



## Castle Rock Water Commission Agenda - Final-Amended

David Hammelman, Chair  
Tony Rathbun, Vice Chair  
Angie Brown  
Brian Gaddie  
KiKi Miller  
Melanie Penoyar-Perez  
Cortland Wolfe

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Wednesday, August 28, 2024

6:00 PM

Castle Rock Water  
175 Kellogg Ct., Bldg. 171  
Castle Rock, CO 80109

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This meeting is open to the public. Three or more Council members may also attend this meeting, during which the items listed herein will be discussed. If you are unable to access any portion of these materials due to a disability as defined under Colorado House Bill 21-1110, please call us at 303-663-4440, email the Town's accessibility team at [accessibility@CRgov.com](mailto:accessibility@CRgov.com) or submit an accommodation request form at [CRgov.com/A11yRequest](https://CRgov.com/A11yRequest).

6:00 pm CALL TO ORDER / ROLL CALL

COUNCIL UPDATE

COMMISSION COMMENTS

DOUGLAS COUNTY WATER COMMISSION MTG. UPDATE

ADMINISTRATIVE BUSINESS

1. [WC 2024-078](#) Approval of the July 24, 2024 Meeting Minutes

**Attachments:** [Attachment A: July Meeting Minutes](#)

2. [WC 2024-079](#) Plum Creek Water Purification Facility Open House & Tour

**Attachments:** [Attachment A: Open House Invitation](#)

3. **WC 2024-092** Walker Reservoir Celebration & Tour

**ACTION ITEMS (HIGH PRIORITY / TIME CRITICAL)**

4. [WC 2024-080](#) Rates & Fees

**Attachments:** [Attachment B: Volume 1](#)  
[Attachment C: Volume 2](#)

5. [WC 2024-081](#) Resolution Approving the Supervisory Control and Data Acquisition (SCADA) Master Plan Phase IV Implementation Project [Entire Castle Rock Water Area]

**Attachments:** [Exhibit 1: SCADA MP Agreement.pdf](#)

6. [WC 2024-082](#) Resolution Approving the Infrastructure Development and Purchase Option Agreement and Water Lease Agreement between the Town of Castle Rock, Acting by and through the Castle Rock Water Enterprise, and Tallgrass Colorado Municipal Water, LLC [Weld County, Colorado]

**Attachments:** [Attachment B: Location Maps.pdf](#)

7. [WC 2024-083](#) Resolution Approving a Services Agreement between the Town of Castle Rock and Consor Engineering for the Plum Creek Pipeline Central Well Field to PCWPF Project [Located parallel to East Plum Creek through central Castle Rock, CO]

**Attachments:** [Exhibit 1: Agreement](#)  
[Attachment B: Location Map](#)

8. [WC 2024-085](#) Ordinance Amending Castle Rock Municipal Code Section 15.10.030 to Permit the use of the IAPMO Water Demand Calculator Approach [Castle Rock Service Area]

**Attachments:** [Attachment A: Ordinance](#)

#### **DIRECTOR FOLLOW-UP AND INFORMATIONAL / UPDATE ITEMS**

9. [WC 2024-086](#) Update on Pine Canyon
10. [WC 2024-087](#) Resolution Approving the Second Amendment to the Services Agreement between the Town of Castle Rock and Burns & McDonnell Engineering Company, Inc. for the Chatfield Pump Back Project Infrastructure Preliminary Engineering and Design Services [Northwestern Douglas County and Southeastern Jefferson County]

11. [WC 2024-088](#) Changes to the ColoradoScape Criteria

**Attachments:** [Attachment A: Summary of ColoradoScape Criteria Changes](#)

12. [WC 2024-089](#) Drought Management Plan Update

**Attachments:** [Attachment A: Drought Plan - DRAFT](#)

13. [WC 2024-091](#) Upcoming Town Council Items

#### **COMMISSIONER MEETING COMMENTS**



# Town of Castle Rock

## Agenda Memorandum

**Agenda Date:** 8/28/2024

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**Item #:** 1. **File #:** WC 2024-078

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**To:** Members of the Castle Rock Water Commission

**From:** Mark Marlowe, P.E., Director of Castle Rock Water

**Approval of the July 24, 2024 Meeting Minutes**  
**Town Council Agenda Date:** NA

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### Executive Summary

Attached are the meeting minutes for the July 24, 2024 Water Commission Meeting.

### Proposed Motion

*"I move to approve the Minutes as presented"*

### Attachments

Attachment A: July 24, 2024 Meeting Minutes

**Water Commission Mtg.  
July 24, 2024**

**Present:** Commissioners David Hammelman, Brian Gaddie, Cortland Wolfe, Tony Rathbun, Melanie Penoyar-Perez, Kiki Miller and Jason Gray

**Absent:** Angie Brown

**Guest:**

**Staff:** Mark Marlowe, Nichol Bussey, Roy Gallea, Scott Tait, Matt Benak, David Van Dellen and MaryJo Reese

**Start: 6:00 pm**

**End: 8:01 pm**

**Council Report**

Time was allowed for Mayor Gray to share a council update.

**Commissioner Comments**

Time was allowed for Commissioner Comments.

**Douglas County Water Commission Meeting Update**

Time was allowed for Mr. Marlowe to share an update.

**0.2% Sales Tax increase Ballot Measure**

Dave Corliss, Town Manager gave a presentation on the ballot initiative that the Town will be bringing to the residents on the November ballot.

**Approval of the June 26, 2024 Meeting Minutes**

***I move to approve the Minutes as presented.***

*It was moved by Tony Rathbun and seconded by Cortland Wolfe to approve the June 26, 2024 meeting minutes as presented. The motion passed unanimously (5-0-1). Kiki Miller abstained.*

**Resolution Approving the Supervisory Control and Data Acquisition (SCADA) Master Plan, Phase IV**

Mr. Marlowe explained that staff just received the bids for this item today but due to the short turnaround to order equipment he wanted to share an informational update. Mr. Marlowe shared that this phase of the project will be to upgrade all equipment and



SCADA systems that feed into the Miller Treatment Plant as well as update the Miller Treatment Plant.

CRW had approved 4 vendors but only 2 bid on the project. Bid amounts ranged from \$4.3M to \$4.8M.

***There was no motion made. Water Commission was generally interested in pursuing this project. Staff will share the final agreement once it is completed.***

**Resolution Approving the Second Amendment to the Tank 17A and 17B Monoclor Residual Control System Station Construction and Installation [2362 Coachline Road, Castle Rock, CO]**

Mr. Tait explained that this project began in the Fall of 2022 and that the purpose of the project is to monitor and control the Chlorine and Chloramine residuals at Tank 17A and Tank 17B. This project has been delayed several times due to Colorado Department of Public Health & Environment (CDPHE) regulatory discussions and Town permitting. During that time the electrical equipment costs and building costs have gone up.

Castle Rock Water (CRW) staff is requesting an addition of \$56,465 to the contract bringing the total project cost to \$274,570.00. Project will be completed in August and then staff will do testing in September and October.

Commissioner Hammelman asked about the proprietary nature of this project, and Mr. Tait explained how the system will work.

***I move to recommend to Town Council approval of the Resolution as presented.***

*Melanie Penoyar-Perez moved to approve the Resolution as presented, Brian Gaddie seconded the motion. Motion passed unanimously (6-0).*

**Resolution Approving the Purchase of the Tallgrass Water Rights**

Mr. Benak explained that this an agreement for a public private partnership (P3). CRW staff is looking at opportunities to have a private company (Tallgrass) build the needed infrastructure to gather all of CRW's Lost Creek water for the Box Elder Creek Project. In the near term, the gathering of this water into a transmission system will allow this water to be leased to existing oil and gas development for hundreds of thousands of dollars per year. The lease of the Lost Creek water until all of the Box Elder Project infrastructure can be built to move the water into our system could provide needed capital to fund the infrastructure. This agreement provides for time to negotiate a broader agreement for Tallgrass to build all of the needed Box Elder Creek infrastructure and also sell CRW up to 1,000 acre feet of additional renewable water rights. If the broader agreement cannot be completed or agreed to, CRW would purchase the infrastructure to gather CRW's Lost Creek water at a cost of \$15M in 2025.

***There was no motion made. Water Commission was generally interested in pursuing this project. Staff will share the final agreement once it is completed.***

### **Townwide Mailer**

This item was tabled due to lack of information at the time of the meeting.

### **ColoradoScape Contest 2024 Update**

Mr. Marlowe shared an update on the 2024 ColoradoScape Contest as well as some photos of the finished landscape at the 2024 winner's home.

### **Introduction to the 2024 Rates & Fees**

Mr. Rementer shared an introduction to the 2024 Rates & Fees.

### **Resolution Approving the Memorandum of Understanding with the Board of County Commissioners of Douglas County Regarding the Douglas County Household Hazardous Waste Collection Program *[Located in Douglas County]***

Mr. Marlowe explained that this is a program that CRW previously participated in and Douglas County has reached out to request assistance again in 2025.

### **Follow up on the June 9<sup>th</sup> Storm event**

Mr. Marlowe shared an update on steps that have been taken since the June 9<sup>th</sup> storm event.

### **Upcoming Town Council Items**

This is a standing item that will be used to share information about projects that are being worked on at the time of the meeting but that staff doesn't have information ready yet.

There were no items at this time.

### **Commissioner Meeting Comments**

Time was allowed for Commissioner Comments.



# Town of Castle Rock

## Agenda Memorandum

**Agenda Date:** 8/28/2024

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**Item #:** 2. **File #:** WC 2024-079

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**To:** Members of the Castle Rock Water Commission

**From:** Mark Marlowe, P.E., Director of Castle Rock Water

**Plum Creek Water Purification Facility Open House**  
**Town Council Agenda Date:** NA

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### Executive Summary

Castle Rock Water staff will again be hosting an open house and tour of one of the most advanced water treatment plants in the nation - Plum Creek Water Purification Facility. Once construction starts, tours will be very limited so now is the time to learn more about the plant, visit with staff and enjoy fun activities for the entire family.

Wednesday, September 18, 2024  
4:00 pm to 6:00 pm  
Plum Creek Water Purification Facility  
1929 Liggett Rd. Castle Rock, CO 80109

Overflow parking and shuttle at 175 Kellogg Court.

Please share the attached invitation with family, friends, and neighbors (**Attachment A**).

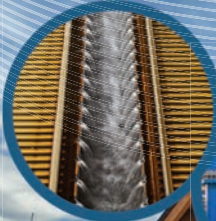
### Attachments

Attachment A: Open House Invitation



# EVERYONE IS INVITED!

Join us for an open house and tour of one of the most advanced water treatment plants in the nation – Plum Creek Water Purification Facility – right here in Castle Rock!



Wednesday, Sept. 18 • 4 to 6 p.m. • Plum Creek Water Purification Facility





# CASTLE ROCK WATER OPEN HOUSE

Wednesday, Sept. 18 • 4 to 6 p.m.

**Plum Creek Water Purification Facility**  
**1929 Liggett Road, Castle Rock**

*Overflow parking and shuttle at 175 Kellogg Court*

Visit our state-of-the-art water purification facility where Castle Rock's water goes through nine processes that filter and attack particles down to a molecular scale. See coagulation bays, giant granular activated carbon filters, and how water operators keep tabs on the Town's entire water distribution system.

Don't miss your chance! Tours limited through 2028 during facility expansion.

- Get your water questions answered by Castle Rock Water staff
- Attend hands-on mini-workshops
- Bring the kids for fun and educational activities
- Enjoy a light dinner and dessert

Learn more at [CRgov.com/WaterOpenHouse](http://CRgov.com/WaterOpenHouse)



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Castle Rock CO 80109

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# Town of Castle Rock

## Agenda Memorandum

**Agenda Date:** 8/28/2024

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**Item #:** 3. **File #:** WC 2024-092

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**To:** Members of the Castle Rock Water Commission

**From:** Mark Marlowe, P.E., Director of Castle Rock Water  
Matt Benak, P.E., Water Resources Manager

**Walker Reservoir Celebration & Tour**  
**Town Council Agenda Date:** NA

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### Executive Summary

The Cherry Creek Project Water Authority would like to invite you to a celebration for the completion of Walker Reservoir (northwest of Franktown) on Thursday, September 26<sup>th</sup> from 11 am to 2 pm.

Please RSVP to Matt Benak, [mbenak@crgov.com](mailto:mbenak@crgov.com) <<mailto:mbenak@crgov.com>> by Friday, August 30<sup>th</sup>.



# Town of Castle Rock

## Agenda Memorandum

**Agenda Date:** 8/28/2024

**Item #:** 4. **File #:** WC 2024-080

**To:** Members of the Castle Rock Water Commission

**From:** Mark Marlowe, P.E., Director of Castle Rock Water  
Nichol Bussey, Business Solutions Manager  
Paul Rementer, Enterprise Fund Analyst

**An Ordinance Approving the 2025 Rates and Fees**  
**Town Council Agenda Date:** 1<sup>st</sup> Reading September 3<sup>rd</sup>

### Executive Summary

A primary goal of the annual rates and fees study is to evaluate the long-term financial plan for Castle Rock Water (CRW) to ensure that future rates and fees will cover future costs of service. The attached **Staff Report** gives an overview of what the study shows. **Attachment A** the Ordinance is not attached but will be added to the Town Council packet and shared with Water Commission once ready. **Attachment B** Volume 1 is an in-depth look at the 2025-2029 Rates and **Attachment C** Volume 2 is an in-depth look at the 2025-2029 System Development Fees.

### Proposed Motion

*"I move to recommend to Town Council approval of the Ordinance as presented"*

### Attachments

Staff Report  
Attachment A: Ordinance (*Not Attached*)  
Attachment B: Volume 1  
Attachment C: Volume 2



# 2024 RATES AND FEES STUDY UPDATE

## VOLUME 1 OF 2

## 2025-2029 RATES

Prepared by Castle Rock Water  
Business Solutions Team

Final Report

September 2024



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# Executive Summary

On an annual basis, Castle Rock Water (CRW) conducts a comprehensive rates and fees study for water, water resources, wastewater, and stormwater funds.

## Project Purpose

The purpose of the rates and fees study is to calculate the cost-of-service (COS) based rates for each enterprise fund that meet CRW's financial goals while being defensible and promoting water conservation. The annual rates and fees study update ensures that any changes in revenue requirements are accounted for based on changes in customer characteristics and both operational and capital costs.

## Financial Management Plan

Starting in 2015, CRW prepared a Financial Management Plan (FMP) which has since been updated on an annual basis as part of this study. The FMP was completed to assist CRW in achieving the following goals:

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

## Cost-of Service Analysis

### Revenue Requirements

A long term financial plan is prepared to project the revenues required for each of CRW's four enterprise funds. The long-term financial plan allows the integration of debt, accumulation/use of reserves, and other assumptions to forecast funding of CRW's water system operations and maintenance (O&M) expenses and capital improvements for each respective enterprise. For each enterprise fund, the financial plan calculates the annual service charge revenue requirements. The projection period developed for each enterprise financial plan was driven by the length of the capital improvement program (CIP) and ends in 2065.

Although the projection period extends to 2065, revenue requirements and capital improvement programs are presented in this report for the five-year planning period 2025 through 2029 for all four enterprise funds. The estimated 2025 total revenue requirements from rates are shown below.

2025 Total Revenue Requirements from Rates	
Water	\$21.4 Million
Water Resources	\$15.0 Million
Wastewater	\$12.4 Million
Stormwater	\$4.3 Million

## Rates and Fees Analysis

CRW updated COS rates for the water and wastewater enterprises, and monthly service charges for the water resources and stormwater enterprises, to meet the annual service charge revenue requirements. The rates and fees meet CRW’s financial objectives while being defensible. The CRW’s rates and fees goals as described in the FMP include:

- Keep the rates and fees competitive with surrounding communities
- Ensure rates and fees for water and water resources are lower than the projected rates in the 2013 hybrid financial plan
- Keep the rates and fees affordable within various national affordability indices

CRW’s rates are based on the cost of providing services and CRW’s comprehensive review of current customer characteristics. A summary of the customer characteristics analysis is presented in Appendix C.

## 2024 Adopted Rates vs 2025 Proposed Rates by Fund

CRW’s adopted rates for 2024 versus proposed rates for 2025 are listed in Tables 1 through 5. Given the financial plan and COS updates, CRW is proposing a 5.0% increase in both the monthly fixed and volumetric rates for water, an 8.0% increase in the water resources monthly fixed rate and a 5.0% increase in the stormwater monthly fixed rate and a 0.5% increase in both the monthly fixed and volumetric rates for wastewater. Each account pays a fixed monthly water service charge, water resources charge and wastewater charge based on their individual meter size. CRW’s water rate structure includes both the fixed monthly service charge by meter size and a volumetric charge based on tiered usage calculated using a water budget rate structure. Volumetric rates are stated per 1,000 gallons (Kgal).

**Table 1**  
**Water Fund**  
**2024 Adopted vs 2025 Proposed Monthly Service Charges**

Meter Size	2024 Adopted Monthly Charges	2025 Proposed Monthly Charges
3/5" x 3/4"	\$10.42	\$10.94
5/8" x 3/4"	\$10.42	\$10.94
3/4"	\$10.42	\$10.94
1"	\$14.99	\$15.74
1.5"	\$20.51	\$21.54
2"	\$28.39	\$29.81
3"	\$45.62	\$47.90
4"	\$102.79	\$107.93
6"	\$160.82	\$168.86
Bulk Hydrant	\$20.51	\$21.54
Bulk Station	\$10.42	\$10.94

## Tiered Rate Structure

The volumetric water budget rate structure consists of three increasing tiered rates:

- Tier 1 = AWMC or Average Winter Monthly Consumption = Base COS rate (Typically considered indoor use)
- Tier 2 = Outdoor Usage = Base plus extra capacity rates by customer class (Typically considered outdoor use)
- Tier 3 = Excess use rate to recover the remaining revenue requirements

Residential accounts are subject to a water conservation surcharge for usage greater than 40 Kgal per month. This surcharge is intended to send a conservation price signal to customers with excessive usage. The revenue collected from this tier is then used to fund conservation rebate programs.

For the volumetric rates shown in Table 2 below, rates by tier are increased by the proposed 5% increase.

**Table 2**  
**Water Fund**  
**2025 Proposed Volumetric Rates by Tier**

Irrigation Season (April 1 through October 31 Consumption)			
Customer Class	Tier 1 (AWMC)	Tier 2 (Outdoor)	Tier 3 (Excess)
Residential	\$3.23	\$6.58	\$9.82
Multi-Family	\$3.23	N/A	\$4.24
Multi-Family w/Irrigation	\$3.23	\$5.59	\$8.35
Commercial	\$3.23	N/A	\$4.53
Commercial w/Irrigation	\$3.23	\$5.65	\$8.45
Irrigation	N/A	\$9.01	\$13.50
Winter Season (November 1 through March 31 Consumption)			
Customer Class	Tier 1 (AWMC)	Tier 2 (Outdoor)	Tier 3 (Excess)
Residential	\$3.23	N/A	\$6.58
Multi-Family	\$3.23	N/A	\$4.24
Multi-Family w/Irrigation	\$3.23	N/A	\$5.59
Commercial	\$3.23	N/A	\$4.53
Commercial w/Irrigation	\$3.23	N/A	\$5.65
Irrigation	N/A	N/A	\$13.50
Bulk Water Customers			
Bulk Hydrant	\$9.01	N/A	N/A
Bulk Station	\$11.26	N/A	N/A

An additional surcharge of \$9.82 is added for any water usage over 40,000 gallons.



**Table 3  
Water Resources Fund  
2024 Adopted vs 2025 Proposed  
Monthly Service Charges**

<b>Meter Size</b>	<b>2024 Adopted Monthly Service Charges</b>	<b>2025 Proposed Monthly Service Charges</b>
3/5" x 3/4"	\$31.12	\$33.61
5/8" x 3/4"	\$31.12	\$33.61
3/4"	\$31.12	\$33.61
1"	\$117.97	\$127.41
1.5"	\$223.18	\$241.03
2"	\$373.21	\$403.07
3"	\$700.96	\$757.04
4"	\$1,788.20	\$1,931.26
6"	\$2,891.63	\$3,122.96
Bulk Hydrant	\$223.18	\$241.03
Bulk Station	\$31.12	\$33.61

**Table 4  
Wastewater Fund  
2024 Adopted vs 2025 Proposed  
Monthly Service Charges and Volumetric Rate**

<b>Meter Size</b>	<b>2024 Adopted Monthly Service Charges</b>	<b>2025 Proposed Monthly Service Charges</b>
3/5" x 3/4"	\$8.57	\$8.61
5/8" x 3/4"	\$8.57	\$8.61
3/4"	\$8.57	\$8.61
1"	\$13.64	\$13.71
1.5"	\$19.78	\$19.88
2"	\$28.53	\$28.67
3"	\$47.66	\$47.90
4"	\$111.11	\$111.67
6"	\$175.53	\$176.41
<b>Volumetric Rate – All Applicable Customers, Per Kgal</b>	\$6.07	\$6.10

Table 5 Stormwater Fund 2024 Adopted vs 2025 Proposed Monthly Service Charge		
	2024 Adopted Monthly Service Charge	2025 Proposed Monthly Service Charge
All Customers, per Single Family Equivalent (SFE)	\$7.97	\$8.37
SFE Assignment		
Customer Class	Impervious Sq. Ft.	SFE
Single Family Attached & Detached Customers	3,255	1
Non-Single Family (Multi-Family & Commercial Customers)	Parcel size times 80% imperviousness divided by 3,255 impervious sq. ft. per SFE = # of SFE's	

## Proposed Rates for 2025 Through 2029

Rates for the five-year study period (2025-2029) were projected using the cost of service model results for water and wastewater as well as the percentage rate revenue increases projected by the financial plan models for all four funds. Table 6 represents proposed rate revenue changes for 2025 through 2029.

Table 6 Proposed Rate Revenue Percentage Increases 2025-2029				
Year	Water	Water Resources	Wastewater	Stormwater
2025	5.0%	8.0%	0.5%	5.0%
2026	5.0%	8.0%	0.5%	5.0%
2027	5.0%	8.0%	0.5%	5.0%
2028	5.0%	8.0%	0.5%	5.0%
2029	5.0%	8.0%	0.5%	5.0%

# Long-Term Financial Planning

## Background

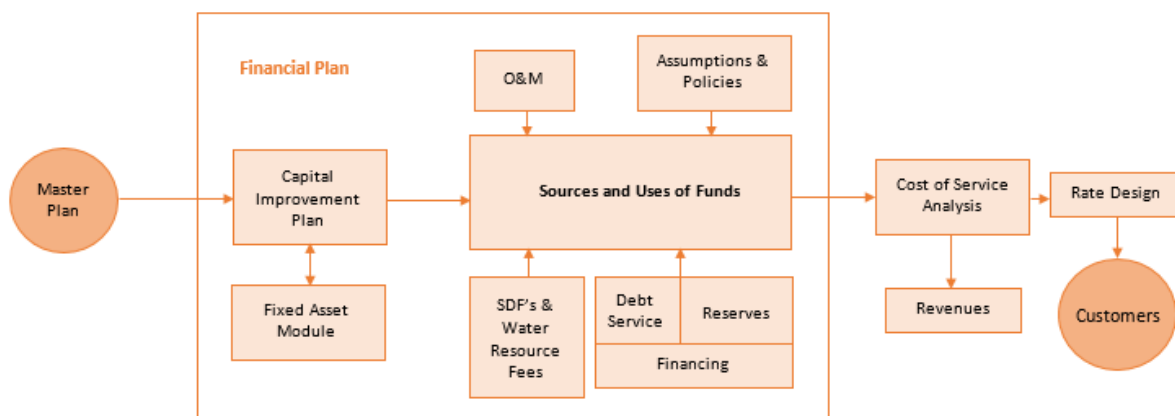
Castle Rock Water engaged Stantec Consulting Services, Inc. (Stantec) to assist in updating the comprehensive utility-specific financial plans that examine revenues, expenditures, debt service requirements, cash flows, reserve requirements, fund balances and capital project costs for the study period. The financial plan is used as the basis for projecting utility specific revenue requirements for the water, water resources, wastewater, and stormwater funds. Assumptions used in the development of the long term financial plans play a critical role in the results of this study. A full understanding of the modeling assumptions is therefore vitally important in qualifying study results. The following sections discuss both the planning assumptions and methods for calculating revenue requirements for the purpose of the study.

## Financial Planning Overview

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

The financial plan is a forward looking model, meaning that all values reported are for future periods. For the purposes of this study, the first year in the model is fiscal year 2025. CRW's fiscal year is January 1, 2025 to December 31, 2025. The model includes projections of sources and uses of funds throughout the study period. Figure 1 provides a visual overview of the financial planning process followed by CRW and reviewed by Stantec. In addition to forecast assumptions, historical revenues and expenses, existing and planned debt service, and the current CIP serve as the basis for revenue requirement projections. Each step of the financial planning process is described individually in greater detail in the following sections.

Figure 1: Financial Planning Flowchart



## Capital Improvements

Capital improvements are the planned investments in capital projects specific to each fund that are projected for the term of the corresponding utility’s financial plan. Capital includes physical assets and infrastructure with a useful life greater than one year that meet all of CRW’s established capitalization policy criteria. CRW also established a measurable goal to keep costs at or under budget for capital budgets each year by enterprise fund. Detailed CIPs were developed by CRW Engineers.

## Operating Expenditures

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

## Other Capital Funding Costs

Planned capital expenditures include monies needed to fund the major infrastructure projects for each fund through the study period. Capital funding costs are cash expenditures that the respective fund will need to make in order to fund capital projects. These expenditures include the annual costs of debt service (principal and interest payments), the cost of cash-financing a given portion of the projects’ costs and the cost of funding repair and replacement reserves. The capital funding costs presented in this report include the impacts of the 3,500 acre-feet (AF) Hybrid renewable water supply option which Town Council approved in October 2012 and the additional 1,000 AF of renewable WISE water supply approved by Town Council in July of 2018.

## Revenue Requirements

Revenue requirements define the total amount of income CRW must earn in order to operate on a day-to-day basis, conduct any necessary repairs and respond to the needs of growth in the system. Two major requirements are measured as revenue requirements:

1. The Total Revenue Requirements
2. The Revenues Required from Rates (Service Charge Revenue Requirements)

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

## Calibration of Financial Plan

There are five major tools one can utilize in optimizing the financial plan to meet revenue requirements while remaining aligned with CRW policies and objectives. These include:

1. Additional Income from Rate Revenue Increases
2. Proceeds from New Debt Issuance
3. Contributions from System Development Fees
4. The Use of Reserve Funds
5. Inter-Fund Loans

## Assumptions Shared Across Funds

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

Table 7 represents projected system growth for each of the four enterprise funds. These assumptions were developed using projections given from the Town's Development Services Department which are updated each year.

**Table 7  
Projected New Permits and Percentage Growth by Fund**

Year	Water Fund		Water Resources Fund		Wastewater Fund		Stormwater Fund	
	New Permits	Percentage Growth	New Permits	Percentage Growth	New Permits	Percentage Growth	New SFEs	Percentage Growth
2025	524	2%	524	2%	516	2%	632	1%
2026	544	2%	544	2%	526	2%	845	2%
2027	538	2%	538	2%	523	2%	781	2%
2028	538	2%	538	2%	523	2%	781	2%
2029	538	2%	538	2%	523	2%	781	2%

The escalation factors used in this study are defined in Appendix B.

## Water Fund

The water fund financial plan projects the water fund’s sources and uses of funds from 2025-2065. The water fund financial model developed for this study contains four sub-funds:

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

### Sources of Funds

Sources of funds include all cash inflows to the water fund. These include service charge revenues, miscellaneous income, contributed cash-capital, and interest earnings. The assumptions for specific sources of funding are provided below. Detailed definitions are given in Appendix B.

- System Growth – Table 7 represents projected system growth by fund.
- Rate Revenue Increases – Rate revenues are projected to increase each year based on Town growth and usage from 2025-2029.
- System Development Fee (SDF) Revenues – SDFs are projected to increase each year based on growth in the Town as well as projected increases from the SDF models. These are shown in more detail in Volume 2.
- Revenue Bonds – No new debt is planned in the five-year study period.

- Inter-Fund Loans – Inter-fund loans through 2029 from wastewater totaling \$13.9 million will be taken to support water CIP.
- Other Revenues – For the study period, the water fund other revenues are presented in Table 8 below and include the following categories:
  - Charges for Service/Fees include revenues from bulk hydrant backflow inspections, bulk hydrant meter calibration, bulk hydrant permit fees, meter repair tests and fees, bulk water sales, water service transfer charges, etc.
  - Contributions and Donations include revenues from developer contributions.
  - Fines and Forfeitures include disconnection notice fees, late charges, lien administrative fees, lien filing fees, NSF charges and disconnection/reconnection of service fees.
  - Intergovernmental Agreement (IGA) Revenues include revenues received from various IGAs.
  - Miscellaneous Revenues include proceeds from sale of assets, reimbursements, sale of recycled materials, tower leases, water leases and vending machine commission.
  - Interest Earnings is the net revenue impact of earnings or losses on our investments.

**Table 8**  
**Water Fund**  
**Other Revenues**

Other Revenues	FY2025	FY2026	FY2027	FY2028	FY2029
Charges for Service/Fees	\$999,632	\$1,034,632	\$1,034,632	\$1,034,632	\$1,034,632
Contributions and Donations	\$0	\$0	\$0	\$0	\$0
Fines and Forfeitures	\$320,300	\$320,300	\$320,300	\$320,300	\$320,300
IGA Revenues	\$300,700	\$150,700	\$150,700	\$150,700	\$155,221
Miscellaneous Revenues	\$248,987	\$251,889	\$257,982	\$261,060	\$261,189
Interest Earnings	\$359,143	\$223,292	\$79,157	\$79,299	\$83,998
<b>Total</b>	<b>\$2,228,762</b>	<b>\$1,980,813</b>	<b>\$1,842,771</b>	<b>\$1,845,991</b>	<b>\$1,855,340</b>

- Fund Balances – The water fund is projected to have a reserve fund balance of approximately \$7.2 million at the beginning of 2025, not including capital reserve funds. Each reserve has a minimum fund balance requirement to help mitigate financial risk, which is in line with the FMP goal to keep adequate reserves and maintain fund balances between minimums and maximums. The requirements by sub-funds are:
  - Operating Reserve – 60 days of O&M; increasing from approximately \$2.8 to \$3.2 million throughout the study period.
  - Capital Reserve – Reserves vary year to year based on timing of CIP. The average capital reserve during the study period is \$1.3 million.

- Catastrophic Failure Reserve – Approximately 1% of original fixed asset value, averaging \$2.7 million throughout the study period.
- Rate Revenue Stabilization Reserve – Based upon 10% of metered water sales; averaging approximately \$2.0 million in the study period. The 10% is consistent with the variance in rainfall from year to year.

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

## Uses of Funds

Uses of funds include all expenditures, either operating or capital and any reserve requirement or increase in fund balance CRW plans to achieve. The major assumptions for uses of funds are as follows. Detailed definitions for each are located in Appendix B.

- Operating Expenses – For the water fund most operating costs are fixed; meaning not varying based on the volume of water sold; with the exception of energy, treatment chemicals and certain other supplies, which vary with production.
- Personnel Services – CRW reviews full time equivalent (FTE) needs each year to determine how many new FTEs are projected over the budget period and includes these into the expense projections. The total projected FTEs for all four enterprise funds for the five-year period is three new FTEs.
- Supplies – The supplies for the water fund are expected to remain consistent over the five-year study period at about \$2.1 million a year.
- Energy Costs – Over the five-year study period these are expected to increase at an average rate of approximately 3%.
- Capital Improvements – Total water system capital improvement costs from 2025-2029 are expected to be \$65.6 million in today's dollars. Only improvements and replacements that provide benefits to existing customers are included in revenue requirements. Improvements to serve growth are funded from SDFs.
- Inter-Fund Loans – The water fund will receive an inter-fund loan of \$4.8 million in 2024. It is anticipated that the water fund will receive additional inter-fund loans from the wastewater fund totaling \$13.9 million the five-year study period. Payments on all inter-fund loans total approximately \$11.0 million during the study period.
- Transfers Out – These include the costs for the vehicle replacement fund which is transferred to the fleet department for about \$3.0 million over the five-year period.
- Fund Balances – When fund balances are drawn down from initial balances, the use of those funds is a source of funding to cover water fund expenses. When it is building the fund balance it is a use of funds as cash is added to the water operating fund. These are projected to be kept at an acceptable level of working capital, which is a minimum of 60 days O&M in the operating reserve. This also conforms to the FMP goal to keep adequate reserves and maintain fund balances between minimums and maximums.
- Debt Service – The water fund currently has one outstanding revenue bond issues (2015). The 2015 bond issue was a refinancing of 2006 bonds. The water fund debt



service amounts average \$688 thousand between 2025 and the final payments in 2026. Total average debt service between 2025 and 2029 is \$275 thousand.

- Debt Service Coverage – The debt service coverage ratio in the model is set to 1.2 times the total annual debt service amount, which is about \$827 thousand. This is a bond covenant requirement.

## Service Charge Revenue Requirements

The portion of annual system revenue requirements to be recovered through rates depends on a utility’s financing policy and its other sources of income. To determine the amount of service charge revenue the water enterprise must generate annually, the total revenue requirements must be reduced by non-rate or other system revenues. Other system revenues are defined as all revenues except those derived from water rates. Table 9 represents the water fund service charge revenue requirements for 2025-2029.

Table 9 Water Fund Service Charge Revenue Requirements					
Revenue Requirements	FY2025	FY2026	FY2027	FY2028	FY2029
Operating and Maintenance	\$16,956,994	\$17,672,776	\$18,315,813	\$18,884,054	\$19,330,657
Debt Service	\$689,000	\$687,750	\$0	\$0	\$0
Transfers Out	\$1,774,482	\$1,969,036	\$2,267,826	\$4,228,972	\$4,417,280
Cash Funded Capital	\$6,252,033	\$7,591,165	\$10,354,935	\$7,790,072	\$8,740,142
Minor Capital Outlay	\$0	\$0	\$0	\$0	\$0
Required Reserves/(Use of Reserves)	(\$2,015,878)	(\$2,410,833)	\$3,240,657	\$3,299,495	(\$2,136,244)
<b>Total Revenue Requirements</b>	<b>\$23,656,631</b>	<b>\$25,509,893</b>	<b>\$34,179,231</b>	<b>\$34,202,593</b>	<b>\$30,351,835</b>
Non-Rate Revenues	(\$2,228,762)	(\$1,980,813)	(\$1,842,771)	(\$1,845,991)	(\$1,855,340)
Transfers In	\$0	(\$500,000)	(\$7,600,000)	(\$5,800,000)	\$0
<b>Revenues Required from Rates</b>	<b>\$21,427,869</b>	<b>\$23,029,080</b>	<b>\$24,736,460</b>	<b>\$26,556,602</b>	<b>\$28,496,495</b>

## Water Resources Fund

The water resources fund financial plan projects the fund's sources and uses of funds from fiscal year 2025 through 2065. As noted previously, the results presented for the water resources fund include the impacts of the renewable water supply plan for the 3,500 AF Hybrid proposal authorized by Town Council in October 2012 and the 1,000 AF WISE renewable supply approved by Town Council in July of 2018. The water resources fund financial model developed in this study has three sub-funds:

- Operating Reserve
- Capital Reserve
- Catastrophic Failure Reserve

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

### Sources of Funds

The sources of funds include all cash inflows to the operating funds. These include service charge revenues, miscellaneous income, contributed cash-capital, and interest earnings. The major assumptions for specific sources of funding are provided below and detailed definitions are given in Appendix B.

- System Growth – Table 7 represents the projected system growth for water resources.
- Rate Revenue Increases – There is an 8.0% increase proposed for 2025. Additionally, annual rate increases of 8.0% are projected for 2026-2029.
- SDF Revenues – Please see Volume 2 for current projections.
- Revenue Bonds – During the 2025-2029 study period, approximately \$55 million in new debt may be required in 2025.
- Inter-Fund Loans – There were no loans payable to the water resources fund.
- Other Revenues – For the study period the water resources fund other revenues are presented in Table 10 below.
  - Charges for Service/Fees include irrigation permit fees, sod exemption fees and landscaper registration fees.
  - Fines and Forfeitures include lien administrative revenue, water surcharge and water violation revenues.
  - Miscellaneous Revenues include capital leases, water rights leases, reimbursements, miscellaneous revenues and vending machine commission.
  - Interest Earnings is the net revenue impact of earnings or losses on our investments.

**Table 10**  
**Water Resources Fund**  
**Other Revenues**

Other Revenues	FY2025	FY2026	FY2027	FY2028	FY2029
Charges for Service/Fees	\$60,000	\$60,000	\$60,000	\$60,000	\$60,000
Fines and Forfeitures	\$187,985	\$187,985	\$187,985	\$187,985	\$187,985
Miscellaneous Revenues	\$2,704,588	\$704,588	\$704,588	\$704,588	\$704,588
Interest Earnings	\$1,219,795	\$600,694	\$147,926	\$97,941	\$57,248
<b>Total</b>	<b>\$4,172,368</b>	<b>\$1,553,267</b>	<b>\$1,100,499</b>	<b>\$1,050,514</b>	<b>\$1,009,821</b>

- Fund Balances – The water resources fund is projected to have a reserve of approximately \$5.8 million at the beginning of 2025, not including capital reserve funds. Each of the sub-funds in the water resources financial plan has a minimum balance requirement to help mitigate financial risk, which is in line with the FMP goal to keep adequate reserves and maintain fund balances between minimums and maximums. The requirements by sub-fund are:
  - Operating Reserve – 60 days of O&M; increasing from approximately \$2.3 million to \$2.9 million in the study period.
  - Capital Reserve – Obligated reserves vary from year to year; depending on the CIP. The fund maintains a minimum unobligated reserve of \$500,000 throughout the study period.
  - Catastrophic Failure Reserve – Approximately 2% of original fixed asset value averaging about \$3.5 million in the study period.

The financial plan calls for maintaining the balances above and using net available capital reserve fund balance to offset short-term capital needs.

## Uses of Funds

Uses of funds include all the same components as listed above in the water fund. The major assumptions for uses of funds are shown below. For detailed definitions see Appendix B.

- Operating Costs – For the water resources fund most operating costs are fixed.
- Personnel Services – CRW reviews FTE needs each year to determine how many new FTEs are projected over the budget period and includes these in the expense projections. The total projected FTEs for all four enterprise funds for the five-year period is three new FTEs.
- Supplies – For the water resources fund supplies are projected to be approximately \$897 thousand per year over the five-year study period.
- Capital Improvements – Total water resources system capital improvement costs from 2025-2029 are expected to be \$148.7 million in today’s dollars. Only improvements or

replacements that provide benefits to existing customers are included in revenue requirements. Improvements to serve growth are funded from SDFs.

- Inter-Fund Loans – The fund does not have an inter-fund loan balance at this time.
- Fund Balances – For the study, it is assumed that the fund balances will not drop below the requirements presented in the above section.
- Debt Service – The water resources fund currently has two outstanding revenue bond issues (2016 and 2022). The 2016 revenue bonds refunded the 2008 Certificates of Participation (COPs). Additional borrowing of \$55 million may be needed in 2025. The debt service, including current and anticipated debt, amounts to an average of \$9.4 million per year from 2025 to 2029.
- Debt Service Coverage – The debt service coverage ratio in the model is set to 1.2 times the total annual debt service amount, which is about \$9.3 million.

## Service Charge Revenue Requirements

Table 11 represents the water resources fund service charge revenue requirements for the study period 2025 through 2029.

**Table 11**  
**Water Resources Fund**  
**Service Charge Revenue Requirements**

Revenue Requirements	FY2025	FY2026	FY2027	FY2028	FY2029
Operating and Maintenance	\$13,655,571	\$14,897,183	\$15,832,645	\$17,104,252	\$17,348,077
Debt Service	\$7,718,050	\$9,788,910	\$9,814,710	\$9,855,710	\$9,875,460
Transfers Out	\$53,847	\$56,143	\$6,933	\$6,933	\$6,933
Cash Funded Capital	\$22,417,532	\$13,795,507	\$5,125,600	\$5,129,200	\$329,200
Minor Capital Outlay	\$0	\$0	\$0	\$0	\$0
Required Reserves/(Use of Reserves)	(\$19,881,558)	(\$14,469,377)	(\$5,526,493)	(\$5,091,927)	\$1,505,484
<b>Total Revenue Requirements</b>	<b>\$23,963,442</b>	<b>\$24,068,366</b>	<b>\$25,253,395</b>	<b>\$27,004,168</b>	<b>\$29,065,154</b>
Non-Rate Revenues	(\$8,803,198)	(\$7,426,613)	(\$6,989,325)	(\$6,963,940)	(\$6,935,097)
Transfers In	(\$186,389)	(\$187,374)	(\$1,88,373)	(\$189,389)	(\$190,418)
<b>Revenues Required from Rates</b>	<b>\$14,973,855</b>	<b>\$16,454,379</b>	<b>\$18,075,697</b>	<b>\$19,850,839</b>	<b>\$21,939,639</b>

# Wastewater Fund

The wastewater fund financial plan projects the fund’s source and uses of funds from 2025 through 2065. The three sub-funds include:

- Operating Reserve
- Capital Reserve
- Catastrophic Failure Reserve

## Sources of Funds

The sources of funds include all cash inflows to the operating funds. These include service charge revenues, miscellaneous income, contributed cash-capital, and interest earnings. The major assumptions for specific sources of funding are provided below and detailed definitions are given in Appendix B.

- System Growth – Table 7 represents the projected system growth for wastewater.
- Rate Revenue Increases – There is a 0.5% increase proposed for 2025. Additionally, annual rate increases of 0.5% are projected for 2026-2029.
- SDF Revenues – Please see Volume 2 for current projections.
- Inter-Fund Loans – There are currently no loans payable to the fund. During the study period, approximately \$11.1 million in payments will be received from the anticipated inter-fund loans to water and stormwater.
- Revenue Bonds – During 2025-2029 no new debt options are being reviewed.
- Other Revenues - For the study period, the wastewater fund other revenues are presented in Table 12 below.
  - Contributions and Donations include expected developer contributions.
  - Fines and Forfeitures include lien administrative revenue.
  - Miscellaneous Revenues include reimbursements, vending machine commissions and other miscellaneous revenues.
  - Interest Earnings is the net revenue impact of earnings or losses on our investments.

**Table 12**  
**Wastewater Fund**  
**Other Revenues**

Other Revenues	FY2025	FY2026	FY2027	FY2028	FY2029
Contributions and Donations	\$29,510	\$29,510	\$29,510	\$29,510	\$29,510
Fines and Forfeitures	\$25	\$25	\$25	\$25	\$25
Miscellaneous Revenues	\$1,600	\$1,600	\$1,600	\$1,600	\$1,600
Interest Earnings	\$537,919	\$454,322	\$238,585	\$180,052	\$179,441
<b>Total</b>	<b>\$569,054</b>	<b>\$485,457</b>	<b>\$269,720</b>	<b>\$211,187</b>	<b>\$210,576</b>

- **Fund Balances** – The wastewater fund was projected to have a reserve of approximately \$4.1 million at the beginning of 2025, not including capital reserve funds. Each of the sub-funds in the financial plan have a minimum balance requirement to help mitigate financial risk, which is in line with the FMP goal to keep adequate reserves and maintain fund balances between minimums and maximums. The requirements by sub-fund are:
  - Operating Reserve – 60 days of O&M; averaging \$1.9 million in the study period.
  - Capital Reserve – Obligated reserves vary from year to year; depending on the CIP. The fund maintains a minimum unobligated reserve of \$1.0 million throughout the study period.
  - Catastrophic Failure Reserve – Approximately 2% of original fixed asset value averaging about \$2.3 million in the study period.

The financial plan calls for maintaining these balances above and using net available capital reserve fund balance to offset short-term capital needs.

## Uses of Funds

Uses of funds include all the same components as listed above in the water fund. The major assumptions for uses of funds are shown below. For detailed definitions see Appendix B.

- **Operating Costs** – For the wastewater fund most operating costs are fixed.
- **Personnel Services** – CRW reviews FTE needs each year to determine how many new FTEs are projected over the budget period and includes these into the expense projections. The total projected FTEs for all enterprise funds for the five-year period is three new FTEs.
- **Energy Costs** – Over the five-year study period these are expected to increase at an average rate of approximately 3%.
- **Capital Improvements** – Total wastewater system capital improvement costs from 2025-2029 are expected to be \$36.0 million in today's dollars. Only improvements or replacements that provide benefits to existing customers are included in revenue requirements. Improvements to serve growth are funded from SDFs.
- **Transfers Out** – These include the costs for the vehicle replacement fund which is transferred to the fleet department as well as inter-fund loans to water and stormwater and is about \$18.8 million over the five-year study period.
- **Fund Balances** – For the study, it is assumed that the fund balances will not drop below the requirements presented in the above section.
- **Debt Service** – The fund does not have existing debt service and the financial plan does not assume new debt issues.

## Service Charge Revenue Requirements

Table 13 represents the wastewater fund service charge revenue requirements for the study period 2025 through 2029.

<b>Table 13 Wastewater Fund Service Charge Revenue Requirements</b>					
<b>Revenue Requirements</b>	<b>FY2025</b>	<b>FY2026</b>	<b>FY2027</b>	<b>FY2028</b>	<b>FY2029</b>
Operating and Maintenance	\$10,604,110	\$11,105,766	\$11,630,813	\$12,185,132	\$12,737,353
Debt Service	\$0	\$0	\$0	\$0	\$0
Transfers Out	\$142,122	\$671,753	\$7,782,211	\$5,982,211	\$4,188,375
Cash Funded Capital	\$0	\$0	\$0	\$0	\$0
Minor Capital Outlay	\$0	\$0	\$0	\$0	\$0
Required Reserves/(Use of Reserves)	\$3,423,206	\$2,680,681	(\$4,566,397)	(\$1,063,422)	\$779,008
<b>Total Revenue Requirements</b>	<b>\$14,169,438</b>	<b>\$14,458,200</b>	<b>\$14,846,627</b>	<b>\$17,103,921</b>	<b>\$17,704,736</b>
Non-Rate Revenues	(\$546,234)	(\$462,637)	(\$246,900)	(\$188,367)	(\$187,756)
Transfers In	(\$1,250,524)	(\$1,258,024)	(\$1,494,246)	(\$3,439,027)	(\$3,666,283)
<b>Revenues Required from Rates</b>	<b>\$12,372,680</b>	<b>\$12,737,539</b>	<b>\$13,105,481</b>	<b>\$13,476,527</b>	<b>\$13,850,698</b>

## Stormwater Fund

The stormwater fund financial plan projects the fund's source and uses of funds from 2025 through 2065. The three sub-funds include:

- Operating Reserve
- Capital Reserve
- Catastrophic Failure Reserve

### Sources of Funds

The sources of funds include all cash inflows to the operating funds. These include service charge revenues, miscellaneous income, contributed cash-capital, and interest earnings. The major assumptions for specific sources of funding are provided below and definitions are given in Appendix B.

- System Growth – Table 7 represents the projected system growth for stormwater.
- Rate Revenue Increases – There is a 5.0% increase proposed for 2025. A 5.0% increase is also projected for 2026-2029.
- System Development Fee (SDF) Revenues - Please see Volume 2 for current projections.
- Revenue Bonds – During 2025-2029 no new debt options are being reviewed.
- Inter-Fund Loans – An inter-fund loan of \$4.0 million from the wastewater fund is projected in 2029.
- Other Revenues – For the study period, the stormwater fund other revenues are presented in Table 14 below.
  - DESC/GESC (now called TESC) Fees include TESC inspection fees and TESC plan check fees and re-inspection fees.
  - Developer Contributions include contributions from developers.
  - Fines and Forfeitures include the lien administrative revenue.
  - Miscellaneous Revenues include vending machine commissions, reimbursements and other miscellaneous revenues.
  - Interest Earnings is the net revenue impact of earnings or losses on our investments.

**Table 14**  
**Stormwater Fund**  
**Other Revenues**

Other Revenues	FY2025	FY2026	FY2027	FY2028	FY2029
TESC Fees	\$264,253	\$264,253	\$264,253	\$264,253	\$267,091
Developer Contributions	\$1,149,593	\$2,315	\$2,315	\$538,315	\$3,164,815
Fines and Forfeitures	\$25	\$25	\$25	\$25	\$25
Miscellaneous Revenues	\$170,086	\$89,606	\$89,606	\$89,606	\$89,606
Interest Earnings	\$127,493	\$89,477	\$22,261	\$19,954	\$22,477
<b>Total</b>	<b>\$1,711,450</b>	<b>\$445,676</b>	<b>\$378,460</b>	<b>\$912,153</b>	<b>\$3,544,014</b>

- Fund Balances – The stormwater fund was projected to have a reserve of approximately \$1.8 million at the beginning of 2025, not including capital reserve funds. Each of the sub-funds in the financial plan have a minimum balance requirement to help mitigate financial risk, which is in line with the FMP goal to keep adequate reserves and maintain fund balances between minimums and maximums. The requirements by sub-fund are:
  - Operating Reserve – 60 days of O&M; averaging approximately \$0.6 million in the study period.
  - Capital Reserve – Obligated reserves vary from year to year; depending on the CIP.
  - Catastrophic Failure Reserve – Approximately 1% of original fixed asset value averaging about \$1.2 million in the study period.



The financial plan calls for maintaining these balances above and using net available capital reserve fund balance to offset short-term capital needs.

## Uses of Funds

Uses of funds include all the same components as listed above in the water fund. The major assumptions for uses of funds are shown below. For detailed definitions see Appendix B.

- Operating Costs – For the stormwater fund most operating costs are fixed.
- Personnel Services – CRW reviews FTE needs each year to determine how many new FTEs are projected over the budget period and includes these in the expense projections. The total projected FTEs for all four enterprise funds for the five-year period is three new FTEs.
- Supplies – The supplies for the stormwater fund are expected to remain consistent over the five-year study period at about \$114 thousand per year.
- Energy Costs – Over the 5-year study period these are expected to increase at a rate of 3%.
- Capital Improvements – Total stormwater system capital improvement costs from 2025-2029 are expected to be \$15.8 million in today's dollars. Only improvements or replacements that provide benefits to existing customers are included in revenue requirements. Improvements to serve growth are funded from SDFs.
- Transfers Out – These include the costs for the vehicle replacement fund which is transferred to the fleet department and is about \$822 thousand over the five-year study period.
- Inter-Fund Loans – There is an anticipated inter-fund loan of \$4 million from wastewater in 2029.
- Fund Balances – For the study, it is assumed that the fund balances will not drop below the requirements presented in the above section.
- Debt Service – The 10-year debt repayment of the 2019 loan will average \$1.2 million a year during the study period.

## Service Charge Revenue Requirements

Table 15 represents the stormwater fund service charge revenue requirements for the study period 2025 through 2029.

**Table 15**  
**Stormwater Fund**  
**Service Charge Revenue Requirements**

<b>Other Revenues</b>	<b>FY2025</b>	<b>FY2026</b>	<b>FY2027</b>	<b>FY2028</b>	<b>FY2029</b>
Operating and Maintenance	\$3,752,723	\$3,902,072	\$4,068,830	\$4,227,695	\$4,381,269
Debt Service	\$1,157,200	\$1,167,424	\$1,182,072	\$1,181,048	\$1,189,640
Transfers Out	\$141,836	\$152,452	\$174,525	\$174,525	\$178,596
Cash Funded Capital	\$1,173,899	\$1,778,650	\$848,243	\$1,001,593	\$3,008,250
Minor Capital Outlay	\$0	\$0	\$0	\$0	\$0
Required Reserves/(Use of Reserves)	(\$169,522)	(\$1,916,116)	(\$943,732)	(\$388,889)	\$423,275
<b>Total Revenue Requirements</b>	<b>\$6,056,136</b>	<b>\$5,084,483</b>	<b>\$5,329,938</b>	<b>\$6,195,972</b>	<b>\$9,181,030</b>
Non-Rate Revenues	(\$1,711,450)	(\$445,676)	(\$378,460)	(\$912,153)	(\$3,544,014)
Transfers In	\$0	\$0	\$0	\$0	\$0
<b>Revenues Required from Rates</b>	<b>\$4,344,686</b>	<b>\$4,638,807</b>	<b>\$4,951,478</b>	<b>\$5,283,819</b>	<b>\$5,637,016</b>

## Water and Wastewater Cost-of-Service Analysis

### Introduction

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

### Cost-of-Service Methodology

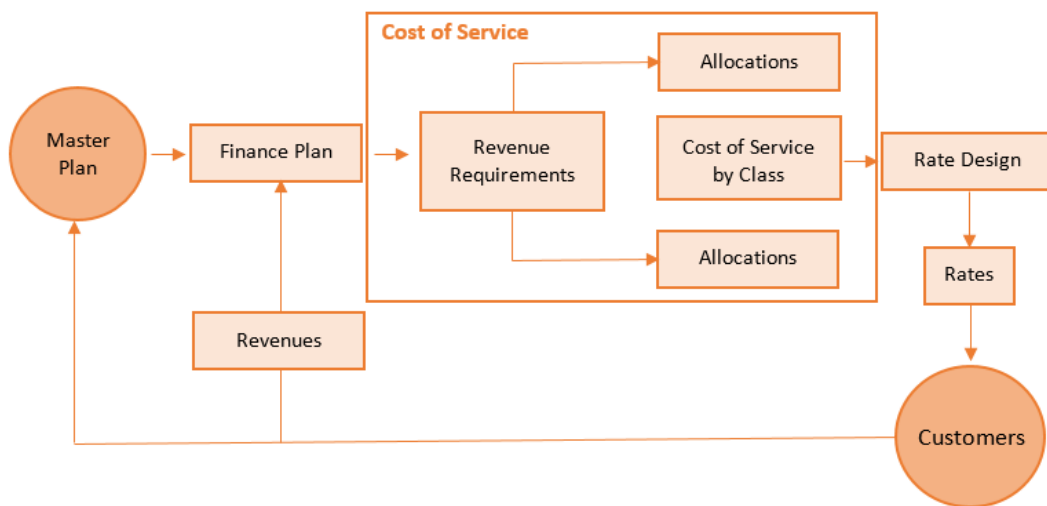
The basic philosophy behind a COS methodology is that utilities should be self-sustaining enterprises that are adequately financed with rates that are based on sound engineering and economic principles. In addition, rates should be equitable and proportionate to the costs of providing service to a given type of customer. The guidelines of water ratemaking are established by the American Water Works Association (AWWA) in the Manual M1. The

guidelines for wastewater ratemaking are established by the Water Environment Federation (WEF) in the Manual of Practice No. 27.

Figure 2 illustrates the flow of information involved in developing COS rates. More specifically, the steps required to develop COS rates include:

- Determination of the systems' annual revenue requirements (i.e., costs)
- Determination of service charge revenue requirements
- Analysis of customer demands and characteristics
- Allocation of service charge revenue requirements by type of customer class
- Design of rates

Figure 2: Cost-of-Service Process



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

The financial plan attempts to balance cash sources and uses through 2065; however, the COS analysis focuses on the water and wastewater system revenue requirements for a single test year with two projected years. The main goal was to determine rates for recommendation in 2025. Revenue requirements for 2025 through 2029 were obtained from the financial plans developed for CRW.

The steps of the COS process are as follows.

## **Determination of Annual System Revenue Requirements**

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

- O&M Expenses
- Debt Service
- Cash-Funded Capital Expenditures
- Transfers to Reserves

## **Determination of Service Charge Revenue Requirements**

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

## **Analysis of Flows and Usage Characteristics**

Analyzing annual consumption and flows in the system and other usage characteristics begins with a review of the individual customer classes. CRW currently provides water services to seven customer classes:

- Residential
- Multifamily (with irrigation)
- Multifamily Indoor Use Only
- Commercial (with irrigation)
- Commercial Indoor Use Only
- Irrigation
- Bulk Water

CRW currently provides wastewater to five customer classes:

- Residential
- Multifamily (with irrigation)
- Multifamily Indoor Use Only
- Commercial (with irrigation)
- Commercial Indoor Use Only

The commercial class includes such customers as schools, churches and the non-irrigation accounts. The irrigation class includes all irrigation-only accounts.

To equitably allocate the service charge revenue requirements of the system, an analysis of each customer class' consumption and flow characteristics is necessary. Characteristics such as annual and monthly consumption in millions of gallons, AWMC, average summer monthly consumption and the number of customers by meter size and customer class are analyzed.

## Customer Characteristics

CRW's customer characteristics that are analyzed in the study include the following for the water system. These are defined in Appendix B and analyzed further in the Customer Characteristics Analysis in Appendix C.

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

For wastewater the analyzed customer characteristics are shown below and are defined in Appendix B and analyzed further in the Customer Characteristics Analysis in Appendix C.

- Flow Demand
- Meters and Services
- Number of Customers

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

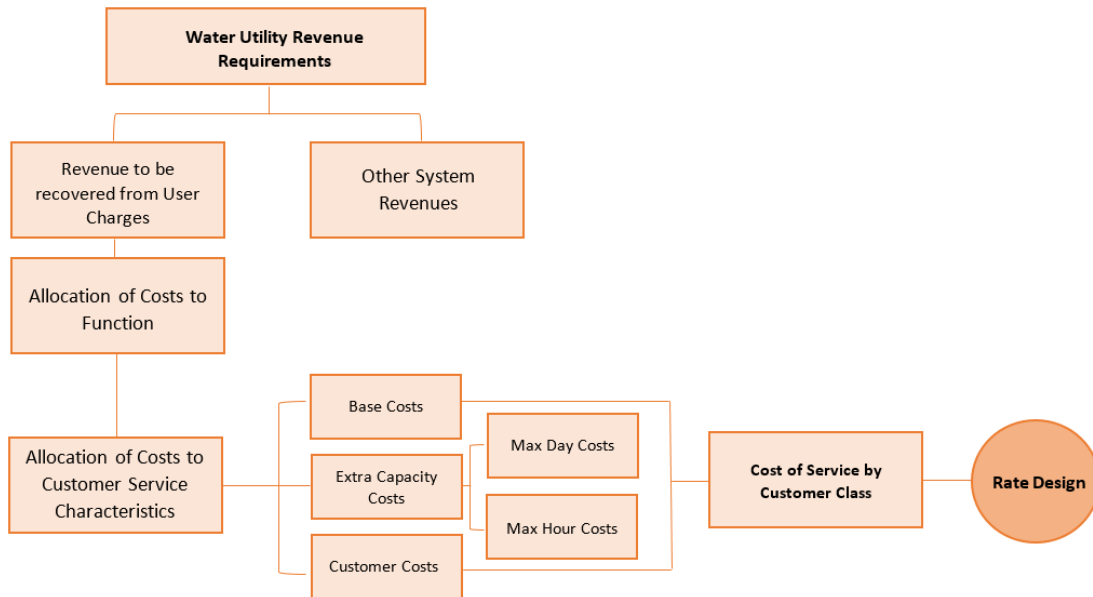
## Allocation Costs to Customer Classes

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

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

Figure 3 illustrates how the separate cost allocation steps fit into the overall process of setting rates for the water system.

**Figure 3: Rate Setting Process**



## Allocation of Costs to Functions

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

- Source of Supply
- Treatment
- Pumping
- Transmission
- Distribution
- Storage
- Buildings/Improvements
- Administration
- Tools/Equipment
- Power and Chemicals
- Meters and Services
- Customers and Accounts

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

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

## **Allocation of Costs to Customer Characteristics**

The assignment of costs to customer characteristics varies with the allocation methodology used. In the method of COS allocation used, costs are typically assigned to the following customer characteristics for water, which are defined in Appendix B and analyzed further in the Customer Characteristics Analysis in Appendix C.

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

In the method of cost allocation followed, costs are typically assigned to the following characteristics for wastewater, which are also defined in Appendix B and analyzed further in the Customer Characteristics Analysis in Appendix C.

- Flow
- Number of Customers
- Demand

## **Distribution of Costs to Customer Classes**

The projections of customer class consumption and their respective usage characteristics are calculated in this step. Each class listed above in the report for water and wastewater contributes a different proportion of total annual usage.

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

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

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

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

## Capital Costs

Under the cash basis approach to calculating revenue requirements, capital costs consist of non-debt funded capital expenditures (capital outlays), debt service and transfers to reserve funds. It is important to note that capital costs for improvements to serve new growth are not included in these costs. Unlike O&M costs where each line item is allocated to the water system functions, capital costs under this approach are allocated to customer classes based on the allocation of fixed assets net of accumulated depreciation and contributions. To generate capital cost allocation percentages used under the cash basis approach, each fixed asset line item is allocated according to the following four steps:

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

## Rate Design Development and Rate Calculation

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

## Water Cost-of-Service Analysis Results

The steps described above to conduct the water COS analysis were followed. The results presented in this section summarize the cost of service for each of the water system's customer classes for 2025.



## Estimated Water System Revenue Requirements

The first two steps of the analysis determine the revenue requirements and service charge revenue requirements or revenues to be recovered from the calculated water rates. Based on the O&M and capital budget and financial planning assumptions, Table 16 represents the water fund revenue requirements for 2025.

<b>Table 16 Water Fund 2025 Revenue Requirements</b>	
<b>Description</b>	<b>2025</b>
<b>O&amp;M Expenses:</b>	
Admin	\$2,181,867
Capital Projects	\$1,852,050
Customer Billing	\$374,347
Meter Services	\$1,670,150
Meters Retrofit / AMI	\$0
Engineering	\$574,831
Mapping	\$108,040
Field Services	\$1,819,680
Facility Maintenance	\$1,098,712
Water Plant Operations	\$6,045,615
SCADA	\$865,782
Reg. & Water Compliance	\$365,919
Transfers Out	\$1,774,482
<b>Subtotal O&amp;M</b>	<b>\$18,731,476</b>
Less: Transfers	(\$1,774,482)
Less: Minor Capital	\$0
<b>Total O&amp;M</b>	<b>\$16,956,994</b>
Capital Expenses	
Transfer to Capital Fund	(\$241,396)
Debt Service	\$689,000
Cash Funded Capital	\$6,252,033
Minor Capital Outlay	\$0
<b>Subtotal Capital</b>	<b>\$6,699,637</b>
<b>Total Revenue Requirements</b>	<b>\$23,656,631</b>
Less: O&M Related Non-Rate Revenue	(\$999,632)
Less: Capital Related Non-Rate Revenue	(\$1,229,130)
Less: Transfers In	\$0
<b>Service Charge Revenue Requirement</b>	<b>\$21,427,869</b>

After subtracting non-rate revenues and calculating the service charge revenue requirements for 2025 the amount to recover is approximately \$21.4 million.

Customer characteristics are estimated for 2025 based on consumption for the most recent twelve months ending December 2023 from CRW’s billing records, peaking factors calculated by CRW, plus the projected minimum additional flow by customer class. Minimum additional flow per class is calculated based on a representative customer’s annualized AWMC multiplied by projected growth. Table 17 summarizes the projected customer characteristics that calculate the equivalent meters used for the study as well as the consumption patterns used. Table 18 shows the percentages allocated to each customer characteristic from the COS model that is projected for 2025 for each customer class.

<b>Table 17 Water Fund Customer Characteristics by Customer Class (2025 Projected)</b>					
<b>Customer Class</b>	<b>Base Consumption (Kgal)</b>	<b>Max Day Extra Capacity (MGD)</b>	<b>Max Hour Extra Capacity (MGD)</b>	<b>Customers</b>	<b>Equivalent Meter</b>
Residential	1,854,997	5.84	16.47	25,457	25,521
Multifamily w/ Irrigation	79,202	0.20	0.62	112	1,006
Commercial w/ Irrigation	122,168	0.32	0.98	283	1,585
Bulk	68,379	0.22	0.62	59	59
Irrigation	295,548	1.88	4.02	635	4,082
Multifamily Indoor Use Only	160,807	0.11	0.84	425	2,475
Commercial Indoor Use Only	181,449	0.18	1.01	440	2,868
<b>Total</b>	<b>2,762,549</b>	<b>8.77</b>	<b>24.56</b>	<b>27,411</b>	<b>37,597</b>

**Table 18  
Water Fund  
Customer Characteristics (2025 Projected)**

Customer Class	Base	Max Day	Max Hour	Customer	Meter
Residential	67.15%	66.67%	67.03%	92.87%	67.88%
Multifamily w/ Irrigation	2.87%	2.23%	2.53%	0.41%	2.68%
Commercial w/ Irrigation	4.42%	3.70%	4.01%	1.03%	4.22%
Bulk	2.48%	2.56%	2.52%	0.22%	0.16%
Irrigation	10.70%	21.43%	16.38%	2.32%	10.86%
Multifamily Indoor Use Only	5.82%	1.31%	3.41%	1.55%	6.58%
Commercial Indoor Use Only	6.57%	2.10%	4.13%	1.61%	7.63%
<b>Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

The service charge revenue requirements reported in Table 16 of \$21.4 million are allocated first among functions, then to customer characteristics and finally to each customer class based on the percentages presented in Table 18 above. These results are the cost of service by customer characteristics and class shown in Table 19 below.

**Table 19  
Water Fund  
Water Cost of Service by Customer Class (2025 Projected)**

Customer Class	Base	Max Day	Max Hour	Customer	Meter	Total
Residential	\$5,553,164	\$2,793,406	\$1,388,579	\$4,921,305	\$1,084,325	\$15,740,778
Multifamily w/ Irrigation	\$237,101	\$93,341	\$52,334	\$21,652	\$42,762	\$447,190
Commercial w/ Irrigation	\$365,725	\$155,175	\$82,983	\$54,709	\$67,354	\$725,946
Bulk	\$204,701	\$107,448	\$52,134	\$11,406	\$2,507	\$378,195
Irrigation	\$884,758	\$897,859	\$339,364	\$122,757	\$173,419	\$2,418,158
Multifamily Indoor Use Only	\$481,396	\$54,748	\$70,590	\$82,160	\$105,163	\$794,058
Commercial Indoor Use Only	\$543,189	\$87,912	\$85,520	\$85,060	\$121,864	\$923,545
<b>Total</b>	<b>\$8,270,034</b>	<b>\$4,189,889</b>	<b>\$2,071,503</b>	<b>\$5,299,049</b>	<b>\$1,597,394</b>	<b>\$21,427,869</b>

## Wastewater Cost-of-Service Analysis Results

This section represents the cost of service by customer class for the wastewater system.

### Estimated Wastewater System Revenue Requirements

Test year revenue requirements and service charge revenue requirements, or revenues to be recovered from the calculated wastewater rates, are presented in Table 20. The study projects that the wastewater system needs to recover about \$12.4 million from customers in 2025.

<b>Table 20 Wastewater Fund 2025 Revenue Requirements</b>	
Description	2025
<b>O&amp;M Expenses</b>	
Admin	\$1,153,602
Capital Projects	\$1,101,694
Customer Billing	\$341,377
Engineering	\$388,671
Mapping	\$95,351
Field Services	\$1,666,500
Facility Maintenance	\$585,080
Plant Operations	\$4,898,218
SCADA	\$373,617
Transfers Out	\$142,122
<b>Subtotal O&amp;M</b>	<b>\$10,746,232</b>
Less: Transfers	(\$142,122)
Less: Minor Capital	\$0
<b>Total O&amp;M</b>	<b>\$10,604,110</b>
<b>Capital Expenses</b>	
Transfer to Capital Fund	\$3,565,328
Debt Service	\$0
Cash Funded Capital	\$0
Minor Capital Outlay	\$0
<b>Subtotal Capital</b>	<b>\$3,565,328</b>
<b>Total Revenue Requirements</b>	<b>\$14,169,438</b>
Less: O&M Related Non-Rate Revenue	\$0
Less: Capital Related Non-Rate Revenue	(\$546,234)
Less: Transfers In	(\$1,250,524)
<b>Service Charge Revenue Requirement</b>	<b>\$12,372,680</b>

Customer characteristics are estimated for 2025 based on January 2023 to December 2023 data from CRW’s billing records and assumed residential strength factors plus the projected minimum additional flow by customer class for wastewater customers. The 2024 cost of service model does not currently incorporate differences between waste strength (i.e. BOD and TSS); therefore, no differences in concentrations are used. Minimum additional flow per class is calculated based on a representative customer’s annualized AWMC and projected growth. Table 21 summarizes the projected customer characteristics that calculate the equivalent meters used for the study as well as the consumption patterns used. Table 22 shows the percentages allocated to each customer characteristic from the COS model that is projected for 2025 for each customer class.

**Table 21**  
**Wastewater Fund**  
**Customer Characteristics by Customer Class (2025 Projected)**

Customer Class	Flow (Kgal)	BOD (Pounds)	TSS (Pounds)	# of Customers	Equivalent Meter
Residential	1,107,032	3,519,747	3,806,131	24,979	25,040
Commercial w/ Irrigation	71,549	227,486	245,995	276	1,557
Commercial Indoor Use Only	149,232	474,474	513,079	422	2,663
Multifamily w/ Irrigation	53,950	171,531	185,488	112	1,006
Multifamily Indoor Use Only	147,229	468,107	506,194	425	2,475
<b>Total</b>	<b>1,528,992</b>	<b>4,861,345</b>	<b>5,256,888</b>	<b>26,214</b>	<b>32,742</b>

**Table 22**  
**Wastewater Fund**  
**Customer Characteristics (2025 Projected)**

Customer Class	Flow (Kgal)	BOD (Pounds)	TSS (Pounds)	Customers	Equivalent Meter
Residential	72.40%	72.40%	72.40%	95.29%	76.48%
Commercial w/ Irrigation	4.68%	4.68%	4.68%	1.05%	4.76%
Commercial Indoor Use Only	9.76%	9.76%	9.76%	1.61%	8.13%
Multifamily w/ Irrigation	3.53%	3.53%	3.53%	0.43%	3.07%
Multifamily Indoor Use Only	9.63%	9.63%	9.63%	1.62%	7.56%
<b>Total</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

The service charge revenue requirements reported in Table 20 of \$12.4 million are allocated first among functions, then to customer characteristics and finally to each customer class based on the percentages presented in Table 22 above. These results are the cost of service by customer characteristics and class shown in Table 23 below.

<b>Table 23 Wastewater Fund Cost of Service by Customer Class (2025 Projected)</b>					
<b>Customer Class</b>	<b>Flow (Kgal)</b>	<b>BOD (Pounds)</b>	<b>TSS (Pounds)</b>	<b>Customers</b>	<b>Total</b>
Residential	\$5,966,286	\$627	\$349	\$3,936,301	\$9,903,563
Commercial w/ Irrigation	\$385,609	\$41	\$23	\$43,493	\$429,166
Commercial Indoor Use Only	\$804,276	\$85	\$47	\$66,501	\$870,908
Multifamily w/ Irrigation	\$290,760	\$31	\$17	\$17,649	\$308,457
Multifamily Indoor Use Only	\$793,483	\$83	\$46	\$66,973	\$860,586
<b>Total</b>	<b>\$8,240,414</b>	<b>\$867</b>	<b>\$482</b>	<b>\$4,130,917</b>	<b>\$12,372,680</b>

## **Wastewater Monthly Service Charge**

An important rate design feature that directly affects the rate results is the policy decision to include 20 percent of annual capital costs in the monthly service charge. By doing this, revenue stability is increased and all customers are required to pay a portion of debt service and other capital expenses strictly on an equivalent water meter basis rather than on a wastewater volume basis. This also reduces the volumetric rate and recovers a portion of the PCWRA debt service costs from users who require more capacity in the wastewater system. The demand charge component on the monthly service charge recovers the 20 percent of annual wastewater system capital costs not including the capital costs needed to serve new growth.

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

# Rate Design

## Introduction

Once the cost of service by class was determined, the water and wastewater COS based rates were developed based on the existing rate structure. The water rate structure is a water budget based rate structure based on tiered usage. The wastewater fund follows a uniform rate structure, with a monthly service charge that varies by meter size. This section presents the results of the rate development for water, water resources, wastewater, and stormwater enterprise funds.

## Water System Rates

### Water Budget Based Rate Structure

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

The irrigation season is defined as the months of March through October. Total inches of water allowed per square foot of landscaped area for the Town averages approximately 30 inches. The total water allowance is based on 80 percent of the 7-year average of historical ET for the year. This value is adequate because ET demands are based on the maximum requirements for bluegrass and creates the irrigation allowance.

For non-irrigation or winter months, an irrigation allowance is not included in an account's water budget. Instead, an account's historical average winter monthly consumption (AWMC) provides actual data on the account's winter water usage for the months of November through February.

### Water Usage Thresholds

The water budget based rate structure consists of three consumption tiers. Table 24 represents the tier threshold by customer class for the irrigation and winter season.

**Table 24  
Water Fund  
Water Usage Thresholds**

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

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

### **Description of Thresholds**

For residential, multifamily and commercial accounts with meters providing both indoor and outdoor irrigation water, the rate structure includes three usage tiers with increasing rates per tier billed in thousand gallons (Kgal).

Tier 1 includes all usage up to an individual account’s AWMC. This represents the base amount of consumption an individual account requires for basic indoor use. Average AWMC for residential customers is 5,000 gallons per month. AWMC for multifamily and commercial accounts varies according to meter size and type of commercial account.

Tier 2, or irrigation budget, includes usage above an account’s AWMC and includes its monthly irrigation allowance. The threshold will vary by month during the irrigation months. An account’s landscaped area in square feet (up to a maximum of 7,000 square feet) and the monthly irrigation requirements (ET) will determine the monthly irrigation allowance.



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

## **Tiered Rates**

The actual rates calculated for consumption tiers in the water budget rate structure recommended here are tied to the results of the COS analysis. Each account pays a fixed monthly service charge and a volumetric charge. A monthly water resources charge per single family equivalent (SFEs, varying by meter) is added to an account's bill. The water resources charge is discussed below.

The water rate structure consists of three increasing tiered rates:

- Tier 1 – Base COS Rate
- Tier 2 – Base plus Extra Capacity Rates by Customer Class
- Tier 3 – Excess Use Rate to Recover CRW's Remaining Revenue Requirements

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

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

Finally, the rate for Tier 3 recovers revenues for usage above each customer's Tier 2 budget. The rate is higher than Tier 2 to encourage customers to stay within their Tier 2 budgets.

Residential accounts are subject to a water conservation surcharge for usage greater than 40,000 gallons per month. This surcharge intends to send a conservation price signal to customers with excessive usage. The water rates are shown in Tables 25 and 26 below.

## **Water Resources Monthly Service Charge**

CRW currently assesses all water resources customers a fixed monthly service charge per SFE. Table 27 below shows the proposed 2025 fixed monthly service charge per SFE by meter size.

## Stormwater Monthly Service Charge

This year's study update used assumptions established during the 2010 study and reviewed periodically for determining the stormwater monthly service charge. This year's study update used revised assumptions. For single family residential units, the percent imperviousness was determined based on the following assumptions:

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

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

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

The service charge is also calculated based on a percent imperviousness for non-residential accounts during this 2023 study update. The average percent imperviousness for multifamily and other non-residential properties was assumed to be 80 percent, unless otherwise indicated in CRW's billing system data based on an actual survey of the property. SFEs were calculated based on the percent imperviousness of each property multiplied by its parcel size.

## Wastewater Monthly Service Charges

CRW currently charges wastewater customers a fixed monthly service charge that consists of a customer charge and a demand charge, plus a uniform volumetric rate for wastewater flow. An account's flow is estimated using its AWMC. The proposed 2025 wastewater rates consist of a monthly charge that includes the demand charge by meter size, plus a uniform volumetric rate for all customers as shown in Table 28 below.

# Summary

CRW has completed the 2024 Rates and Fees Study update, including financial planning, COS rate studies and rate design. The purpose of the study is to provide an update for water, water resources, wastewater and stormwater fund rates designed to meet CRW policies and objectives during the years 2025 through 2029. The findings are based on a thorough review of the information provided.

## Proposed Rates for 2025 by Enterprise Fund

Rates for the five-year study period (2025-2029) were projected using the percentage rate revenue increases projected by the financial plan. The 2025 proposed rates are shown in the following tables by enterprise fund.

Table 25 Water Fund Proposed 2025 Monthly Service Charges	
Meter Size	Monthly Charges
3/5" x 3/4"	\$10.94
5/8" x 3/4"	\$10.94
3/4"	\$10.94
1"	\$15.74
1.5"	\$21.54
2"	\$29.81
3"	\$47.90
4"	\$107.93
6"	\$168.86
Bulk Hydrant	\$21.54
Bulk Station	\$10.94

<b>Table 26</b>			
<b>Water Fund</b>			
<b>Proposed 2025 Volumetric Rates by Tier</b>			
Irrigation Season (April 1 through October 31 Consumption)			
<b>Customer Class</b>	<b>Tier 1 (AWMC)</b>	<b>Tier 2 (Outdoor)</b>	<b>Tier 3 (Excess)</b>
Residential	\$3.23	\$6.58	\$9.82
Multifamily Indoor Use Only	\$3.23	N/A	\$4.24
Multifamily	\$3.23	\$5.59	\$8.35
Commercial Indoor Use Only	\$3.23	N/A	\$4.53
Commercial	\$3.23	\$5.65	\$8.45
Irrigation	N/A	\$9.01	\$13.50
Winter Season (November 1 through March 31 Consumption)			
<b>Customer Class</b>	<b>Tier 1 (AWMC)</b>	<b>Tier 2 (Outdoor)</b>	<b>Tier 3 (Excess)</b>
Residential	\$3.23	N/A	\$6.58
Multifamily Indoor Use Only	\$3.23	N/A	\$4.24
Multifamily	\$3.23	N/A	\$5.59
Commercial Indoor Use Only	\$3.23	N/A	\$4.53
Commercial	\$3.23	N/A	\$5.65
Irrigation	N/A	N/A	\$13.50
Bulk Water Customers			
Bulk Hydrant	\$9.01	N/A	N/A
Bulk Station	\$11.26	N/A	N/A

An additional surcharge of \$9.82 is added for any water usage over 40,000 gallons.

**Table 27  
Water Resources Fund  
Proposed 2025 Monthly Service Charges**

<b>Meter Size</b>	<b>Monthly Charges</b>
3/5" x 3/4"	\$33.61
5/8" x 3/4"	\$33.61
3/4"	\$33.61
1"	\$127.41
1.5"	\$241.03
2"	\$403.07
3"	\$757.04
4"	\$1,931.26
6"	\$3,122.96
Bulk Hydrant	\$241.03
Bulk Station	\$33.61

**Table 28  
Wastewater Fund  
Proposed 2025 Monthly Service Charges and Volumetric Rate**

<b>Meter Size</b>	<b>Monthly Charges</b>
3/5" x 3/4"	\$8.61
5/8" x 3/4"	\$8.61
3/4"	\$8.61
1"	\$13.71
1.5"	\$19.88
2"	\$28.67
3"	\$47.90
4"	\$111.67
6"	\$176.41
Volumetric Rate - All Applicable Customers, Per Kgal	\$6.10

**Table 29  
Stormwater Fund  
Proposed 2025 Monthly Service Charge**

Monthly Stormwater Fee		
All Customers, per SFE		\$8.37
SFE Assignment		
Customer Class	Impervious Sq. Ft.	SFE
Single Family Attached & Detached	3,255	1
Non-Single Family (Multifamily & Commercial)	Parcel size time 80% imperviousness divided by 3,255 impervious sq. ft. per SFE = # of SFEs	

## Recommendations

Please see Appendix D for study review letter from Stantec Consulting Services Inc.

For a copy of the supporting data analysis, please contact Castle Rock Water at 720-733-6000.

# Appendix A

## List of Acronyms

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

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

# Appendix B

## Definitions

The following are definitions used in this study:

- 2013 Hybrid Model – The water resources strategic plan set in 2013 as to how rates would be projected in order to achieve the long term water goals for CRW.
- System Growth – The projected growth within the Town that is used to project the increased number of SFEs per year for each fund.
- Escalation Factors – As part of the projections of O&M costs for the study period, CRW has provided a 5-year O&M budget. CRW's budget planning documents are used for the O&M projections within the 5-year budget period. After this period, costs were escalated at 1.55 percent, which is the best estimate based on the average Engineering News Record (ENR) index for the Denver area.
- Rate Revenue Increases – System revenues are derived primarily from service charges or rates. Revenue is a function of price and the current financial plans calculate the increases needed.
- System Development Fee (SDF) Revenues – SDFs are one time charges to new connections to the system that are intended to recover investments in capacity to serve new customers. SDF revenue is directly related to the SFE and growth assumptions. SDF revenues are used to fund the growth related CIP and are presented in Volume 2.
- Revenue Bonds – Current and projected debt for the funds.
- Inter-Fund Loans – Loans borrowed between funds and paid back with interest.
- Other Revenues – This source of funds includes non-rate related revenues, miscellaneous revenues, fines, leases, intergovernmental agreements and interest earning.
- Fund Balances – The balances needed to be kept in different reserves for each fund. There are minimums per fund. These can include the operating fund, the capital reserve fund, the catastrophic failure reserve fund, and the rate revenue stabilization reserve fund.
- Operating Expenses – Represents the basic costs of operating the system. Projection of O&M expenses varies depending on the degree of fixed versus variable costs for each budgeted line item. Most of the costs are fixed and do not escalate with increased demand on the system. Meanwhile, variable costs escalate both with increased system use and the expected inflation rate. CRW staff have made a reasonable effort to separate the two for projection purposes. O&M expenses during the rate period were provided by CRW. The goal is to keep costs at or under budget for capital and operational budgets each year by fund and to continuously strive towards more efficient operations.
- Personnel Services – These are one of the most important cost drivers in operating expenses. Additional staff needed over the next five years are included in the 5-year financial planning document.



- Energy Costs – These are a major component in plant operations and an important cost driver in variable operating expenses. Over the next 5 years, energy costs are expected to increase at a rate of 3%.
- Capital Improvements – Capital improvement projections are provided by year for the study. Capital improvement costs were provided by CRW for years 2024-2065. These are reviewed and updated annually.
- Debt Service – The debt service sub-fund currently carries debt service obligations of each fund. As stated in the FMP, CRW aims to minimize debt carrying costs at or below industry standards.
- Debt Service Coverage – Outstanding revenue bonds require operating revenues to be 1.2 times the total annual debt service amount.
- Base Water Demand - the average annual water consumption in thousand gallons for each customer class. This was obtained from the 2024 Customer Characteristics Analysis using the billing data for twelve months ending December 2023.
- Maximum Day and Maximum Hours Extra Capacity Demands - Water demands that exceed average levels of water usage by system customers. Maximum day and hour extra capacity demands are calculated by applying the class peaking factors to the base demand, which average 2.16 for peak day and 5.40 for peak hour.
- Meters and Services – the total number of equivalent meters. These are derived by applying the average actual usage meter equivalency schedule to the number of meters of each size by class.
- Number of Customers – equals the projected total number of customers by customer class.
- Flow Demand represents the quantity discharged from customers directly to the wastewater system. Since, wastewater discharge is not metered, wastewater flows are measured by the average winter monthly consumption (AWMC) of each customer. AWMC was provided by the 2024 Customer Characteristics Analysis, which summarized the billing data for January 2023 to December 2023.
- Pollutant Strength including BOD and TSS - represents total pounds of loadings expected from each customer class. Pounds of loadings by customer class are calculated assuming domestic strength concentrations and volume of flow for each customer class.
- Base Costs – These vary with water consumption under average demand conditions. They are the costs that would be incurred if water consumption occurred evenly from day to day and hour to hour, and the system did not require investment in additional capacity to meet peak requirements.
- Maximum Day and Maximum Hours Extra Capacity Costs (Extra Capacity Demands) – The costs incurred to meet water demands that exceed average levels of water usage by system customers. Extra capacity costs are incurred because of water usage variations and peak demands imposed on a water system. Such demands are directly related to customer water consumption characteristics and fire-flow demands. Extra capacity costs are typically divided into costs incurred to meet maximum day and maximum hour water demands of system customers.

- Customer Related Costs – Those costs incurred to serve customers, regardless of water demands or wastewater flows. Customer costs vary with the number of customers. Examples of these costs include administration and billing costs.
- Meter and Services Costs – These vary with the size of the meter and/or service used to serve the customer. Examples of meter and service costs include meter replacement and maintenance costs.
- Flow Costs – These vary with the hydraulic flow of sanitary sewage. The relative strength of sewage does not affect flow costs. Typically, flow costs include the cost of operating lift stations and the capital costs for assets that are designed based on hydraulic flow requirements.
- Pollutant Strength Costs – Include BOD and TSS, represent costs incurred to treat wastewater of various qualities. As the wastewater treatment processes are the responsibility of PCWRA and the wastewater fund does not charge for strength characteristics, the single unit process allocated to the strength characteristics is Treatment by Others.
- Demand Related Costs – Those capital related costs that are to be recovered on an equivalent water meter basis. In this COS analysis, 20 percent of the wastewater system's capital costs are recovered in this manner. The demand related cost represents a portion of the cost of capacity in PCWRA's system.

# Appendix C

## Customer Characteristics Analysis

# Appendix D

## Stantec Consulting Services Inc. Study Review Letter



2024  
RATES AND FEES STUDY  
VOLUME 2 OF 2  
SYSTEM DEVELOPMENT  
FEES

Prepared by Castle Rock Water  
Business Solutions

Final Report

September 2024

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# Executive Summary

On an annual basis, Castle Rock Water (CRW) conducts a comprehensive rates and fees study for the water, water resources, wastewater, and stormwater funds. The purpose of this study is to provide the Town with a comprehensive and updated review of System Development Fees (SDFs) and the underlying assumptions used to calculate the 2025-2029 fees.

For the sixth year in a row, CRW contracted with Stantec Consulting Services, Inc. to provide oversight and guidance with the study. Stantec was chosen based on the company's knowledge and experience in the industry and the ability to provide industry best practices. They have reviewed our models and reports and provided their recommendations for the study.

## Methodology

For calculating SDFs, there are two commonly accepted methodologies. They are the equity buy-in approach and the incremental cost (or improvement) approach. A third approach acknowledged by the American Water Works Association (AWWA) and the Water Environment Federation (WEF) is the combined or hybrid approach. The hybrid method is used to calculate CRW's water, water resources and wastewater SDFs.

For stormwater, the incremental cost approach is used to identify additional capacity needed to serve growth. It is assumed that CRW's existing infrastructure and replacements are specifically serving existing developments and capital improvements are needed to provide runoff capacity for new customers.

### 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 infrastructure. AWWA recommends the equity method within systems that have adequate capacity to serve both existing and future customers without major system expansions.

### Incremental Cost (Improvement) Approach

The incremental cost approach is most appropriate when the existing system is at or near its maximum capacity and when new customers are not being served without significant investment in infrastructure. Under the incremental cost approach, new customers pay a proportionate share of the expansion related costs of the new infrastructure.

### Combined Approach

The combined approach often is the most appropriate approach because new customers tend to use capacity available in the existing infrastructure (buy-in) as well as new capacity that the utility must build in order to accommodate growth and the additional units to be served

(incremental cost). This method best conforms to “growth pays for growth” policies, coinciding with the Town’s policy. The SDF is calculated using capital improvement plans (CIPs) developed in CRW’s master planning process.

With the combined approach, the equity buy-in 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 follows for 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 as follows:

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

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

## Capacity Definitions

Defining capacity in both the existing infrastructure 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 CRW, the following assumptions on capacity definitions apply:

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.

## Equivalency Schedule

Out of the various available equivalency schedules, CRW chooses two different schedules to look at in order to establish its rates and fees. The first is the hydraulic capacity method which is based on the relative capacity of different meter sizes and meter types utilized to deliver water. These can also be based on the relative potential demands of different customers. Based on the characteristic hydraulic demands, a single family meter size of  $\frac{3}{4}$ " is designated as the base for one SFE. The maximum flow rate or 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's maximum flow rate is 30 gpm and a commercial customer requires 200 gpm, the equivalency ratio equals 6.67 ( $200/30=6.67$ ). These are shown in Table 1 below.

The second method is the actual use equivalency schedule, which is based on the relative average monthly water usage of CRW's customers. Average monthly use per account by meter size was calculated using a 2021 to 2023 three-year average of monthly consumption data from the customer characteristics analysis, which was obtained from the core billing system. 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 equivalency ratios. Estimating existing demands on CRW's systems determines remaining capacity to serve new customers, therefore, the actual use equivalency schedule is what was used to calculate existing SFEs for the water, water resources and wastewater SDFs. These ratios are shown in Table 2 below.

<b>Table 1 Hydraulic Capacity Equivalency Ratios</b>	
<b>Meter Size</b>	<b>Equivalent Meter Ratios</b>
5/8" x 3/4"	0.67
3/4"	1.00
1"	1.67
1.5"	3.33
2" C2	6.67
2" T2	8.33
3" C2	16.67
3" T2	21.67
4" C2	33.33
4" T2	41.67
6" C2	66.67
6" T2	83.33

Table 2 Calculated Meter Equivalency Ratios	
Meter Size	Equivalent Meter Ratios
5/8" x 3/4"	0.66
3/4"	1.01
1"	3.70
1.5"	9.04
2" C2	10.08
2" T2	29.33
3" C2	20.85
3" T2	38.88
4" C2	68.29
4" T2	93.49
6" C2	99.02

## 2024 Adopted vs 2025 Proposed SDFs by Fund

Castle Rock Water’s 2024 adopted versus proposed SDFs for 2025 are listed below in Tables 3 through 6. For water, water resources and wastewater the primary drivers of the SDF calculations include:

- changes in net fixed asset values and construction work in progress
- updated system capacity in existing and future facilities
- growth in SFEs
- updated capital improvement plans

Stormwater development impact fees are assessed based on impervious area by development type. The costs for stormwater capital improvements for new development are proportioned across the planned developments by type:

- Single Family Detached
- Single Family Attached
- Multifamily
- Commercial (Retail/Office)

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

Updates to the stormwater fee calculations include:

- decrease in the number of developable acres by land use type
- updated costs for the stormwater capital improvement plan

Single family and multifamily development impact fees are per dwelling unit. Units for commercial (retail/office) development are per 1,000 square feet of building space.

<b>Table 3 Water Fund 2024 Adopted vs 2025 Proposed SDFs</b>		
<b>Meter Size</b>	<b>2024 Adopted SDFs</b>	<b>2025 Proposed SDFs</b>
3/5" x 3/4"	\$4,138	\$4,966
5/8" x 3/4"	\$4,621	\$5,545
3/4"	\$6,897	\$8,276
1"	\$11,518	\$13,821
1.5"	\$22,967	\$27,559
2" C2	\$46,003	\$55,201
2" T2	\$57,452	\$68,939
3" C2	\$114,973	\$137,961
3" T2	\$149,458	\$179,341
4" C2	\$229,877	\$275,839
4" T2	\$287,398	\$344,861
6" C2	\$459,823	\$551,761
6" T2	\$574,727	\$689,639

**Table 4**  
**Water Resources Fund**  
**2024 Adopted vs 2025 Proposed SDFs**

<b>Meter Size</b>	<b>2024 Adopted SDFs</b>	<b>2025 Proposed SDFs</b>
3/5" x 3/4"	\$18,777	\$20,091
5/8" x 3/4"	\$20,967	\$22,435
3/4"	\$31,294	\$33,485
1"	\$52,262	\$55,920
1.5"	\$104,211	\$111,505
2" C2	\$208,734	\$223,345
2" T2	\$260,683	\$278,930
3" C2	\$521,679	\$558,195
3" T2	\$678,152	\$725,620
4" C2	\$1,043,045	\$1,116,055
4" T2	\$1,304,041	\$1,395,320
6" C2	\$2,086,404	\$2,232,445
6" T2	\$2,607,770	\$2,790,305

**Table 5**  
**Wastewater Fund**  
**2024 Adopted vs 2025 Proposed SDFs**

<b>Meter Size</b>	<b>2024 Adopted SDFs</b>	<b>2025 Proposed SDFs</b>
7/8" x 3/4"	\$3,337	\$3,437
5/8" x 3/4"	\$3,727	\$3,838
3/4"	\$5,562	\$5,729
1"	\$9,289	\$9,567
1.5"	\$18,521	\$19,078
2" C2	\$37,099	\$38,212
2" T2	\$46,331	\$47,723
3" C2	\$92,719	\$95,502
3" T2	\$120,529	\$124,147
4" C2	\$185,381	\$190,948
4" T2	\$231,769	\$238,727
6" C2	\$370,819	\$381,952
6" T2	\$463,481	\$477,398

**Table 6**  
**Stormwater Fund**  
**2024 Adopted vs 2025 Proposed Development Impact Fees**

<b>Plum Creek Basin</b>	<b>2024 Adopted DIFs</b>	<b>2025 Proposed DIFs</b>
Single Family Detached	\$2,575	\$2,704
Single Family Attached	\$1,720	\$1,806
Multifamily	\$1,561	\$1,639
Commercial (Retail/Office) per 1,000 sq. ft.	\$1,162	\$1,220
<b>Cherry Creek Basin</b>	<b>2024 Adopted DIFs</b>	<b>2025 Proposed DIFs</b>
Single Family Detached	\$1,265	\$1,265
Single Family Attached	\$846	\$846
Multifamily	\$766	\$766
Commercial (Retail/Office) per 1,000 sq. ft.	\$571	\$571

## Proposed SDFs for 2025 Through 2029

CRW reviews the SDFs each year and adjusts based on the updated CIP and fixed asset costs. As new projects are added to serve growth and as projects are completed the SDF is adjusted accordingly. The 2025 SDFs are increasing 20% for Water, 7% for Water Resources and 3% for Wastewater. Stormwater development impact fees are increasing 5% in 2025 in the Plum Creek Basin and will see no increase in the Cherry Creek Basin. Water SDFs are projected to see annual increases of 20% in 2026 and 16% from 2027 through 2029. Water Resources SDFs are projected to see an increase of 7% in 2026 followed by annual increases of 3% from 2027 through 2029. Wastewater SDFs are projected to see 3% annual increases from 2026 through 2029. Stormwater development impact fees in the Plum Creek Basin are projected to see an increase of 5% in 2026 followed by annual increases of 3% from 2027 through 2029 while the Cherry Creek Basin development impact fees are projected to remain flat through 2029. For future costs beyond 2029, escalation expectations based on the average Engineering News Record (ENR) index using the Construction Cost Index (CCI) from 2023 are used in CRW's financial models. Tables 7 through 10 show the projected system development fees for 2025 through 2029.



**Table 7**  
**Water Fund**  
**Proposed System Development Fees**  
**2025-2029**

<b>Meter Size</b>	<b>FY2025</b>	<b>FY2026</b>	<b>FY2027</b>	<b>FY2028</b>	<b>FY2029</b>
3/5" x 3/4"	\$4,966	\$5,959	\$6,912	\$8,018	\$9,301
5/8" x 3/4"	\$5,545	\$6,654	\$7,718	\$8,953	\$10,386
3/4"	\$8,276	\$9,931	\$11,520	\$13,363	\$15,501
1"	\$13,821	\$16,585	\$19,238	\$22,316	\$25,887
1.5"	\$27,559	\$33,070	\$38,362	\$44,499	\$51,618
2" C2	\$55,201	\$66,240	\$76,838	\$89,131	\$103,392
2" T2	\$68,939	\$82,725	\$95,962	\$111,314	\$129,123
3" C2	\$137,961	\$165,550	\$192,038	\$222,761	\$258,402
3" T2	\$179,341	\$215,205	\$249,638	\$289,576	\$335,907
4" C2	\$275,839	\$331,000	\$383,962	\$445,389	\$516,648
4" T2	\$344,861	\$413,825	\$480,038	\$556,836	\$645,927
6" C2	\$551,761	\$662,100	\$768,038	\$890,911	\$1,033,452
6" T2	\$689,639	\$827,550	\$959,962	\$1,113,539	\$1,291,698

**Table 8**  
**Water Resources Fund**  
**Proposed System Development Fees**  
**2025-2029**

<b>Meter Size</b>	<b>FY2025</b>	<b>FY2026</b>	<b>FY2027</b>	<b>FY2028</b>	<b>FY2029</b>
3/5" x 3/4"	\$20,091	\$21,497	\$22,142	\$22,807	\$23,491
5/8" x 3/4"	\$22,435	\$ 24,005	\$ 24,726	\$ 25,467	\$26,231
3/4"	\$ 33,485	\$ 35,829	\$ 36,904	\$ 38,011	\$39,151
1"	\$55,920	\$59,834	\$ 61,630	\$ 63,478	\$65,382
1.5"	\$111,505	\$119,311	\$122,890	\$126,577	\$130,373
2" C2	\$223,345	\$238,979	\$246,150	\$253,533	\$261,137
2" T2	\$278,930	\$298,456	\$307,410	\$316,632	\$326,128
3" C2	\$558,195	\$597,269	\$615,190	\$633,643	\$652,647
3" T2	\$725,620	\$776,414	\$799,710	\$823,698	\$848,402
4" C2	\$1,116,055	\$1,194,181	\$1,230,010	\$1,266,907	\$1,304,903
4" T2	\$1,395,320	\$1,492,994	\$1,537,790	\$1,583,918	\$1,631,422
6" C2	\$2,232,445	\$2,388,719	\$2,460,390	\$2,534,193	\$2,610,197
6" T2	\$2,790,305	\$2,985,631	\$3,075,210	\$3,167,457	\$3,262,453

**Table 9**  
**Wastewater Fund**  
**Proposed System Development Fees**  
**2025-2029**

<b>Meter Size</b>	<b>FY2025</b>	<b>FY2026</b>	<b>FY2027</b>	<b>FY2028</b>	<b>FY2029</b>
7/8" x 3/4"	\$3,437	\$3,541	\$3,647	\$3,756	\$3,869
5/8" x 3/4"	\$3,838	\$3,954	\$4,072	\$4,194	\$4,320
3/4"	\$5,729	\$5,901	\$6,078	\$6,260	\$6,448
1"	\$9,567	\$9,855	\$10,150	\$10,454	\$10,768
1.5"	\$19,078	\$19,650	\$20,240	\$20,846	\$21,472
2" C2	\$38,212	\$39,360	\$40,540	\$41,754	\$43,008
2" T2	\$47,723	\$49,155	\$50,630	\$52,146	\$53,712
3" C2	\$95,502	\$98,370	\$101,320	\$104,354	\$107,488
3" T2	\$124,147	\$127,875	\$131,710	\$135,654	\$139,728
4" C2	\$190,948	\$196,680	\$202,580	\$208,646	\$214,912
4" T2	\$238,727	\$245,895	\$253,270	\$260,854	\$268,688
6" C2	\$381,952	\$393,420	\$405,220	\$417,354	\$429,888
6" T2	\$477,398	\$491,730	\$506,480	\$521,646	\$537,312

**Table 10**  
**Stormwater Fund**  
**Proposed Development Impact Fees**  
**2025-2029**

<b>Plum Creek Basin</b>	<b>FY2025</b>	<b>FY2026</b>	<b>FY2027</b>	<b>FY2028</b>	<b>FY2029</b>
Single Family Detached	\$2,704	\$2,839	\$2,924	\$3,012	\$3,102
Single Family Attached	\$1,806	\$1,896	\$1,953	\$2,012	\$2,072
Multifamily	\$1,639	\$1,721	\$1,773	\$1,826	\$1,881
Commercial (Retail/Office)	\$1,220	\$1,281	\$1,319	\$1,359	\$1,400
<b>Cherry Creek Basin</b>	<b>FY2025</b>	<b>FY2026</b>	<b>FY2027</b>	<b>FY2028</b>	<b>FY2029</b>
Single Family Detached	\$1,265	\$1,265	\$1,265	\$1,265	\$1,265
Single Family Attached	\$846	\$846	\$846	\$846	\$846
Multifamily	\$766	\$766	\$766	\$766	\$766
Commercial (Retail/Office)	\$571	\$571	\$571	\$571	\$571

## Study Purpose

The purpose of the water, water resources and wastewater system development fees and stormwater development impact fee study update is to provide CRW with a thorough review of its SDFs and the underlying assumptions. The intent is to update assumptions from prior years and provide updated fees for 2025-2029.

## 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 1 below details the combined SDF methodology.

Figure 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 investment to provide capacity to new growth, either as a capital improvement or an infrastructure 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, 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 component for planned future investments to make additional capacity available to serve new customers. Deficiency remediation or in-kind replacement in the existing system should not be included in the fee calculations.

## **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.

### **Equity Buy-In Approach**

The equity buy-in method 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 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 one 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.

### **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.

## 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 or 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 this study.

## 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 (GAAP), 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.

### Original Cost Approach

The original cost approach is taken straight from the utility’s asset records. 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.

### 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.

### 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.

## **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 to reflect the value of the existing assets in today's dollars while acknowledging the depreciation that has occurred in the system.

## **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. Total SFEs that can be served by the existing system less current SFEs actually using the system equals the capacity available for growth or new SFEs.

For purposes of this study, the existing users in the system were updated by CRW staff to reflect changes in requirements in the existing system. Please see the individual sections for the assumptions used in this year's study.

## **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's 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.

## **Capacity Definitions for the Improvement Component**

Unlike the calculation of existing 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.

## **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 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.

An assessment schedule based on this calculation of SFEs is used for this study. CRW may adjust its approach to match a particular meter size with a known hydraulic capacity. For 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 manufacturer rated flow for those particular meters. Any different assumptions on hydraulic capacity will change the calculated SDF.

## **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 equivalency schedules used in this study. 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.

### **Schedule for SFEs**

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 actual use equivalency is calculated based on the average use per account by meter size for 2021-2023 three-year average of monthly consumption data. The calculation of existing SFEs for assessing SDFs for this study is based on the ratio of the actual use equivalency. The capacity required by a new connection is determined by a fixture count for residential connections and engineering calculations for commercial and irrigation connections.

Review of fixture counts for the typical single-family residential property indicates that the hydraulic capacity required is, on average, 30 gallons per minute (gpm) for a ¾" meter size. Since 2010 it has been determined that one SFE equals 30 gpm of maximum flow. The hydraulic equivalency method is used to determine the new SDF amounts per meter size and is presented in Table 11 below.

Table 11 Hydraulic Meter Equivalency Ratios	
Meter Size	Equivalent Meter Ratios
5/8" x 3/4"	0.67
3/4"	1.00
1"	1.67
1.5"	3.33
2" C2	6.67
2" T2	8.33
3" C2	16.67
3" T2	21.67
4" C2	33.33
4" T2	41.67
6" C2	66.67
6" T2	83.33

## Water System Development Fees

This section outlines the steps and assumptions used to calculate the water SDFs using the combined approach, which was described above.

### 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
3. Assessment Schedule Development

#### Fixed Asset Valuation

The value of the water fixed assets is based on an estimate of RCNLD, 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 water system development fees.

CRW’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 a specific function. The model uses 11 different functions that each asset is assigned to. These include:

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
11. Meters/Services

Table 12 summarizes the asset values attributed to each function. Based on the analysis, the total value of the water system assets including construction work in progress for SDF purposes in fiscal year ending 2023 is \$355.0 million. Many assets used in the distribution 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 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, \$204.6 million is excluded from the SDF. The water system value, net of outstanding debt, used to calculate the buy-in component of SDFs is \$148.6 million.

<b>Table 12 Water Fund RCNLD System Value by Function</b>	
<b>Function</b>	<b>RCNLD</b>
Source of Supply	\$53,838,514
Treatment	\$21,300,201
Pumping	\$3,650,623
Transmission/Distribution	\$27,697,636
Storage	\$27,443,033
Buildings/Improvements	\$16,552,109
Exclude from SDF	\$204,559,929
<b>Total</b>	<b>\$355,042,045</b>

## Capacity Definition

The next step in determining the buy-in component is to define the system capacity. Under this approach the capacity is based on the unused capacity of the system for each function identified above. This data is provided by CRW engineers.

Table 13 lists the current capacities of each water system function. It also presents an estimate of the total capacity in the existing system and the unused capacity in the existing system that is available for growth. The assumption in this table is that one SFE requires 400 gallons of water per day for source of supply, treatment, storage pumping, transmission and distribution. Building capacities are based off of total square footage. Capacity in SFEs includes assumptions of peaking factors provided by the Engineering Manager and Public Works Design Guidelines. Peak day requirements are 2.2 times the average requirements of 400 gpd for source of supply, treatment and storage. Peak hour requirements are 5.5 times the average requirements of 400 gpd and are applied to pumping, transmission and distribution functions. Used capacity is calculated by taking the capacities existing SFEs in the system as of December 2023 and assuming 400 gpd times a peaking factor of 2.2 for each SFE. The assumed SFEs are applied to supply, treatment, pumping, transmission and distribution and storage. Used capacity for buildings and improvements are based on square feet of space per SFE. Unused capacity is the projected total available capacity minus the used capacity.

**Table 13**  
**Water Fund**  
**System Component Capacities**

Function	Capacities	Unit	Projected SFEs Available	Used Capacity (SFEs)	Unused Capacity (SFEs)	Remaining Capacity
Source of Supply	20.58	MGD	23,386	19,121	4,265	18.2%
Treatment	21.61	MGD	24,557	19,121	5,436	22.1%
Pumping	45.86	MGD	20,845	19,121	1,724	8.3%
Transmission/Distribution	80.27	MGD	36,486	19,121	17,365	47.6%
Storage	34.41	MG	39,102	19,121	19,981	51.1%
Buildings/Improvements	59,087	Sq. Ft.	45,875	26,612	19,263	42.0%

## Buy-In Component

The total costs to be recovered from the buy-in component of the water SDF are based on the percentage of remaining capacities by function calculated in Table 13 and the total system asset values shown in Table 14. Table 15 represents the total buy-in amount by function. The total amount attributable to the buy-in component is \$40.4 million.

It is important to note that each of the two components of the water SDF assumes 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 weighting the cost by the sum of capacities available is to calculate 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 14**  
**Water Fund**  
**RCNLD for Buy-In Totals**

Function	System Value RCNLD	Less: Principal Credit	Remaining Capacity	Cost of Available Capacity RCNLD
Source of Supply	\$53,838,514	\$664,406	18.2%	\$9,697,964
Treatment	\$21,300,201	\$262,860	22.1%	\$4,656,649
Pumping	\$3,650,623	\$45,138	8.3%	\$298,244
Transmission/Distribution	\$27,697,636	\$341,809	47.6%	\$13,019,669
Storage	\$27,443,033	\$338,667	51.1%	\$13,850,250
Buildings/Improvements	\$16,552,109	\$217,121	42.0%	\$6,859,165
Exclude from SDF	\$204,559,929	\$0	0%	\$0
<b>Total</b>	<b>\$355,042,045</b>	<b>\$1,870,000</b>		<b>\$48,381,942</b>

## Improvement Component

The improvement component is based on CRW’s updated CIP for the 2024 study. The total CIP from 2024 through 2065 for the water fund is approximately \$451.6 million as shown in Table 15.

Table 15 Water Fund CIP Costs 2024-2065	
Function	CIP Costs 2024-2065
Source of Supply	\$75,014,974
Treatment	\$77,000,000
Pumping	\$7,300,000
Transmission/Distribution	\$24,658,050
Storage	\$24,924,883
Buildings/Improvements	\$0
Exclude from SDF	\$242,735,151
<b>Total</b>	<b>\$451,633,058</b>

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
3. Assessment Schedule Development

### 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 a project group. Table 16 shows the results of determining only the growth-related costs of the CIP after this project allocation step. Out of the \$451.6 million CIP, \$190.0 million is included in the improvement component calculation.

Table 16 Water Fund Growth-Related CIP Costs for Improvement Component	
Function	Cost of New Capacity
Source of Supply	\$73,514,974
Treatment	\$74,500,000
Pumping	\$7,300,000
Transmission/Distribution	\$22,658,050
Storage	\$12,000,000
Buildings/Improvements	\$0
<b>Total</b>	<b>\$189,973,024</b>

## Capacity Definition

Table 17 summarizes the system capacities added for growth-related CIP projects by function. It also represents the estimated number of SFEs available for growth by function.

Table 17 Water Fund System Capacities for System Improvements			
Function	New Capacities Added	Unit	Added SFEs
Source of Supply	10.36	MGD	16,038
Treatment	5.47	MGD	11,652
Pumping	28.76	MGD	14,797
Transmission/Distribution	115.53	MGD	69,879
Storage	7.85	MGD	16,071
Buildings/Improvements	0	SFE	16,071

## Total Fee Calculation

The buy-in component is calculated using the current capacity of the system multiplied by the unsubscribed percent of capacity. This is then added to the projected new capacity being added for the improvement component of the fee. Table 18 below summarizes the total costs of the newly calculated fee by function.

**Table 18**  
**Water Fund**  
**Total Calculated Fee per SFE**

Function	Net Asset and Capital Valuation	MGD <sup>1</sup>	Level of Service (gpd)	Equivalent SFEs	Calculated Fee per SFE
Source of Supply	\$83,212,938	14.11	880	16,038	\$5,344
Treatment	\$79,156,649	10.25	880	11,652	\$6,998
Pumping	\$7,598,244	32.55	2,200	14,797	\$528
Transmission/Distribution	\$35,677,720	153.73	2,200	69,879	\$526
Storage	\$25,850,251	25.43	880	16,071	\$1,656
Buildings/Improvements	\$6,859,165	24,811	1.288	16,071	\$440
<b>Total</b>	<b>\$238,354,966</b>				<b>\$15,492</b>

<sup>1</sup>Buildings/ Improvements capacities are measured in sq.ft. while other functions are in MGD.

## Results and Proposed Water SDF for 2025

As shown in Table 18, the total buy-in and improvement components are together calculating a total fee of \$15,492 per SFE for 2025. For 2025, CRW proposes to implement a 20% increase which equals a \$1,379 increase for a total SDF of \$8,276.

### Assessment Schedule

The final step in calculating the SDF for both the buy-in component and the improvement component is to determine the schedule of fees by meter size using hydraulic equivalencies as presented in Table 1. Table 19 represents the existing and proposed schedule of SDFs including both components by meter size.

Table 19 Water Fund 2025 Proposed SDF by Meter Size		
Meter Size	Adopted 2024 SDF	Proposed 2025 SDF
3/5" x 3/4"	\$4,138	\$4,966
5/8" x 3/4"	\$4,621	\$5,545
3/4"	\$6,897	\$8,276
1"	\$11,518	\$13,821
1.5"	\$22,967	\$27,559
2" C2	\$46,003	\$55,201
2" T2	\$57,452	\$68,939
3" C2	\$114,973	\$137,961
3" T2	\$149,458	\$179,341
4" C2	\$229,877	\$275,839
4" T2	\$287,398	\$344,861
6" C2	\$459,823	\$551,761
6" T2	\$574,727	\$689,639

# Water Resources System Development Fees

This section outlines the steps and assumptions used to calculate the water resources SDFs using the combined approach, which was described above in the water fund sections.

## Equity Buy-In Component

The buy-in component is based on the equity buy-in approach and requires the same three steps as described above in the water system development fees section.

### Fixed Asset Valuation

The fixed assets for water resources are based on the same calculation as the water system development fees above, including the same 11 functions. Table 20 summarizes the asset values attributed to each function. Based on the analysis, the total value of the water resources system assets including construction work in progress for SDF purposes in fiscal year ending 2023 is \$333.9 million. Assets used in the system that are contributed are excluded from the buy-in calculation. The value of assets to be contributed by developers was assigned to the Exclude from SDF function. Of the total RCNLD value, \$37.2 million is excluded from the SDF calculation. For the buy-in component, the RCNLD value is approximately \$122.4 million.

Table 20 Water Resources Fund RCNLD System Value by Function	
Function	RCNLD
Source of Supply	\$154,132,640
Treatment	\$46,624,272
Pumping	\$12,939,854
Transmission/ Distribution	\$3,190,605
Storage	\$59,851,532
Buildings/Improvements	\$19,951,304
Exclude from SDF	\$37,241,767
<b>Total</b>	<b>\$333,931,973</b>

### Capacity Definition

The next step is to define system capacity based on the same functions used for fixed assets. Table 21 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. One assumption used in the table is that one SFE requires 400 gallons of water per day on an average day basis. The peak day factor used is 2.2 and was derived by CRW’s Engineering Manager and Public Works Design Guidelines. These numbers are both true for source of supply, treatment, pumping and transmission capacities. The amount of storage required per SFE is 0.45 acre feet per day, which is derived from the Town’s Public Works Design Guidelines. Storage capacity is represented as MGD in the table.

Using the assumptions and the capacities for each function summarized in Table 21, 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 the original allocation of these components was to existing customers and future customers based on an assumption that these components would ultimately serve 105,000 people. In the current study, the total population to be served is assumed to be 150,000. At the present time, 50 percent of the SFEs that can be served (approximately 75,000 people) are existing users and 50 percent are new users. CRW determined its renewable water resources program allocation will be revised over time as population changes. Projects that have not been completed but are part of the water resources program are allocated in the same manner under the improvement component of the SDF.

**Table 21**  
**Water Resources Fund**  
**System Component Capacities**

Function	Capacities	Unit	Projected SFEs Available	Used Capacity (SFEs)	Unused Capacity (SFEs)	Remaining Capacity
Source of Supply	4.10	MGD	4,659	2,330	2,330	50.0%
Treatment	6.00	MGD	6,818	3,409	3,409	50.0%
Pumping	15.00	MGD	17,045	8,523	8,523	50.0%
Transmission/Distribution	14.60	MGD	16,591	8,295	8,295	50.0%
Storage	17.02	MGD	19,336	9,668	9,668	50.0%
Buildings/Improvements	59,087	Sq. Ft.	45,875	26,612	19,263	42.0%

In order to assess SDFs, the number of SFEs a new customer represents is determined by an assessment of that customer’s potential capacity needs using the hydraulic equivalencies identified in Table 1.

## Buy-In Component

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 function calculated in Table 21 and the total system asset values shown in Table 22. The total amount attributable to the buy-in component is \$122.4 million

**Table 22**  
**Water Resources Fund**  
**RCNLD for Buy-In Totals**

Function	System Value RCNLD	Less: Principal Credit	Remaining Capacity	Cost of Available Capacity RCNLD
Source of Supply	\$154,132,640	\$25,580,183	50%	\$64,276,228
Treatment	\$46,624,272	\$7,739,350	50%	\$19,442,461
Pumping	\$12,939,854	\$2,147,459	50%	\$5,396,197
Transmission/Distribution	\$3,190,605	\$529,503	50%	\$1,330,551
Storage	\$59,851,532	\$9,933,622	50%	\$24,958,955
Buildings/Improvements	\$19,951,304	\$3,365,083	42%	\$6,964,604
Exclude from SDF	\$37,241,767	\$0	0%	\$0
<b>Total</b>	<b>\$333,931,973</b>	<b>\$49,295,200</b>		<b>\$122,368,997</b>

## Improvement Component

The improvement component is based on the updated water resources CIP from the updated planning process in 2024 and the review of renewable water supply projects. The total CIP from 2024-2065 is approximately \$564.6 million as shown in Table 23.

**Table 23**  
**Water Resources Fund**  
**CIP Costs 2024-2065**

Function	CIP Costs 2024-2065
Source of Supply	\$115,675,546
Treatment	\$169,790,973
Pumping	\$114,519,813
Transmission/Distribution	\$101,284,402
Storage	\$47,677,168
Buildings/Improvements	\$0
Exclude from SDF	\$15,633,235
<b>Total</b>	<b>\$564,581,137</b>

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
3. Assessment Schedule Development

### **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 24 shows the result of determining only the growth-related costs of the CIP after this project allocation step. Out of the \$564.6 million CIP, \$354.8 million is included in the improvement component calculation. For projects that were part of the original water resources program the split between existing and future customers is the same as it is for the buy in component. For projects that are new and are structured to serve a population beyond 150,000, the full cost is allocated to the improvement component of the SDF.

**Table 24**  
**Water Resources Fund**  
**Growth-Related CIP Costs for Improvement Component**

Function	Cost of New Capacity
Source of Supply	\$80,813,356
Treatment	\$102,514,584
Pumping	\$68,711,888
Transmission/Distribution	\$64,377,042
Storage	\$38,414,924
Buildings/Improvements	\$0
<b>Total</b>	<b>\$354,831,793</b>

## Capacity Definition

Table 25 summarizes the system capacities added for growth-related CIP projects by function.

**Table 25**  
**Water Resources Fund**  
**System Capacities for System Improvements**

Function	New Capacities Added
Source of Supply	4.10
Treatment	6.00
Pumping	15.00
Transmission/Distribution	14.60
Storage	17.02
Buildings/Improvements	59,087

## Total Fee Calculation

The buy-in component is calculated using the current capacity of the system times the unsubscribed percent of capacity. This is then added to the projected new capacity being added for the improvement component of the fee. Table 26 below summarizes the total costs of the newly calculated fee by function.

Table 26 Water Resources Fund Total Calculated Fee per SFE					
Function	Net Asset and Capital Valuation	MGD <sup>1</sup>	Level of Service (gpd)	Equivalent SFEs	Calculated Fee per SFE
Source of Supply	\$148,587,838	9.52	880	10,820	\$14,145
Treatment	\$123,015,207	14.72	880	16,071	\$7,884
Pumping	\$74,401,775	10.42	880	11,836	\$6,475
Transmission/Distribution	\$65,780,008	27.40	880	16,071	\$4,216
Storage	\$64,732,278	11.13	880	12,648	\$5,272
Buildings/Improvements	\$7,343,655	24,811	1.288	16,071	\$471
<b>Total</b>	<b>\$483,860,760</b>				<b>\$38,461</b>

<sup>1</sup>Buildings/ Improvements capacities are measured in sq.ft. while other functions are in MGD.

## Results and Proposed Water Resources SDF for 2025

As shown in Table 26, the total fee is calculated to be \$38,461 per SFE for 2025. CRW proposes to raise the current fee of \$31,294 to \$33,485 for 2025. This \$2,191 increase represents a 7% increase over 2024.

### Assessment Schedule

The buy-in component and the improvement component portion of the proposed SDF is based on meter size using the hydraulic equivalencies identified in Table 1.

Table 27 represents the existing and proposed schedule of SDFs by meter size. A 7% change in the water resources SDF is proposed for 2025.

<b>Table 27</b> <b>Water Resources Fund</b> <b>Proposed SDF by Meter Size</b>		
<b>Meter Size</b>	<b>Adopted 2024 SDF</b>	<b>Proposed 2025 SDF</b>
3/5" x 3/4"	\$18,777	\$20,091
5/8" x 3/4"	\$20,967	\$22,435
3/4"	\$31,294	\$33,485
1"	\$52,262	\$55,920
1.5"	\$104,211	\$111,505
2" C2	\$208,734	\$223,345
2" T2	\$260,683	\$278,930
3" C2	\$521,679	\$558,195
3" T2	\$678,152	\$725,620
4" C2	\$1,043,045	\$1,116,055
4" T2	\$1,304,041	\$1,395,320
6" C2	\$2,086,404	\$2,232,445
6" T2	\$2,607,770	\$2,790,305

# Wastewater System Development Fees

This section outlines the steps and assumptions used to calculate the wastewater SDFs using the combined approach, which was described previously.

## Equity Buy-In Component

The buy-in component is based on the equity buy-in approach and requires the same three steps as described above in the water system development fees section.

### Fixed Asset Valuation

The fixed assets for wastewater are based on the same calculation as the water system development fees above.

The wastewater system is designed to collect wastewater from its customers and provide safe and reliable wastewater service throughout its service area. It is Plum Creek Water Reclamation Authority's (PCWRA's) and the Pinery Water and Sanitation District's (Pinery) responsibility to treat the wastewater for CRW. CRW's wastewater system includes individual components that serve 6 specific functions. To estimate the value of assets related to each function, the RCNLD value of each asset is allocated to one or more of these functions, typically referred to in wastewater systems as unit processes. However, note that the PCWRA Treatment Plant component is handled separately and for the Pinery the treatment component is paid directly to the Pinery. To calculate the buy-in component for the wastewater component for PCWRA, assets considered under the Treatment Plant unit process are CRW's share of cash-funded improvements at the Treatment Plant. The wastewater unit processes are:

1. Collection System
2. Interceptor System
3. Treatment Plant
4. Lift Station
5. Buildings/Improvements
6. Exclude from SDF

Table 28 summarizes the asset values attributed to each unit process. The total value of the wastewater system assets including construction work in progress for SDF purposes in fiscal year ending 2023 is \$108.0 million. Many assets used in the collection system are typically contributed by developers and thus included in the exclude from SDF section of the buy-in component. Of the total RCNLD value, \$78.6 million is excluded from the SDF. For establishing a buy-in SDF, the Town's wastewater system, net of outstanding debt is valued at approximately \$29.4 million.

**Table 28**  
**Wastewater Fund**  
**RCNLD System Value by Function**

Unit Process	RCNLD
Collection System	\$16,913,090
Interceptor System	\$7,261,709
Treatment Plant	\$23,144
Lift Station	\$2,281,977
Buildings/Improvements	\$2,907,875
Exclude from SDF	\$78,594,179
<b>Total</b>	<b>\$107,981,974</b>

## Capacity Definition

The next step is to define system capacity based on the same functions used for fixed assets. Table 29 lists the current capacities of each wastewater system function, excluding PCWRA’s treatment component. This table also represents an estimate of the capacity in the existing system that is available for growth. The interceptor system capacity required per SFE is approximately 440 gallons per day on a wet-weather peak capacity basis. This value is derived from CRW’s master plan and the aggregate gpd peaking factor of 2.0 for interceptors. Using these assumptions and the capacities for each function summarized in Table 29, the number of SFEs that can be served by each unit process is calculated. Subtracting the number of SFEs currently served generates the number of SFEs available for growth. A description of how the number of SFEs currently served by the wastewater system is estimated is shown below.

The number of SFEs currently using the wastewater system is based on different approaches depending on the system component.



**Table 29**  
**Wastewater Fund**  
**System Component Capacities**

Unit Process	Capacities	Unit	Projected SFEs Available	Used Capacity (SFES)	Unused Capacity (SFES)	Remaining Capacity
Collection System	0	MGD	0	0	0	0%
Interceptor System	8.80	MGD	20,000	11,518	8,482	42.4%
Treatment Plant	7.10	MGD	16,136	11,518	4,619	28.6%
Lift Station	11.55	MGD	26,250	11,518	14,732	56.1%
Buildings/Improvements	59,087	Sq. Ft.	45,875	26,612	19,263	42.0%

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

The capacities have been reviewed 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 and the Pinery. PCWRA is rated for 7.1 mgd. CRW has 0.53 mgd capacity in the Pinery. CRW will add additional capacity through the PCWRA phase II plant expansion which is expected to be completed by 2040..

## Buy-In Component

The total costs to be recovered from the buy-in component of the wastewater SDF are based on the percentage of remaining capacities by functions calculated in Table 32 and the total system asset values shown in Table 30. The total amount attributable to the buy-in component is \$5.9 million.

Table 30 Wastewater Fund RCNLD for Buy-In Totals				
Unit Process	System Value RCNLD	Less: Debt Principal	Remaining Capacity	Cost of Available Capacity RCNLD
Collection System	\$16,913,090	\$0	0%	\$0
Interceptor System	\$7,261,709	\$0	42.4%	\$3,079,746
Treatment Plant	\$23,144	\$0	28.6%	\$6,624
Lift Station	\$2,281,977	\$0	56.1%	\$1,280,702
Buildings/Improvements	\$2,907,875	\$0	42.0%	\$1,221,035
Exclude from SDF	\$78,594,179	\$0	0%	\$0
<b>Total</b>	<b>\$107,981,974</b>	<b>\$0</b>		<b>\$5,588,108</b>

## Treatment Fee Component

Part of the existing wastewater system serving CRW's customers is the treatment process and associated assets provided by PCWRA. The calculation of the treatment fee component was updated in 2024 to reflect all debt issues obtained by PCWRA for treatment plant improvements and costs associated with the cash payment for the PCWRA capacity expansion. Table 31 represents the calculation and shows the total principal on debt for the treatment plant expansions. Capacity for new customers allows for approximately 22,955 SFEs. By dividing the cost of expansion-related capacity by 22,955 SFEs, the treatment fee component calculates to be \$4,053 per SFE.

**Table 31  
Wastewater Fund  
Treatment Fee per SFE**

<b>Unit Process</b>	<b>Cost of PCWRA Treatment Plant</b>	<b>Growth Percentage</b>	<b>Growth Portion of Treatment Cost</b>	<b>Added SFEs</b>	<b>Treatment Component per SFE</b>
Treatment Component	\$96,054,036	96.9%	\$93,035,141	22,955	\$4,053

## Improvement Component

The improvement component is based on the updated CIP from an engineering review in 2024. The total CIP through 2065 is approximately \$199.7 million as shown in Table 32.

**Table 32  
Wastewater Fund  
CIP Costs 2024-2065**

<b>Unit Process</b>	<b>CIP Costs 2024-2065</b>
Collection System	\$1,526,185
Interceptor System	\$7,175,850
Treatment Plant	\$35,000,000
Lift Station	\$0
Buildings / Improvements	\$0
Exclude from SDF	\$156,006,262
<b>Total</b>	<b>\$199,708,296</b>

To calculate an improvement component based on the incremental cost approach the same steps are taken as in water and water resources and are shown below.

## Multi-Purpose Project Allocations

Similar to the water system, only growth-related portions of projects can be included in the calculation. Projects were allocated serving both growth and rehabilitation/upgrade (i.e., multi-purpose projects) as either growth or non-growth. Out of \$199.7 million of capital improvements, only \$43.3 million is included in the improvement component calculation. The treatment plant CIP costs of \$35.0 million are included in the Treatment fee component calculation in Table 33 rather than the improvement fee component.

Table 33 Wastewater Fund Growth-Related CIP Costs for Improvement Component	
Unit Process	Cost of New Capacity
Collection System	\$1,169,097
Interceptor System	\$7,175,850
Treatment Plant	\$35,000,000
Lift Station	\$0
Buildings / Improvements	\$0
<b>Total</b>	<b>\$43,344,947</b>

## Capacity Definition

Table 34 summarizes the system capacities added by function.

Table 34 Wastewater Fund System Capacities for System Improvements	
Unit Process	Added MGDs
Collection System	1.81
Interceptor System	11.35
Treatment Plant	3.0
Lift Station	0
Buildings / Improvements	0 SFEs

## Total Fee Calculation

The buy-in component is calculated using the current capacity of the system times the unsubscribed percent of capacity. This is then added to the projected new capacity being added for the improvement component of the fee. Table 35 below summarizes the total costs of the newly calculated fee by function.

**Table 35  
Wastewater Fund  
Total Calculated Fee per SFE**

<b>Unit Process</b>	<b>Net Asset and Capital Valuation</b>	<b>MGD<sup>1</sup></b>	<b>Level of Service (gpd)</b>	<b>Equivalent SFEs</b>	<b>Calculated Fee per SFE</b>
Collection System	\$1,169,097	1.81	440	4,122	\$293
Interceptor System	\$10,255,596	15.08	440	16,071	\$657
Treatment Plant	\$63,434,551	5.03	440	11,437	\$4,175
Lift Station	\$1,280,702	6.48	440	14,732	\$90
Buildings / Improvements	\$1,221,035	24,811	1.288	16,071	\$78
<b>Total</b>	<b>\$77,360,982</b>				<b>\$5,292</b>

<sup>1</sup>Buildings/ Improvements capacities are measured in sq.ft. while other functions are in MGD.

## Results and Proposed Wastewater SDF for 2025

As shown in Table 35, the total fee is calculated to be \$5,292 per SFE for 2025. CRW proposes to raise the fee to \$5,729 in 2025. This \$167 increase represents a 3% increase over 2024.

## Assessment Schedule

As with the buy-in component, the improvement component portion of the proposed SDF is based on meter size using the hydraulic equivalencies in Table 1. Table 36 represents the existing and proposed schedule of SDFs by meter size using the hydraulic equivalencies.

<b>Table 36</b> <b>Wastewater Fund</b> <b>Proposed SDF by Meter Size</b>		
<b>Meter Size</b>	<b>Adopted 2024 SDF</b>	<b>Proposed 2025 SDF</b>
3/5" x 3/4"	\$3,337	\$3,437
5/8" x 3/4"	\$3,727	\$3,838
3/4"	\$5,562	\$5,729
1"	\$9,289	\$9,567
1.5"	\$18,521	\$19,078
2" C2	\$37,099	\$38,212
2" T2	\$46,331	\$47,723
3" C2	\$92,719	\$95,502
3" T2	\$120,529	\$124,147
4" C2	\$185,381	\$190,948
4" T2	\$231,769	\$238,727
6" C2	\$370,819	\$381,952
6" T2	\$463,481	\$477,398

## Stormwater Development Impact Fees

Stormwater development impact fees (DIFs) were developed differently than the previous 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 CRW's service area. Values are presented for both Cherry Creek Basin and Plum Creek Basin.

The assessment of stormwater DIFs also differs from the other funds. Stormwater flow is based on runoff and impervious area; therefore, assessment of stormwater DIFs is based on

assumptions of runoff characteristics for different development types, i.e., single family detached, single family attached, multifamily, and commercial.

## **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 2024 are used in this analysis. These improvements are divided among non-growth related, growth related and developer's contribution costs. The value of improvements included in the stormwater DIF is \$41.3 million and is represented in Table 37.

**Table 37**  
**Stormwater Fund**  
**Capital Improvement Cost Allocations**

Item	CIP Costs 2024-2065
Total Non-Growth Related Cost	\$67,634,641
Total Growth Related Improvement Costs	\$41,309,069
Developer's Contribution	\$15,042,986
<b>Total Capital Improvement Costs</b>	<b>\$123,986,697</b>
<b>Growth Related Improvement Costs</b>	
Total Cherry Creek Basin	\$7,196,827
Total Plum Creek Basin	\$34,112,242
<b>Total Growth Related Improvement Costs</b>	<b>\$41,309,069</b>

Acres available to be developed by land use type were reduced to reflect construction anticipated through 2024. Table 38 represents developable acreage by land use type.

**Table 38**  
**Stormwater Fund**  
**Acreage to be Developed**

Land Use Type	Cherry Creek Basin	Plum Creek Basin
Single Family Detached	784	795
Single Family Attached	18	47
Multifamily	254	995
Commercial (Retail/Office)	252	170
<b>Total</b>	<b>1,309</b>	<b>2,007</b>

Imperviousness percentages by land use type were based on the Urban Drainage and Flood Control District (UDFCD) Criteria Manual. 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.



**Table 39**  
**Stormwater Fund**  
**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%

Units per acre are needed to determine the actual stormwater DIF per unit. Single family detached, single family attached and multifamily 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.

## Stormwater Development Impact Fee Equation

The equation below represents the calculation of stormwater DIFs:

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

$$DIF = C/U$$

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

## Steps to Calculate the Stormwater Fee

### 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 are of development. Tables 40 and 41 demonstrate the allocation of capital costs across land use types.

**Table 40  
Stormwater Fund  
Allocation 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	259	262	38.19%	21.34%
Single Family Attached	14	35	2.04%	2.87%
Multifamily	203	796	29.98%	64.75%
Commercial (Retail/Office)	202	136	29.79%	11.04%
<b>Total</b>	<b>678</b>	<b>1,229</b>	<b>100.00%</b>	<b>100.00%</b>

**Table 41  
Stormwater Fund  
Capital Cost by Class**

Land Use Type	Cherry Creek Basin	Plum Creek Basin
---------------	--------------------	------------------

Single Family Detached	\$2,748,110	\$7,280,287
Single Family Attached	\$147,083	\$978,198
Multifamily	\$2,157,462	\$22,089,227
Commercial (Retail/Office)	\$2,144,172	\$3,764,530
<b>Total</b>	<b>\$7,196,827</b>	<b>\$34,112,242</b>

## 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 42 shows the result of this step.

Table 42 Stormwater Fund Capital Cost per Acre		
Land Use Type	Cherry Creek Basin	Plum Creek Basin
Single Family Detached	\$3,504	\$9,158
Single Family Attached	\$7,963	\$20,813
Multifamily	\$8,494	\$22,200
Commercial (Retail/Office)	\$8,494	\$22,200

## 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 45. 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 average 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 43 shows the units per acre assumed for each land use type. Table 44 presents the recommended DIF per unit by land use type. Table 44 shows the model recommended development impact fees. Castle Rock is proposing to increase the DIFs to this value for the study period 2024-2029. As such, in 2025 CRW proposes no increase for the Cherry Creek Basin and a 5% increase for the Plum Creek Basin. This results in an increase of \$129 for the Plum Creek Basin.

Table 43 Stormwater Fund 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

Table 44 Stormwater Fund DIF Per Unit		
Land Use Type	Cherry Creek Basin	Plum Creek Basin
Single Family Detached	\$1,265	\$2,704
Single Family Attached	\$846	\$1,806
Multifamily	\$766	\$1,639
Commercial (Retail/Office)	\$571	\$1,220

## Summary

The purpose of this study was to provide CRW with a thorough review of its SDFs and the underlying assumptions and provide updated fees for 2025 through 2029. The review is based on development fee approaches that are acceptable to the industry and to the State of Colorado’s impact fee legislation. An annual review of growth, capital improvements and use of revenues from SDFs continues to be made to allow CRW to proactively make changes, if needed.

## Recommended SDFs for 2025-2029

The report shows how the fixed assets and CIP costs were calculated to determine the needed SDFs and DIFs for the funds for 2025-2029. Costs for capital improvements were maintained at 2024 dollars. In order to maintain SDF revenues to match increases in capital costs over time, staff is recommending an increase for 2025 in the SDFs for water, water resources, wastewater and stormwater DIFs for both the Plum Creek and Cherry Creek Basins. See the charts in the executive summary for these amounts and recommendations.

For a copy of the supporting data analysis, please contact Castle Rock Water at 720-733-6000.

### Recommendations

As part of the 2024 Rates and Fees Study, Stantec Consulting Services Inc. reviewed CRW's methodology and findings and recommends Castle Rock Water do the following:

- Continue to work with engineering managers to evaluate and refine additional capacities provided by each capital improvement project.
- Continue to track changes in asset values and CIP costs used to calculate fees over time.
- Actively track SDF sources (revenues) and uses (expenses) of funds separately from operating funds. Consider working on the flow of funds during CRW's annual financial planning process to help determine if revenues collected from new customers are appropriately recovering the costs of growth.

Please see Appendix C for study review letter from Stantec Consulting Services, Inc.

# Appendix A

## List of Acronyms

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

- AF: Acre Feet
- CIP: Capital Improvement Program
- 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

# Appendix B

## Definitions

The following are definitions used in this study:

- SDFs are one-time fees charged to new customers 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 Statute (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 by an average single-family residential unit.
- Equivalency schedules are a set of calculated ratios, based on a  $\frac{3}{4}$ " Meter being 1 SFE, which help to define how many SFEs are represented by the different meter sizes. Equivalency schedules are also used to calculate the monthly service charges for water, water resources and wastewater service.
- 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  $\frac{3}{4}$ " x  $\frac{3}{4}$ " 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 2021 to 2023 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.

# Appendix C

## Stantec Consulting Services Inc. Study Review Letter





# Town of Castle Rock

## Agenda Memorandum

**Agenda Date:** 8/28/2024

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**Item #:** 5. **File #:** WC 2024-081

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**To:** Members of the Castle Rock Water Commission

**From:** Mark Marlowe, P.E., Director of Castle Rock Water  
Shawn Griffith, Assistant Director of Operations  
Nicolas Van Kooten, SCADA Superintendent

**Resolution Approving the Supervisory Control and Data Acquisition (SCADA) Master Plan Phase IV Implementation Project** *[Entire Castle Rock Water Service Area]*  
**Town Council Agenda Date:** September 3, 2024

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### Executive Summary

Castle Rock Water (CRW) seeks Town Council approval of a Resolution (**Attachment A**) approving a services agreement with Logical Systems, LLC (LSI), for the CRW Supervisory Control and Data Acquisition (SCADA) SCADA Master Plan Phase IV Project. This capital improvement was identified through the SCADA Master Plan (MP), adopted in December 2019 by Council Resolution No. 2019-131. The cost for this work is \$4,475,720 plus a 10% Town managed contingency of \$447,572, for a total authorization request of \$4,923,292.

Through a competitive request for proposal (RFP) process, bids were received on July 18, 2024, and LSI was selected by CRW staff as the recommended consultant to complete these proposed system upgrades. The existing system is antiquated and has components that have been in service for up to 30 years. The scope of work for this project shall include, but not be limited to, the replacement of hardware, wiring, and software for SCADA control systems at the Miller Water Treatment Plant (WTP), and various wells and other remote sites. This project will bring the system into compliance with modern cybersecurity and equipment standards and improve operator efficiencies, as recommended by our 2019 SCADA Master Plan.

Once awarded, it will take approximately 19 months to fully implement. The timing fits into CRW's operations by allowing the majority of the work to be completed during the low-demand seasons and the goal is to complete this by April 2026.

### Notification and Outreach Efforts

This project is security-sensitive and no public outreach is planned. Work will be performed at remote CRW sites and will be done out of the public eye.

### **History of Past Town Council, Boards & Commissions, or Other Discussions**

Castle Rock Water Commission was provided with a presentation on the SCADA Master Plan on December 11, 2019, and voted to recommend Council approval. Town Council adopted the 2019 SCADA Master Plan Update on December 17, 2019.

### **Discussion**

In May of 2024, Burns & McDonnell Engineering, Inc. (BMcD) created the RFP for the SCADA Master Plan Phase IV, to create a complete and more consistent RFP, resulting in better contractor pricing, improved schedules, and a smoother overall project. This project was necessary to properly detail the required elements of the RFP and meet budget and schedule goals. The RFP contained the proper steps, equipment, software, and programming protocols necessary to ensure accurate estimates and proper project implementation details.

CRW uses SCADA to monitor and control all processes in the water treatment plants and their remote sites. This current project will upgrade hardware and software in the Miller WTP and associated remote sites listed below:

#### Phase IV Remote Facility List:

- Citadel Pump Station
- Hillside Pump Station
- Plum Creek Pump Station
- Castlewood 1 Lift Station
- Castlewood 2 Lift Station
- Maher Lift Station
- Mitchell Creek Lift Station
- Sellers Lift Station
- Black Feather PRV
- Briscoe PRV
- Scott PRV
- Valley PRV
- BM1A\_D Well
- W7 Well
- RT6ABC Well
- RT14 Well
- BM2 Well
- Red Hawk Pond
- Meadows Flume
- North Flume
- Main Flume
- Meadows Grinder

The SCADA system is separate and segregated from other Town computer networks and is a stand-

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**Item #: 5. File #: WC 2024-081**

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alone process by which many CRW assets are controlled remotely. This project will replace the hardware and wiring for the existing control system at these sites. The contractor will also be required to test all of the installed hardware, instrumentation, and wiring. Due to supply chain issues CRW has purchased and will be providing additional hardware, such as Programmable Logic Controllers (PLCs), power supplies, input and output (I/O) cards, racks, human-machine interfaces (HMIs) and network switches, for the contractor to install.

A more robust operational system will address deficiencies within the existing system and bring the system into compliance with modern cybersecurity and equipment safety standards. It also will reduce network failure risk due to aging equipment, reduce costs of support by utilizing current, non-obsolete hardware and software, improve operator efficiency by standardizing equipment and procedures, and properly manage risk and resilience associated with process automation.

In June of 2024, CRW advertised a request for qualifications (RFQ) for contractors using BidNet (an online platform that advertises information such as government RFQs). Six firms responded by submitting Statements of Qualifications. The contractor submittals were reviewed by the CRW staff and four contractors were shortlisted. The RFP was then issued to the shortlisted group of contractors and a mandatory project site visit was completed by staff with contractors and BMcD. The following table includes the contractors who issued the RFP for this project and their proposal cost or if they were non-responsive.

<b>Consulting Firm</b>	<b>Total Cost</b>
Logical Systems, Inc.	\$4,290,890
Prime	Declined to bid
Techneaux	\$4,826,905
Tetra Tech	Declined to bid

LSI was selected based on the qualifications that were submitted, the completeness of fulfilling the scope of work, and the project costs that were submitted.

LSI will be required to perform testing on all installed hardware and wiring, to ensure that all locations can communicate and operate properly. The contractor will also need to research, prepare, and submit to the appropriate agency any necessary permits for project completion. All work will be completed within an approximate 19-month period beginning in October 2024 and concluding in April 2026.

**Budget Impact**

During the budget process of 2020, the funding for the SCADA Master Plan Phase IV implementation was budgeted in 2024. These funds will be taken from the Water, Water Resources, and Wastewater SCADA System Improvement account, as follows:

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Fund Name	Account Number	Cost	10% Contingency	Total Cost	Split	2024 Balance
Water SCADA System Improvements	210-4275-442.75-41	\$2,145,445	\$214,545	\$2,461,646	50%	\$2,461,646
Water Resources SCADA System Improvements	211-4375-443.75-41	\$1,072,722	\$107,272	\$1,230,823	25%	\$1,230,823
Wastewater SCADA System Improvements	213-4575-445.75-41	\$1,072,723	\$107,272	\$1,230,823	25%	\$1,230,823
Totals		\$4,290,890	\$429,089	\$4,923,292		\$4,923,292
<b>Total Authorization Request</b>				<b>\$4,923,292</b>		

**Staff Recommendation**

Staff recommends Town Council approval of a Resolution approving a services agreement between the Town and LSI for the Master Plan Phase IV Implementation Project in the amount of \$4,475,720 plus a 10% Town managed contingency of \$447,572, for a total authorization request of \$4,923,292.

**Proposed Motion**

*"I move to recommend to Town Council approval of the Resolution as presented"*

**Attachments**

Attachment A: Resolution (*Not Attached*)  
Exhibit 1: Agreement



**TOWN OF CASTLE ROCK  
EQUIPMENT AND SERVICES ACQUISITION AGREEMENT  
(SCADA Master Plan Phase IV Implementation – Castle Rock Water)**

---

**DATE:** August 14, 2024.

**PARTIES:** **TOWN OF CASTLE ROCK**, a Colorado municipal corporation, 100 N. Wilcox Street, Castle Rock, Colorado 80104 (“Town”).

**LOGICAL SYSTEMS, LLC**, a Tennessee limited liability company, 2756 Appling Center Cove, Suite 101, Memphis, Tennessee 38133 (“Contractor”).

**RECITALS:**

- I. The Town issued a Request for Proposals from qualified contractors with expertise in water treatment plant control system services.
- II. Contractor timely submitted its proposal.
- III. The Town engages Contractor to provide the services more fully described in the following Agreement and Exhibits.

**TERMS:**

1. **Scope of Services.** Contractor shall perform all of the services and provide all materials as set forth on *Exhibit 1* (“Services”). Contractor shall complete the Services consistent with standards and practices of the profession.

2. **Payment.** The Town’s total obligation to Contractor under this Agreement for the Services shall not exceed \$4,475,720.00, unless authorized in writing by the Town. Contractor shall invoice Town for the Services rendered in accordance with the rate and fee schedule set forth in *Exhibit 1* may withhold payment in whole, or in part for the Services found by the Town to be not conforming to this Agreement, not in conformance with all applicable federal, state, and local laws, ordinances, rules and regulations, or if Contractor is in default of the Inspection and Warranty Section herein, below. Town shall remit payment, whether whole or in part within fifteen (15) days of receipt of such invoice.

3. **Term/Completion.** The term of this Agreement shall commence on October 1, 2024 and expire on May 31, 2026 (the “Term”). The Parties may mutually agree to extend the Term of this Agreement for no more than one (1) year under the same terms and conditions by a written amendment to this Agreement prior to the expiration of this Agreement. Nothing in this paragraph prohibits the parties from amending the payment section and/or incorporating an updated rate and fee schedule should the Parties elect to extend the term of the Agreement. Contractor shall complete any Services in progress as of the expiration date. Contractor shall devote adequate resources, in its professional opinion, to assure timely completion of the Services in accordance with the standards specified in this Agreement. Contractor shall perform the Services under this Agreement using a standard of care, skill and diligence ordinarily used by reputable professionals performing under circumstances similar to those required by this Agreement.

4. **Termination.** Town shall have the right to terminate this Agreement with or without cause at any time with ten (10) days’ written notice to Contractor. The Town’s only obligation in the event of termination shall be payment of fees and expenses incurred up to and including the effective

date of termination. In the event that the Town terminates this Agreement without cause, such fees may include reasonable demobilization costs, restocking fees and other reasonable costs incurred by Contractor as a result of such termination (the "Termination Fees"). The Town shall not be required to pay any Termination Fees which would result in the cumulative total payment to Contractor under this Agreement exceeding the Town's total payment obligation as listed in Paragraph 2 of this Agreement. Contractor shall provide the Town with an itemization of the Termination Fees if such fees are incurred. Contractor shall not be entitled to charge Termination Fees if the Town terminates this Agreement for cause, or if Contractor is in default under this Agreement. Upon termination, Contractor shall immediately turn over all work product, materials, deliverables created up to the point of termination.

5. **Subcontractors.** Contractor may utilize subcontractors to assist with specialized Services as necessary to complete the Services. Contractor will submit any proposed subcontractor and the description of subcontractor services to the Town for its prior approval.

6. **Inspection and Warranty.** Town reserves the right to inspect the Services provided under this Agreement at all reasonable times and places during the term of this Agreement. Alternatively, the Town may refuse the Services and cancel all or any part of this Agreement if Contractor fails to deliver all or any part of the Services in accordance with the terms and conditions of this Agreement. Failure by the Town to inspect and test the Services shall not relieve Contractor of such responsibility. Any acceptance by the Town shall not be deemed a waiver or settlement of any defect or nonconformity in such Services. If Town elects to accept nonconforming or defective Services, Town, in addition to its other remedies, shall be entitled to deduct a reasonable amount from the price thereof to compensate Town for the nonconformity or defect. Contractor expressly warrants that all materials and/or equipment manufactured by Contractor and furnished under this Agreement shall be free from defects in materials or workmanship, are installed properly and in accordance with the manufacturer recommendations or other industry standards, and will function in conformance with this Agreement for a period of one (1) year from the date of delivery or installation. Contractor, shall, at its option, repair or replace any material and/or equipment that fail to satisfy this warranty during the warranty period. Additionally, Contractor agrees to assign to the Town all written manufacturer warranties relating to the supplies and to deliver such written warranties to the Town.

7. **Risk of Loss.** With respect to any goods or equipment provided under this Agreement, risk of loss shall not pass to the Town until such equipment has been received and accepted by the Town, pursuant to the Inspection and Warrant Section herein, above, at the destination specified by the Town. Contractor assumes full responsibility for packing, crating, marking, transporting, and liability for loss or damage in transit, notwithstanding any agreement by the Town to pay freight, express or other transportation charges.

8. **Annual Appropriation.** The continuance of this Agreement is contingent upon the appropriation of funds to fulfill the requirements of the Agreement by the Town. If the Town fails to appropriate sufficient monies to provide for the continuance of the Agreement, the Agreement shall terminate on the final day preceding the date of the beginning of the first fiscal year for which funds are not appropriated. The Town's only obligation in the event of termination shall be payment of fees and expenses incurred up to and including the effective date of termination.

9. **Assignment.** This Agreement shall not be assigned by Contractor without the written consent of the Town.

10. **Notice.** Any notice required or permitted by this Agreement shall be in writing and shall be deemed to have been sufficiently given for all purposes if sent by certified mail or registered mail, postage and fees prepaid, addressed to the party to whom such notice is to be given at the address

set forth on the first page of this Agreement, or at such other address as has been previously furnished in writing to the other party or parties. Such notice shall be deemed given when deposited in the United States mail.

11. **Insurance.**

A. **General Conditions:** Contractor agrees to secure, at or before the time of execution of this Agreement, the following insurance covering all operations, goods or services provided pursuant to this Agreement. Contractor shall keep the required insurance coverage in force at all times during the term of the Agreement, including any extension thereof, and during any warranty period. The required insurance shall be underwritten by an insurer licensed or authorized to do business in Colorado and rated by A.M. Best Company as "A-VII" or better. Each policy shall require notification to the Town in the event any of the required policies be canceled or non-renewed before the expiration date thereof. Such written notice shall be sent to the parties identified in the Notices section of this Agreement. Such notice shall reference the Town. Said notice shall be sent thirty (30) days prior to such cancellation or non-renewal unless due to non-payment of premiums for which notice shall be sent ten (10) days prior. If such written notice is unavailable from the insurer, Contractor shall provide written notice of cancellation, non-renewal and any reduction in coverage to the Town by certified mail, return receipt requested within three (3) business days of such notice by its insurer(s). Contractor shall be responsible for the payment of any deductible or self-insured retention. The insurance coverages specified in this Agreement are the minimum requirements, and these requirements do not lessen or limit the liability of the Contractor. The Contractor shall maintain, at its own expense, any additional kinds or amounts of insurance that it may deem necessary to cover its obligations and liabilities under this Agreement. All commercial and automobile liability policies shall have the following additional provisions:

- Severability of interests or separation of insureds provision;
- Provision that coverage is primary and non-contributory with other coverage maintained by the Town;
- The underlying Agreement is an "insured contract" under the policy;
- Defense costs shall be outside the policy limits for liability coverage.

B. **Proof of Insurance:** Contractor may not commence services or work relating to this Agreement prior to placement of coverages required under this Agreement. Contractor certifies that the certificate of insurance attached as *Exhibit 2*, preferably an ACORD form, complies with all insurance requirements of this Agreement. The Town's acceptance of a certificate of insurance or other proof of insurance that does not comply with all insurance requirements set forth in this Agreement shall not act as a waiver of Contractor's breach of this Agreement or of any of the Town's rights or remedies under this Agreement. Each certificate shall identify the Project and shall provide that coverage afforded under the policies shall not be cancelled, terminated or materially changed until at least 30 days prior written notice has been given to the Town. If the words "endeavor to" appear in the portion of the certificate addressing cancellation, those words shall be stricken from the certificate by the agent(s) completing the certificate. The Town may require additional proof of insurance, including but not limited to policies and endorsements.

C. **Additional Insureds:** For Commercial General Liability and Automobile Liability, Contractor and subcontractor's insurer(s) shall include the Town, its elected and appointed officials, officers, employees, agents and volunteers acting within the course and scope of their duties for the Town as additional insured.

D. **Waiver of Subrogation:** For all coverages required under this Agreement, Contractor's insurer shall waive subrogation rights against the Town, its elected and appointed officials, officers, employees, agents and volunteers acting within the course and scope of their duties for the Town.

E. **Subcontractors:** Contractor shall confirm and document that all subcontractors (including independent contractors, suppliers or other entities providing goods or services required by this Agreement) procure and maintain coverage as approved by the Contractor and appropriate to their respective primary business risks considering the nature and scope of services provided.

F. **Workers' Compensation and Employer's Liability Insurance:** Contractor shall maintain the coverage as required by statute for each work location and shall maintain Employer's Liability insurance with limits of \$100,000 per occurrence for each bodily injury claim, \$100,000 per occurrence for each bodily injury caused by disease claim, and \$500,000 aggregate for all bodily injuries caused by disease claims.

G. **Commercial General Liability:** Contractor shall maintain a Commercial General Liability insurance policy with minimum limits of \$1,000,000 for each occurrence and \$2,000,000 products and completed operations aggregate, and \$2,000,000 general aggregate (per project). The policy shall provide coverage for all claims for bodily injury, property damage (including loss of use), products and completed operations, and contractual liability.

H. **Automobile Liability:** Contractor shall maintain Automobile Liability with minimum limits of \$1,000,000 combined single limit applicable to all owned, hired and non-owned vehicles used in performing services under this Agreement.

12. **Colorado Governmental Immunity Act.** The parties understand and agree that the Town is relying on, and does not waive or intend to waive by any provision of this contract, the monetary limitations or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, §24-10-101, *et seq.*, C.R.S., as from time to time amended, or otherwise available to Town, its officers, or its employees.

13. **Indemnification.** Contractor expressly agrees to defend, indemnify and hold harmless Town or any of its agents, officers or employees from any and all claims, damages, liability, or court awards including attorney's fees that are or may be awarded as a result of any loss, injury or damage sustained or claimed to have been sustained by anyone, including, but not limited to, any person, firm, partnership, or corporation, to the extent caused by the negligent acts or willful misconduct of Contractor or any of their employees or agents in performing Services pursuant to this Agreement. In the event that any such suit or action is brought against Town, Town will give notice within ten (10) days thereof to Contractor. These defense and indemnification obligations shall survive the expiration or termination of this Agreement.

14. **Delays.** Any delays in or failure of performance by any party of the obligations under this Agreement shall be excused if such delays or failure are a result of acts of God, fires, floods, strikes, labor disputes, accidents, regulations or orders of civil or military authorities, shortages of labor or materials, or other causes, similar or dissimilar, which are beyond the control of such party.

15. **Additional Documents & Entire Agreement.** The parties agree to execute any additional documents or take any additional action that is necessary to carry out this Agreement. Further, this Agreement represents the entire agreement between the parties and there are no oral or collateral agreements or understandings. This Agreement may be amended only by an instrument in



writing signed by the parties. If any other provision of this Agreement is held invalid or unenforceable, no other provision shall be affected by such holding, and all of the remaining provisions of this Agreement shall continue in full force and effect.

16. **Time of the Essence.** Time is of the essence. If any payment or any other condition, obligation, or duty is not timely made, tendered or performed by either party as defined in Paragraph 17 below and with the exception of any delay excused under Paragraph 14 herein, then this Agreement, at the option of the party who is not in default, may be terminated by the non-defaulting party, in which case, the non-defaulting party may recover such damages as may be reasonable.

17. **Default and Remedies.** In the event either party should default in performance of its obligations under this agreement, and such default shall remain uncured for more than ten (10) days after notice of default is given to the defaulting party, the non-defaulting party shall be entitled to pursue any and all legal remedies and recover its reasonable attorney's fees and costs in such legal action. In addition, no party will be entitled to lost profits, economic damages, or actual, direct, incidental, consequential, punitive or exemplary damages in the event of a default. Contractor's liability hereunder shall be limited to (a) insurance proceeds paid, or (b) in the event that insurance does not respond, to the total cumulative price of this Agreement as stated in Paragraph 2 above.

18. **Waiver.** A waiver by any party to this Agreement of the breach of any term or provision of this Agreement shall not operate or be construed as a waiver of any subsequent breach by either party.

19. **Venue, Choice of Law and Disputes.** Venue for all legal actions shall lie in the District Court in and for the County of Douglas, State of Colorado, and shall be governed by the laws of the State of Colorado as well as the Charter and Municipal Code, rules, regulations, Executive Orders, and fiscal rules of the Town.

20. **Americans with Disabilities Act.** Contractor agrees to ensure that any deliverables, work, services, or equipment developed, designed, constructed or produced pursuant to this Agreement, to include website design services, will comply with all requirements of Title II of the Americans with Disabilities Act and, where applicable, Section 504 of the Rehabilitation Act, the Architectural Barriers Act, and the Colorado Anti-Discrimination Act. To the extent any deliverables, work, services, or equipment developed, designed, constructed or produced pursuant to this Agreement fail to comply with the requirements of this Section, Contractor shall indemnify the Town in accordance with the terms of this Agreement and, at the Town's option, shall re-vise, re-construct, or similar, the non-compliant deliverable, work, service, or equipment, or reimburse the Town for the cost associated with bringing the non-compliance deliverable, work, service or equipment into compliance.

21. **No Discrimination in Employment.** The Town is a governmental agency and, therefore, in connection with the performance of Work or Services under this Agreement, Contractor shall not refuse to hire, discharge, promote or demote, or to discriminate in matters of compensation against any person otherwise qualified, solely because of race, color, religion, national origin, gender, age, military status, sexual orientation, gender identity or gender expression, marital status, or physical or mental disability, or any other protected class under Federal or State law; and Contractor shall insert the foregoing provision in any subcontracts hereunder.

22. **Title VI Compliance.** To the extent applicable, Contractor shall ensure its current and future compliance with Title VI of the Civil Rights Act of 1964, 42 U.S.C. § 2000d et seq., as amended, which prohibits the exclusion from participation, denial of the benefits of, or subjection to

discrimination under programs and activities receiving federal financial assistance, of any person in the United States on the ground of race, color, or national origin.

23. **Advertising and Public Disclosure.** Contractor shall not include any reference to this Agreement or goods or services provided pursuant to this Agreement in any of Contractor's advertising or public relations materials without first obtaining the written approval of the Town. Nothing herein, however, shall preclude the transmittal of any information to officials of the Town, including without limitation, the Town Attorney, Town Manager, and the Town Council.

24. **Ownership of Documents, Open Records, and Copyright.** Any work product, materials, and documents produced by the Contractor pursuant to this Agreement shall become property of the Town upon delivery and shall not be made subject to any copyright or made confidential or protected in any manner unless authorized by the Town. Other materials, methodology and proprietary work used or provided by the Contractor to the Town not specifically created and delivered pursuant to the Services outlined in this Agreement may be protected by a copyright held by the Contractor and the Contractor reserves all rights granted to it by any copyright. However, Contractor acknowledges and understands that the Town is subject to the Colorado Open Records Act, C.R.S. § 24-72-201, et seq. The Town shall not reproduce, sell, or otherwise make copies of any copyrighted, confidential or protected material, subject to the following exceptions: (1) for exclusive use internally by Town staff and/or employees; or (2) pursuant to a request under the Colorado Open Records Act, C.R.S. § 24-72-201, et seq., to the extent that such statute applies; or (3) pursuant to law, regulation, or court order. The Contractor waives any right to prevent its name from being used in connection with the Services.

Contractor warrants that all Services or Work performed under this Agreement shall comply with all applicable patent, trademark and copyright laws, rules, regulations and codes of the United States. Contractor shall not knowingly utilize any protected patent, trademark or copyright in performance of the Work or Services unless Contractor has obtained proper permission and all licenses, releases and other necessary documents. Contractor releases, defends, indemnifies and holds harmless the Town, its officers, agents, and employees from any and all claims, damages, suits, costs, expenses, liabilities actions or proceedings of any kind or nature whatsoever, of or by anyone whomsoever, in any way resulting from, or arising out of, directly or indirectly, the performance of the Work or Services under this Agreement which infringes upon any patent, trademark or copyright protected by law, except where the Services are provided in conformance with the Town's express specifications.

25. **Authority.** The individuals executing this Agreement represent that they are expressly authorized to enter into this Agreement on behalf of the Town and the Contractor and bind their respective entities. This Agreement is executed and made effective as provided above.

26. **Independent Contractor.** Contractor and the Town hereby represent that Contractor is an independent contractor for all purposes hereunder. Contractor is not covered by any worker's compensation insurance or any other insurance maintained by Town except as would apply to members of the general public. Contractor shall not create any indebtedness on behalf of the Town.

27. **No Third-Party Beneficiaries.** It is expressly understood and agreed that enforcement of the terms and conditions of this Agreement, and all rights of action relating to such enforcement, shall be strictly reserved to Town and Contractor, and nothing contained in this Agreement shall give or allow any such claim or right of action by any other third party on such Agreement. It is the express intention of the parties that any person other than Town or Contractor receiving services or benefits under this Agreement shall be deemed to be an incidental beneficiary only.

28. **Counterparts & Electronic Signatures.** This Agreement may be executed in counterparts, each of which shall be deemed an original, and all of which together shall be deemed to constitute one and the same instrument. Each of the parties hereto shall be entitled to rely upon a counterpart of the instrument executed by the other party and sent by electronic mail. Each party agrees that this Agreement and any other documents to be delivered in connection herewith may be electronically signed, and that any electronic signatures appearing on this Agreement or such other documents are the same as handwritten signatures for the purposes of validity, enforceability, and admissibility.

29. **Licenses/Taxes.** Contractor affirms it is licensed to do business in the State of Colorado and is in good standing. Further, Contractor shall be solely responsible for paying all applicable taxes associated with or rising out of this Agreement.

30. **Confidentiality.** Contractor agrees that it shall treat as confidential all information provided by the Town regarding the Town's business and operations. All confidential information provided by the Town hereto shall be used by Contractor solely for the purposes of rendering services or work pursuant to this Agreement and, except as may be required in carrying out the terms of this Agreement, shall not be disclosed to any third party without the prior consent of the Town. The foregoing shall not be applicable to any information that is publicly available when provided or which thereafter becomes publicly available or which is required to be disclosed by any regulatory authority in the lawful and appropriate exercise of its jurisdiction over a party, any auditor of the parties hereto, by judicial or administrative process or otherwise by applicable law or regulation.

31. **Priority of Provisions.** In the event that any terms of this Agreement and any Exhibit, attachment, or other referenced document are inconsistent, the following order of priority shall control: (1) this Agreement; (2) Exhibit containing Certificate of Insurance; (3) Exhibit containing the Scope of Services and Fee Schedule; and (4) Exhibit containing the Town of Castle Rock Affidavit of Independent Contractor Status.

**ATTACHED EXHIBITS:**

EXHIBIT 1 – SCOPE OF SERVICES AND FEE SCHEDULE

EXHIBIT 2 – CONTRACTOR'S CERTIFICATE OF INSURANCE

*(Remainder of page intentionally left blank; signature page to follow)*



**ATTEST:**

**TOWN OF CASTLE ROCK**

\_\_\_\_\_  
Lisa Anderson, Town Clerk

\_\_\_\_\_  
Jason Gray, Mayor

\_\_\_\_\_  
David L. Corliss, Town Manager

**Approved as to form:**

**Approved as to content:**

\_\_\_\_\_  
Sarah Jean Rodger, Assistant Town Attorney

\_\_\_\_\_  
Mark Marlowe, Director of Castle Rock Water

**CONTRACTOR:**

LOGICAL SYSTEMS, LLC

By:     *Carmen Manes*    

Its:     Contract Administrator



**EXHIBIT 1**

SCOPE OF SERVICES AND FEE SCHEDULE



**LOGICAL SYSTEMS, LLC - Golden Branch**

400 CORPORATE CIR., SUITE R

GOLDEN, CO 80401

PHONE: (303) 215-9950

FAX: (303) 215-9952

[www.logicalsystinc.com](http://www.logicalsystinc.com)

Submitted to: Nicolas Van Kooten

Submitted by: Kristin Scott

Reviewed by: Joey Cate

Creation Date: July 24, 2024

Last Revision Date: August 6, 2024

**Nicolas Van Kooten**  
**Castle Rock Water**  
**171 Kellogg Court**  
**Castle Rock, CO 80109**  
**303.663.4455 voice**  
**303.874.4597 mobile**  
**NVanKooten@crgov.com**

**Bid Prepared by Logical Systems, LLC**  
**Proposal No. 28091F R1**  
**Castle Rock Water**  
**SCADA Master Plan Implementation Phase IV**



This document is confidential information of Logical Systems, LLC and is only for use by Castle Rock Water and Logical Systems, LLC. All information contained herein is to be strictly controlled and in no case can this information be shared outside of the parties listed here without prior written consent from both parties.



Submitted to: Nicolas Van Kooten

Creation Date: July 24, 2024

Submitted by: Kristin Scott

Last Revision Date: August 6, 2024

Reviewed by: Joey Cate

rev24v0.0

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## Overview

Castle Rock Water (CRW) has requested support to replace the hardware and wiring for the existing control system at the Miller Water Treatment Plant (Miller), and various well and remote sites. The purpose of this project is to bring the system into compliance with modern cybersecurity and equipment standards and improve operator efficiencies, as recommended by the Town’s 2019 SCADA Master Plan. LSI proposes to provide professional services for the design, procurement, installation, programming, startup, commissioning and testing of the hardware installation. This also includes fabricating and installing the new programmable logic controller (PLC) panels at Miller WTP and remote sites.

Logical Systems, LLC is pleased to present this Fixed Price proposal for the professional services required for the SCADA Master Plan Implementation Phase IV on the Castle Rock Water.

Proposal revision R1 per Castle Rock Water - Request for Clarification provided on July 31<sup>st</sup>, 2024. Changed or updated items indicated in yellow highlight.

Submitted to: Nicolas Van Kooten

Submitted by: Kristin Scott

Reviewed by: Joey Cate

Creation Date: July 24, 2024

Last Revision Date: August 6, 2024

## 1 Scope of Work

This scope of work is based on the following source documents provided to LSI which described the current state of Castle Rock Water's SCADA Master Plan Implementation efforts and outlined support needs to 23 facilities including:

RFP 2024-006- SCADA Master Plan Phase IV Project (including Appendices A through H), Addendum 1, Addendum 2, Addendum 3, Addendum 4, and Addendum 5.

**LSI Proposal – Request for Clarification received on July 31<sup>st</sup>, 2024.**

For this scope of work, LSI will be providing the detail design, procurement, and construction efforts for the Castle Rock Water. As part of this effort LSI will be providing the electrical and control systems design as well as the control system integration. LSI will provide technical and commercial oversight of the electrical and mechanical installation contractors. LSI will also provide a Project Manager for this effort to provide a single point of interface responsible to Castle Rock Water's Project Manager.

This document forms the entire basis for the scope of work and deliverables between the two parties. No other terms other than those contained herein are agreed to. A written purchase order is required for confirmation of the order and must reference this proposal number.

It is recognized by the parties that the aforementioned scope of services is based on the current evaluation and corresponding request by Castle Rock Water and it is possible that variations in the scope of services specified herein may be adjusted from time to time based on newly found needs and requirements at the facility. In such an event, Logical Systems, LLC will use its best efforts to keep Castle Rock Water informed of any such variations and, in any event, shall receive Castle Rock Water's advance approval prior to undertaking any variations that will increase the costs of services Logical Systems, LLC to Castle Rock Water.

## 2 Equipment and Fabrication

In support of the scope of this proposal LSI will be providing the following equipment/hardware:

LSI will design, fabricate, and internally wire twenty-four (24) control panels based on Issue for Construction drawings developed by LSI and submitted to the Owner for approval. As directed by Castle Rock Water, the panels are required to be Underwriters Laboratories (UL) 508A Listed. LSI will fabricate and list the panels prior to shipment, any design changes or modifications after approval of fabrication drawings will require additional efforts. Panels will be fabricated and listed utilizing one of LSI's four UL508 certified panel shops.

In addition to the control panels above, LSI will also be procuring and providing various instrumentation and actuators for the Miller WTP and remote sites per the provided Instrumentation and Actuator list provided in the Scope of Work.

Please reference "LSI Provided Equipment, Instrumentation, Actuators, Exhibit 6" in the Appendix List for specific instrumentation detail and Control Panel equipment.



Submitted to: Nicolas Van Kooten  
Submitted by: Kristin Scott  
Reviewed by: Joey Cate

Creation Date: July 24, 2024  
Last Revision Date: August 6, 2024

### 3 Project Management

#### 3.1 Project Management

LSI shall provide specific for its scope, a Project Manager for this effort to serve as the point of contact between Castle Rock Water personnel, contractors, vendors, and the LSI resources working on the project. This allows for timely updates of project milestones and will ensure a seamless documented transfer of information between all parties minimizing the potential for scope changes.

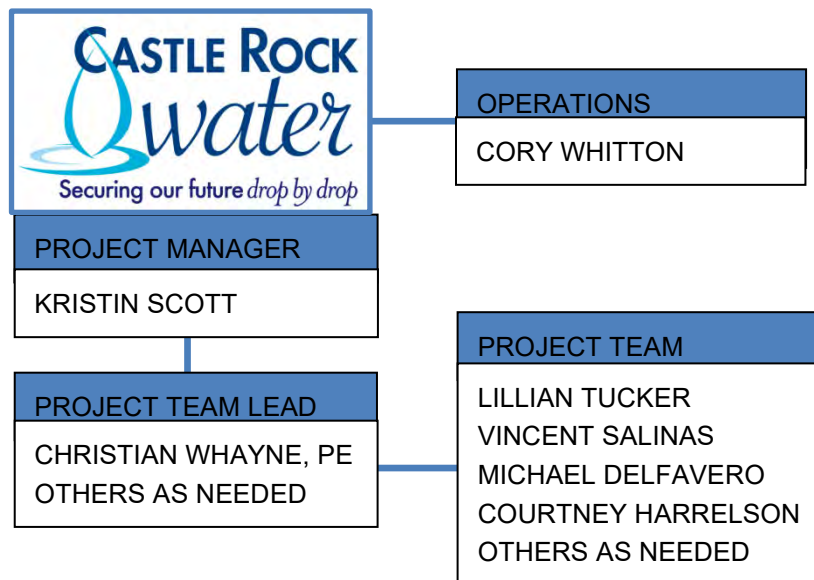
For this scope of work, LSI has included weekly on-site meetings for the duration of the project. These weekly meetings are estimated to be one (1) hour for a total of seventy-eight (78) On-site meetings.

#### 3.2 Project Team

The organizational chart below identifies the key members of a typical project team. LSI’s project team will be based in Golden, CO and will be led by Christian Whyne. Christian will be principal point of contact for the Water/Wastewater projects and will delegate tasks to the project team as appropriate. Resumes of the key project team leads and project manager are available upon request.

It is the goal of the project team leadership to coordinate with Castle Rock Water to provide a value engineering analysis of the Miller WTP and all remote sites prior to starting engineering efforts. The purpose of this analysis is to identify areas in which LSI can provide value to Castle Rock Water for each of the sites listed in the provided scope of work. Additionally, it is the intention of LSI to leverage increasing efficiencies throughout the project by using the completed sites as examples for future sites.

The key project staff are all available to begin work on this project October 1<sup>st</sup>, 2024, and LSI has sufficient resources available from our Colorado office to staff the project in support of the key principals.



Submitted to: Nicolas Van Kooten

Creation Date: July 24, 2024

Submitted by: Kristin Scott

Last Revision Date: August 6, 2024

Reviewed by: Joey Cate

## 4 Hardware Design Effort

For this scope of work, LSI has been provided with design basis PDFs for the twenty-four (24) control panels that will be constructed for the Miller WTP and remote sites. As a part of the hardware design effort for this project, LSI will use the design basis drawings to create drawings for the twenty-four (24) control panels that can meet the requirements for being UL 508 Listed.

LSI will be providing one (1) new motor control panel for the Well W7 site. This panel will include power distribution for the existing soft starter that is to be relocated into this panel in the field. This panel will not be UL 508 Listed due to field installed components.

In addition, LSI will be providing twelve (12) motor starter control panels for the Castlewood 1 Lift Station, Castlewood 2 Lift Station, Maher Lift Station, Sellars Lift Station, and Meadows Grinder remote sites to segregate the existing 480V motor control from the existing PLC Panels. These panels have been sized based on the existing motors and will each be mounted individually. These panels will be designed to meet the requirements of being UL 508 Listed.

LSI will provide a pre-construction submittal including manufacturer's catalog information for the material to be provided as well as layout and schematic drawings for the twenty-four (24) control panels. These submittals will be provided electronically in PDF format. AutoCAD DWG drawings will be provided to the Owner upon request. Hard copies are not included.

In addition, LSI will be conducting individual site detail design. Included in this detail design is the effort for system walk-down and research and creating detailed contractor scope of work documents for both mechanical and electrical installations and demolitions. This detailed design will also include conduit routing, wire way installation details, power distribution drawings, and cable schedules depending on the site.

## 5 Control System Integration Effort

### 5.1 Control System Integration Effort

LSI will provide the control system integration effort required for one (1) ControlLogix (and ControlLogix Remote Rack) and twenty-two (22) CompactLogix processors per the scope of work document. This effort will also include modifications to the existing ControlLogix data concentrator processor logic required to integrate the remote sites with Castle Rock's existing FactoryTalk View SE application. LSI will use its existing understanding of data flow between the remote sites and water treatment plants to ensure data integrity is maintained with other existing systems.

For this proposal, LSI has assumed that the control systems integration effort for the remote sites will be able to be leveraged after one (1) Well, Pump Station, PRV, and Lift Station PLC program and Data Concentrator programs are each complete.

It is estimated that this project will require updating up to twenty (20) existing SCADA screens for the Miller WTP, one (1) existing FactoryTalk ViewSE SCADA screen for each remote site, with the exception of BM1A\_D and BM2 which will require new one (1) new SCADA Screens, and modification to two (2) system overview and summary screens. In addition, LSI will be providing simple operator terminal screens for each site. These OIT graphics will mirror the SCADA functionality of these sites. additional local functionality not included in the SCADA screens is not included in this proposal.

Submitted to: Nicolas Van Kooten

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Last Revision Date: August 6, 2024

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For this effort, LSI has included six (6) FAT sessions at either Castle Rock Water or LSI's office in Golden, Colorado for program review and of graphics for the Miller WTP, one (1) standard Well Site, one (1) standard Lift Station Site, one (1) standard PRV Site, the Meadows Grinder Site, and one (1) standard Flume Site. It is assumed for this effort that each FAT session will be one (1) 8-Hour day.

In addition, LSI will also be developing functional description/control narrative documents for each individual site detailing control schema, AOI configuration, and functional specifications for the site and associated equipment.

## 6 Documentation

Upon installation and commissioning of a site, LSI will provide an operations and maintenance (O&M) manual for the equipment reflecting as-built parameters and configuration of the system as left after completion. Documentation will be provided electronically in PDF format. Hard copies are not included.

For this proposal, LSI has included twenty-eight (28) hours for the Miller WTP and fourteen (14) hours per remote site to as-built all control panel drawings, and provide final O&M manuals for the respective sites. O&M manuals will consist of vendor manuals for provided equipment and instrumentation and an as-built functional description/control narrative document.

Per revision R1 of this proposal, LSI has also included additional documentation effort for the As-built drawing, and O&M manuals for the additional motor control starter panels for Castlewood 1, Castlewood 2, Maher, and Sellar Lift Stations, and the Meadows Grinder site.

## 7 Training

Per the specifications Binder, Contractor is requested to provide the training per SECTION 24.24.19, 26.29.13, 26.29.23.40.90.00, 40.92.05B, and 40.96.00. Based on these sections requirements 35 days total of training would be required.

Although the requested training requirement per the specifications binder listed above is thirty-five (35) days of training, for the purpose of this proposal, LSI proposes to include a total of seventeen (17) days of training to for the affected sites. This reduction in training is to leverage and maximize efficiencies of similar sites.

## 8 Installation

LSI will subcontract a licensed electrical contractor the electrical scope of work and a licensed mechanical contractor for the mechanical scope of work. LSI has successfully collaborated directly with local firms including Grasmick Electric, Sun Valley Electric, and Rice Lake West in the past.

LSI received bids from all the contractors listed above. LSI conducted interviews with each company to evaluate the provided proposals.

For the purposes of this proposal, LSI has included the subcontracted electrical and mechanical installation effort from Sun Valley Electric. From the interviews, LSI believes that Sun Valley Electric exhibited the best understanding of the approach to complete this scope of work. If requested, LSI will work with Castle Rock Water to select another contractor for this scope of work, however it should be noted that this may cause a change to the overall project cost.

Submitted to: Nicolas Van Kooten

Creation Date: July 24, 2024

Submitted by: Kristin Scott

Last Revision Date: August 6, 2024

Reviewed by: Joey Cate

## 9 On-Site Support

LSI will provide on-site installation support for the startup and commissioning of new equipment and integration of the new control panels with the Castle Rock Water's SCADA system.

Unforeseen on-site delays with existing site conditions, network connections, production rescheduling, plant services, and personnel are not taken into account of which any of these could contribute to extending support over the estimated period. In addition, the estimated period does not account for personnel staying over a weekend or returning on-site for production standby.

### 9.1 Construction Management

LSI is to provide the overall Construction Management effort for both the Mechanical and Electrical effort required for the upgrades at the Miller WTP and the Remote sites. For this purpose of this proposal, LSI has assumed this effort will be Twenty-Four (24) 40-hour weeks split between the installation season of 2024/2025 and the installation season of 2025/2026.

Per revision R1 of this proposal, LSI has also included additional construction management, commissioning, and start-up effort for the the additional motor control starter panels for Castlewood 1, Castlewood 2, Maher, and Sellar Lift Stations, and the Meadows Grinder site.

### 9.2 Post Commissioning Support

LSI has included one (1) 40-hour week of on-site post commissioning support for this project.

Submitted to: Nicolas Van Kooten

Creation Date: July 24, 2024

Submitted by: Kristin Scott

Last Revision Date: August 6, 2024

Reviewed by: Joey Cate

## 10 Client Responsibilities

### 10.1 Source Documentation

Castle Rock Water is to provide relevant project drawings, documentation, and configuration files from the existing process(es) to LSI.

All control panel drawings used as a basis for this scope of work are to be provided in their native CAD format to LSI for modifications to UL List.

### 10.2 Existing Equipment Condition

Any equipment required for this scope of work that is existing or provided by others is assumed to be fully functional and operational to support the scope of work. Any equipment found to be in unsatisfactory condition will be repaired or replaced as a change order, separate scope, or by others, as agreed upon by LSI and Castle Rock Water. Should the equipment condition impact LSI's ability to perform the scope, a change order or schedule adjustment may be required by LSI to proceed.

### 10.3 On-Site Infrastructure for LSI Use

Castle Rock Water will, at a minimum, provide the following (as needed) for the LSI execution team and this scope:

1. Badged Site Access and Parking
2. Internet Access to LSI VPN and bandwidth for audio/video conferencing
3. Printing/Plotting
4. Working and Meeting Space

### 10.4 Network Configuration

Town of Castle Rock is to provide configuration parameters of network switches and XetaWave radio settings.

## 11 Schedule

Please reference "Castle Rock Water Project Schedule, Exhibit 7" provided in the Appendix List for the proposed schedule. Per RFP Addendum 3, work is expected to begin October 1, 2024, and continue through February 28<sup>th</sup>, 2026.

Submitted to: Nicolas Van Kooten  
 Submitted by: Kristin Scott  
 Reviewed by: Joey Cate

Creation Date: July 24, 2024  
 Last Revision Date: August 6, 2024

## 12 Pricing

Pricing is Fixed Price. Please reference “Contractor Fee Schedule Form, Exhibit 3” provided in the Appendix List for pricing details.

**NOTES:**

- Proposed Payment Milestones:  
 For these proposal milestones, LSI has identified the eight (8) sites that are to be upgraded during the 2024/2025 installation period as “Phase 1”. The remaining sites to be upgraded during the 2025/2026 installation period will be identified as “Phase 2”.

Proposed Milestone Description	Percentage
Order Acceptance	20%
Phase 1 Drawings Issued for Review	10%
Phase 1 Programming Completion	5%
Phase 1 Receipt of Hardware	5%
Phase 1 Site Mobilization	5%
Phase 1 Installation Completion	10%
Phase 1 Commissioning Complete	5%
Phase 2 Drawings Issued for Review	10%
Phase 2 Programming Completion	5%
Phase 2 Receipt of Hardware	5%
Phase 2 Site Mobilization	5%
Phase 2 Installation Completion	10%
Phase 2 Commissioning Complete	5%
<b>Total</b>	<b>100%</b>

**Remit Payments to:**  
 Logical Systems, LLC  
 P.O. Box 341321  
 Memphis, TN 38184-1321



## **Exhibit 5\_R1**

### **Appendix - Assumptions, Exclusions, and Clarifications**

The following items are LSI's assumptions and/or exclusions for the scope of work defined in LSI's proposal "28091F\_CRW SCADA Master Plan P4\_R1.pdf" dated August 6, 2024.

#### **General Assumptions, Exclusions, and Clarifications:**

1. This scope, proposal, and estimate is based on the source documentation as provided to LSI. If changes are made to or missing items or errors are found in the source documents, it may require LSI to request a change in contract amount and/or schedule.
2. All onsite work will be confirmed by Castle Rock Water a minimum of one (1) week in advance. If Castle Rock Water reschedules an installation window during that confirmed window, additional costs may be applicable.
3. Customer will provide access to all areas where necessary during normal business hours (7:00 AM – 5:00 PM) unless other arrangements are made. If Access is not available when previously agreed upon, additional costs may be applicable.
4. Labor in quote does not include evening, weekend, or holiday work. Any work requested, by the Customer, to be performed after 5:00 PM weekdays or on Saturdays will be charged at 1.5 times the normal rate. Any such work performed on Sundays and holidays will be charged at 2 times the normal rate.
5. All work will be performed in strict accordance with all applicable building codes. The Customer will inform LSI and their Contractors of any unusual code or building circumstances of which they are aware.
6. New field I/O wiring will be pulled as part of this scope. Conduit will be reused where possible. Conduit allowance of \$50,000 per the provided contractor fee schedule has been included where conduit may not be re-used.

- 7/31/24 CRW Request for Clarification:

- a) [CRW] Please clarify that the allowance dollars are only to be used when replacing existing conduit that is deemed to be unusable.

[LSI] Confirmed. Allowance dollars are only to be used when contractor is onsite and existing conduit is deemed unusable.

- b) [CRW] There are other parts of the scope document that dictates needing to provide additional conduit/wireway (example: Scope of Work #3, requires only bottom entry conduit on all control panels, this would require additional conduit for instances where the conduits for existing panels enter from top of the cabinet). Confirm that this is included in the scope of work. If the new conduit is not included in the scope of work, please provide revised pricing to include new conduit.

[LSI] Confirmed. New conduit is included when scope of work document requires rework around new control panels.

- 7. The control panels provided will be UL508 listed. Motor Control Panels with field-mounted equipment will be provided without UL Listing.
- 8. All Allen-Bradley equipment listed on the control panel BOMs in RFP Appendix D will be provided by the client. Electronic copies of CAD files requiring modifications will be supplied by the client in their native format. PDF file will not suffice for this work.

- 7/31/24 CRW Request for Clarification:

- a) [CRW] Section 4.2 of the RFP defines all the equipment provided by the Owner. The BOMs in Appendix D might have additional Allen Bradley components that are not provided by CRW. Please confirm these are included in the LSI scope.

[LSI] LSI has excluded the following Allen Bradley components:

ALL CompactLogix and ControlLogix PLC components, 2711P HMI, Stratix Ethernet Switches

- 9. All Allen Bradley hardware for entire project scope is available for shipment to LSI upon award of contract.
- 10. Any required software licenses will be supplied by the client.
- 11. Castle Rock Water will be providing any data trending or historian configuration effort.
- 12. No arc flash studies of new or existing MCCs or Motor Control Panels are included in this proposal



13. Assume all soft starters and motor starters will be reused unless otherwise specifically noted

- 7/31/24 CRW Request for Clarification:

a) [CRW] CRW requires new UL listed Motor Control Panel for each motor individually which includes new soft starters/motor starters, and all associated control hardware for following lift stations. This shall also include design, documentation, approval process, testing, startup and commissioning for these panels. Assume all panels are rated for 65KAIC.

i. Castlewood 1 Lift Station,

ii. Castlewood 2 Lift Station,

iii. Maher Lift Station,

iv. Sellars Lift Station.

v. Meadows Grinder

[LSI] Proposal updated to include new UL listed Motor Control Panels for each site listed above.

14. Control panel hardware has been estimated using the drawings provided for each site as a design basis.

15. It is assumed that all pipe taps (saddle or hot taps) for process instrumentation are existing. No new taps have been provided per this proposal.

16. For the first eight sites performed in the 2024/2025 winter, LSI has included shipping for each panel individually. After these first eight sites are completed, LSI has included three (3) shipments for the remaining panels.

17. LSI has assumed only new provided VFDs, Flow Transmitters, and Chlorine analytical transmitters will be wired for RJ45 ethernet communication for non-critical process signals.

18. Per the Scope of Work document provided in the RFQ, LSI assumes that Castle Rock Water shall be responsible for any and all surveying needs.

19. Per the Scope of Work and Addendum documents provided in the RFQ, LSI assumes that Castle Rock Water shall be responsible for any and all bypassing needs.

20. Castle Rock Water will assist with providing confined space permits for work in any confined space as a part of this scope of work.

21. It is assumed that any alarm dialer replacement will utilize the same alarm point configuration as the existing Racco alarm dialers. Communication to the PLC will be upgraded to ethernet per the new communication specification.

22. The overall installation effort included in this scope of work has been estimated by the mechanical and electrical contractor based on the RFP provided to LSI and subsequently the mechanical and electrical contractor. LSI will coordinate closely with the chosen contractor to adhere to scope and inform Castle Rock Water of any deviations in a timely manner.
23. Per the provided design basis documentation, area classification hardware such as isolation barriers or explosion proof instrumentation has not been included in this proposal. Upon award of project, LSI will coordinate with owner to ensure any provided equipment and instrumentation meets NFPA and NEC requirements. If additional hardware is required to meet area classification requirements, a change request will be submitted.
- 7/31/24 CRW Request for Clarification:
    - a) [CRW] For purposes of bidding, please assume all instrumentation with the wastewater service (lift stations, grinder, flume) shall require Class I Div 1 rating and corresponding hardware.  
  
**[LSI] Proposal updated to include Class I Div 1 rating material at the following (9) sites: Castlewood 1 LS, Castlewood 2 LS, Maher LS, Mitchell Creek LS, Sellars LS, Meadows Grinder, Main Flume, Meadows Flume, North Flume**
24. All equipment provided by Castle Rock Water will be warranted by Castle Rock Water. LSI assumes no liability for the warranty of this equipment.
25. Line No. 24 of "Appendix - Contractor Fee Schedule Form, Exhibit 3" General condition references Div 00 which was not included in the RFP. However, LSI has included the costs from Div 01 "General Requirements" in each site. As such no cost has been provided for line 24 general conditions in this proposal.
26. Line No. 26 of "Appendix - Contractor Fee Schedule Form, Exhibit 3" shall adhere to LSI's Standard warranty per Town of Castle Rock Services Agreement. As such this warranty is included.
27. Line No. 27 of "Appendix - Contractor Fee Schedule Form, Exhibit 3" extended 2-year warranty has not been included in this scope of work due to schedule restrictions. An extended 2-year warranty is available for this project and can be negotiated with Castle Rock Water upon award.
- 7/31/24 CRW Request for Clarification:
    - a) [CRW] Please provide a price for an extended 2-year warranty requested in Line No. 27 of "Appendix – Contractor Fee Schedule Form, Exhibit 3".  
  
**[LSI] Proposal updated to include price for an extended 2-year warranty. This warranty will begin on a per-site basis upon installation.**
28. The global supply chain is currently experiencing extended or unreliable lead times for material procurement. LSI will endeavor to hold schedule, but LSI is not responsible for supplier part or equipment delivery issues outside of our control.

29. 7/31/24 CRW Request for Clarification:

- [CRW] Also provide, per linear foot cost for wiring, conduit, fittings (labor and material) to be used for any additional wiring required at each site based on field conditions.

[Sun Valley] Per foot pricing for conduit/wire/fitting installation is dependent on several factors, including size, type, number and size of conductors, above-ground or underground, etc. It would be difficult to provide a price-per-foot without specifics. Our average price per foot would be \$12.25 for 2#14 w/ ground in ¾" PVC. Materials- \$4.15, Labor- \$8.10

**Site Specific General Assumptions, Exclusions, and Clarifications:**

**Miller Water Treatment Plant**

1. Valve actuators per the instrument & actuator list provided in the RFQ will be replaced. Existing valves will stay in place.
2. LSI has included five (5) days of support for valve actuator tuning from the actuator supplier.
3. LSI assumes duct bank and or conduit from treatment building to well location for intrusion switches cannot be re-used and has included cost in additional scope for excavating and installation of underground raceways for wellhead intrusion switches, and patching asphalt as required.
4. LSI has included one (1) MCC per the load list provided in Addendum 5 of the RFQ. This proposal is budgetary and must be finalized prior to purchase. See "Exhibit 8\_Rexel CRW Quote Document" for additional details.
5. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 87 analog signals and 264 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 100 ft in length.

**BM1A\_D Well**

1. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 10 analog signals and 18 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.

- 7/31/24 CRW Request for Clarification:

- a) [CRW] BM1D Well – 100 feet

[LSI] Pricing updated from 25 ft to 100 ft.

### BM2 Well

1. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 5 analog signals and 11 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.

### RT6ABC

1. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 4 analog signals and 40 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.
  - 7/31/24 CRW Request for Clarification:
    - a) [CRW] RT6ABC – 200 feet

[LSI] Pricing updated from 25 ft to 200 ft.

### RT14

30. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 2 analog signals and 12 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.
  - 7/31/24 CRW Request for Clarification:
    - a) [CRW] RT14 – 200 feet

[LSI] Pricing updated from 25 ft to 200 ft.

### W7 Well

1. Well W7 pump soft starter and associated 480V control hardware that are existing may be re-used and relocated into new provided motor starter control panel.
2. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 4 analog signals and 10 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.

### Citadel Pump Station

1. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 6 analog signals and 27 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.

### Hillside Pump Station

1. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 9 analog signals and 16 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.

**Plum Creek Pump Station**

1. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 17 analog signals and 38 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.
  - 7/31/24 CRW Request for Clarification:
    - a) [CRW] Plum Creek PS – 50 feet

[LSI] Pricing updated from 25 ft to 50 ft.

**Black Feather PRV**

1. For the new limit switch requested to be installed on the PRV for this site, LSI has included the installation effort and material required, however LSI has not included the instrument due to it not being included on the Instrument and Actuator list and associated 40.91.00 specifications provided in the RFP. LSI will coordinate with Owner to provide this instrument upon award.
2. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 6 analog signals and 27 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.

**Briscoe PRV**

1. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 3 analog signals and 0 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.

**Scott PRV**

1. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 4 analog signals and 27 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.

**Valley PRV**

1. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 4 analog signals and 20 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.
  - 7/31/24 CRW Request for Clarification:
    - a) [CRW] Valley PRV – 50 feet

[LSI] Pricing updated from 25 ft to 50 ft.

### Castlewood 1 Lift Station

1. Castlewood 1 Lift Station pump soft starters and associated 480V control hardware that are existing will not be reused. LSI will provide new separate motor starter control panels for the existing motors. Four (4) 15HP starter panels will be provided for Castlewood 1 Lift Station.
2. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 3 analog signals and 36 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 50 ft in length.

### Castlewood 2 Lift Station

1. Castlewood 1 Lift Station pump soft starters and associated 480V control hardware that are existing will not be reused. LSI will provide new separate motor starter control panels for the existing motors. Although the scope of work for Castlewood 2 calls out two (2) 15HP starters, the existing drawings for the site denote two (2) 25HP motors. As such, LSI has assumed Two (2) 25HP starter panels will be provided for Castlewood 2 Lift Station.
2. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 3 analog signals and 40 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 50 ft in length.

### Maher Lift Station

1. Maher Lift Station pump soft starters and associated 480V control hardware that are existing will not be reused. LSI will provide new separate motor starter control panels for the existing motors. Two (2) 64HP starter panels will be provided for Maher Lift Station.
2. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 3 analog signals and 26 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 50 ft in length.
  - 7/31/24 CRW Request for Clarification:
    - a) [CRW] Maher LS – 40 feet  
[LSI] Pricing updated from 50 ft to 40 ft.

### Mitchell Creek Lift Station

1. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 12 analog signals and 45 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 100 ft in length.
  - 7/31/24 CRW Request for Clarification:
    - a) [CRW] Please confirm the following instrumentation from the “Instrument and Valve List” found on Addendum Four is included in the Proposal. If not, please revise the pricing to include:  
Mitchell Creek: Two level transmitters, 1 additional float  
[LSI] Confirmed. Two level transmitters and 1 additional float are included in proposal.



**Sellars Lift Station**

1. Sellars Lift Station pump soft starters and associated 480V control hardware that are existing will not be reused. LSI will provide new separate motor starter control panels for the existing motors. Three (3) 30HP starter panels will be provided for Sellars Lift Station.
2. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 4 analog signals and 54 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.
  - 7/31/24 CRW Request for Clarification:
    - a) [CRW] Sellars LS – 40 feet  
[LSI] Pricing updated from 25 ft to 40 ft.
    - b) [CRW] Please confirm the following instrumentation from the “Instrument and Valve List” found on Addendum Four is included in the Proposal. If not, please revise the pricing to include:  
Sellars Lift Station: Additional level float, temperature switches, and the flow meter wiring. Remove intrusion switch.  
[LSI] Confirmed. Additional level float, temperature switches, and the flow meter wiring are included in proposal. Intrusion switch removed.

**Meadows Grinder**

1. Meadows Grinder reversing starters and associated 480V control hardware that are existing will not be reused. LSI will provide new separate motor starter control panels for the existing motors. one (1) 5HP reversing starter panels will be provided for Meadows Grinder remote site.
2. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 0 analog signals and 10 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.

**Main Flume**

1. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 2 analog signals and 3 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.

**Meadows Flume**

1. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 4 analog signals and 3 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.

**North Flume**

1. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 2 analog signals and 2 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.



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Appendix to LSI Proposal

28091F\_CRW SCADA Master Plan P4\_R1.pdf

Creation Date: July 24, 2024

Last Revision Date: August 6, 2024

### **Red Hawk Pond**

1. LSI has considered all I/O that is external to the PLC panel to be new field wiring. From the design basis documents allocating for 20% spare, 2 analog signals and 3 discrete signals have been identified for this site. LSI assumes each new signal will require wiring of up to 25 ft in length.



**Exhibit 6\_R1**

**Appendix - LSI Provided Equipment, Instrumentation, Actuators**

The following items will be provided by LSI for the scope of work defined in LSI's proposal "28091F\_CRW SCADA Master Plan P4\_R1.pdf" dated August 6, 2024.

**Instrumentation:**

In support of the scope of this proposal LSI will be providing the following instrumentation:

<b>Miller Water Treatment Plant Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
6 ea.	12" Backwaste - Filter 1 - 6, Valve Actuator, Rotork <ul style="list-style-type: none"> <li>IQT2000 Open/Close - Discrete</li> <li>Adaption kit for mounting to existing valve</li> <li>18-20 week lead time</li> </ul>
25 ea.	4" Air Scour - Filter 1 - 6, Valve Actuator, Rotork 4" Filter Waste Filter 1 - 6, Valve Actuator, Rotork 6" Raw Water Filters 1 - 6, Valve Actuator, Rotork 6" Pipe Gallery Valve, Valve Actuator, Rotork 8" Backwash Supply Filter 1 - 6, Valve Actuator, Rotork <ul style="list-style-type: none"> <li>IQT500 Open/Close - Discrete</li> <li>Adaption kit for mounting to existing valve</li> <li>18-20 week lead time</li> </ul>
6 ea.	6" Filter Effluent - Filter 1 - 6, Valve Actuator, Rotork <ul style="list-style-type: none"> <li>IQT500 Modulating - FOLO</li> <li>Adaption kit for mounting to existing valve</li> <li>18-20 week lead time</li> </ul>
2 ea.	Backwash Differential Pressure Transmitter, Endress+Hauser Deltabar PMD75 <ul style="list-style-type: none"> <li>4-20mA, HART</li> <li>Diaphragm Seal, factory installed</li> </ul>
3 ea.	Pressure Indicating Transmitter, Endress+Hauser Cerabar PMP71 <ul style="list-style-type: none"> <li>0-150 PSI range</li> <li>Diaphragm Seal, factory installed</li> <li>Tags: PIT311, PIT312, Treatment Building</li> </ul>
2 ea.	Electronic Flow Meter, Endress+Hauser Promag W 500 <ul style="list-style-type: none"> <li>3" Pipe Size</li> <li>Stainless Ground Discs</li> <li>Ethernet/IP, 4-20mA</li> <li>Remote Transmitter, 60' cable</li> </ul>
1 ea.	pH Analyzer and Transmitter, Hach <ul style="list-style-type: none"> <li>SC4500 Controller with Ethernet IP</li> <li>Digital pH Sensor</li> </ul>
1 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>871P VersaCube 2-wire AC/DC Rectangular Sensor</li> </ul>
1 ea.	Water On Floor Level Switch, GEMS <ul style="list-style-type: none"> <li>LS-270 Series, Single-Point Level Switch</li> </ul>

<b>ADDITIONAL SCOPE</b>	
3 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>871P VersaCube 2-wire AC/DC Rectangular Sensor</li> </ul>
<b>MISC EQUIPMENT</b>	
1 ea.	PD Pump #2, UGSI Chem Feed <ul style="list-style-type: none"> <li>Encore 700 Pump</li> <li>5-7 week lead time</li> </ul>
1 ea.	MCC, Rockwell <ul style="list-style-type: none"> <li>46-48 week lead time</li> </ul>
1 ea.	MTS, ABB <ul style="list-style-type: none"> <li>14-16 week lead time</li> </ul>
1 ea.	Trystar Generator Docking Station, ABB <ul style="list-style-type: none"> <li>14-16 week lead time</li> </ul>

<b>Bell Mountain Well 1A &amp; 1D Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Electronic Flow Meter Cable, Endress+Hauser <ul style="list-style-type: none"> <li>60" factory cable</li> </ul>
1 ea.	Pressure Transmitter, Endress+Hauser Cerabar PMP71 <ul style="list-style-type: none"> <li>Diaphragm Seal, factory installed</li> </ul> Pressure Switch, Ashcroft Pressure Gauge, Ashcroft Pressure Tree 10-12 week lead time
2 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>871P VersaCube 2-wire AC/DC Rectangular Sensor</li> </ul>
1 ea.	Water On Floor Level Switch, GEMS <ul style="list-style-type: none"> <li>LS-270 Series, Single-Point Level Switch</li> </ul>

<b>Bell Mountain Well 2 Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
2 ea.	Electronic Flow Meter Cable, Endress+Hauser <ul style="list-style-type: none"> <li>60" factory cable</li> </ul>
2 ea.	Pressure Transmitter, Endress+Hauser Cerabar PMP71 <ul style="list-style-type: none"> <li>Diaphragm Seal, factory installed</li> </ul> Pressure Switch, Ashcroft Pressure Gauge, Ashcroft Pressure Tree 10-12 week lead time
3 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>871P VersaCube 2-wire AC/DC Rectangular Sensor</li> </ul>
1 ea.	Water On Floor Level Switch, GEMS <ul style="list-style-type: none"> <li>LS-270 Series, Single-Point Level Switch</li> </ul>

<b>RT6ABC Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
2 ea.	Submersible Level Transducer, Endress+Hauser Waterpilot FMX21 <ul style="list-style-type: none"> <li>4-20mA, HART</li> </ul>
7 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>871P VersaCube 2-wire AC/DC Rectangular Sensor</li> </ul>
3 ea.	Water On Floor Level Switch, GEMS <ul style="list-style-type: none"> <li>LS-270 Series, Single-Point Level Switch</li> </ul>

<b>RT14 Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Submersible Level Transducer, Endress+Hauser Waterpilot FMX21 <ul style="list-style-type: none"> <li>4-20mA, HART</li> </ul>
2 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>871P VersaCube 2-wire AC/DC Rectangular Sensor</li> </ul>

<b>W7 Well Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Pressure Transmitter, Endress+Hauser Cerabar PMP71 <ul style="list-style-type: none"> <li>Diaphragm Seal, factory installed</li> </ul> Pressure Switch, Ashcroft Pressure Gauge, Ashcroft Pressure Tree 10-12 week lead time
1 ea.	Electronic Flow Meter, Endress+Hauser Promag W 500 <ul style="list-style-type: none"> <li>4" Pipe Size</li> <li>Stainless Ground Discs</li> <li>Ethernet/IP, 4-20mA</li> <li>Remote Transmitter, 60' cable</li> </ul>
1 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>871P VersaCube 2-wire AC/DC Rectangular Sensor</li> <li>Meter Vault Hatch</li> </ul>

<b>ADDITIONAL SCOPE</b>	
1 ea.	Level Transducer, Keller <ul style="list-style-type: none"> <li>Acculevel High Accuracy Submersible Level Transmitter</li> <li>Factory Cable</li> </ul>

<b>MISC EQUIPMENT</b>	
1 ea.	480V/120V Transformer <ul style="list-style-type: none"> <li>Aluminum windings and drip hood</li> </ul>

<b>Citadel Pump Station Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
2 ea.	Pressure Transmitter, Endress+Hauser Cerabar PMP71 <ul style="list-style-type: none"> <li>• Diaphragm Seal, factory installed</li> </ul> Pressure Switch, Ashcroft Pressure Gauge, Ashcroft Pressure Tree 10-12 week lead time
1 ea.	Electronic Flow Meter, Endress+Hauser Promag W 500 <ul style="list-style-type: none"> <li>• 8" Pipe Size</li> <li>• Stainless Ground Discs</li> <li>• Ethernet/IP, 4-20mA</li> <li>• Remote Transmitter, 60' cable</li> </ul>

<b>Hillside Pump Station Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
2 ea.	Pressure Transmitter, Endress+Hauser Cerabar PMP71 <ul style="list-style-type: none"> <li>• Diaphragm Seal, factory installed</li> </ul> Pressure Switch, Ashcroft Pressure Gauge, Ashcroft Pressure Tree 10-12 week lead time
1 ea.	Electronic Flow Meter Cable, Endress+Hauser <ul style="list-style-type: none"> <li>• 60" factory cable</li> </ul>
1 ea.	Electronic Flow Meter, Endress+Hauser Promag W 500 <ul style="list-style-type: none"> <li>• 4" Pipe Size</li> <li>• Stainless Ground Discs</li> <li>• Ethernet/IP, 4-20mA</li> <li>• Remote Transmitter, 60' cable</li> </ul>

<b>Plum Creek Pump Station Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
2 ea.	Pressure Transmitter, Endress+Hauser Cerabar PMP71 <ul style="list-style-type: none"> <li>• Diaphragm Seal, factory installed</li> </ul> Pressure Switch, Ashcroft Pressure Gauge, Ashcroft Pressure Tree 10-12 week lead time
4 ea.	Electronic Flow Meter, Endress+Hauser Promag W 500 <ul style="list-style-type: none"> <li>• 6" Pipe Size</li> <li>• Stainless Ground Discs</li> <li>• Ethernet/IP, 4-20mA</li> <li>• Remote Transmitter, 60' cable</li> </ul>
1 ea.	Submersible Level Transducer, Endress+Hauser Waterpilot FMX21 <ul style="list-style-type: none"> <li>• 4-20mA, HART</li> </ul>
1 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>• 871P VersaCube 2-wire AC/DC Rectangular Sensor</li> </ul>

<b>Black Feather PRV Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Pressure Transmitter, Endress+Hauser Cerabar PMP71 <ul style="list-style-type: none"> <li>• Diaphragm Seal, factory installed</li> </ul> Pressure Switch, Ashcroft Pressure Gauge, Ashcroft Pressure Tree 10-12 week lead time
2 ea.	Electronic Flow Meter, Endress+Hauser Promag W 500 <ul style="list-style-type: none"> <li>• 8" Pipe Size</li> <li>• Stainless Ground Discs</li> <li>• Ethernet/IP, 4-20mA</li> <li>• Remote Transmitter, 60' cable</li> </ul>
1 ea.	Electronic Flow Meter, Endress+Hauser Promag W 500 <ul style="list-style-type: none"> <li>• 4" Pipe Size</li> <li>• Stainless Ground Discs</li> <li>• Ethernet/IP, 4-20mA</li> <li>• Remote Transmitter, 60' cable</li> </ul>
2 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>• 871P VersaCube 2-wire AC/DC Rectangular Sensor</li> </ul>
1 ea.	Water On Floor Level Switch, GEMS <ul style="list-style-type: none"> <li>• LS-270 Series, Single-Point Level Switch</li> </ul>
<b>MISC EQUIPMENT</b>	
1 ea.	Power Panel <ul style="list-style-type: none"> <li>• QTY 1 - 60A Main Circuit Breaker</li> <li>• QTY 4 – 15A Circuit Breaker</li> <li>• QTY 4 – 20A Circuit Breaker</li> </ul>

<b>Briscoe PRV Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Pressure Transmitter, Endress+Hauser Cerabar PMP71 <ul style="list-style-type: none"> <li>• Diaphragm Seal, factory installed</li> </ul> Pressure Switch, Ashcroft Pressure Gauge, Ashcroft Pressure Tree 10-12 week lead time
3 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>• 871P VersaCube 2-wire AC/DC Rectangular Sensor</li> </ul>
1 ea.	Water On Floor Level Switch, GEMS <ul style="list-style-type: none"> <li>• LS-270 Series, Single-Point Level Switch</li> </ul>
<b>MISC EQUIPMENT</b>	
1 ea.	Power Panel <ul style="list-style-type: none"> <li>• QTY 1 - 60A Main Circuit Breaker</li> <li>• QTY 4 – 15A Circuit Breaker</li> <li>• QTY 4 – 20A Circuit Breaker</li> </ul>

<b>Scott PRV Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Pressure Transmitter, Endress+Hauser Cerabar PMP71 <ul style="list-style-type: none"> <li>• Diaphragm Seal, factory installed</li> </ul> Pressure Switch, Ashcroft Pressure Gauge, Ashcroft Pressure Tree 10-12 week lead time
1 ea.	Electronic Flow Meter, Endress+Hauser Promag W 500 <ul style="list-style-type: none"> <li>• 12" Pipe Size</li> <li>• Stainless Ground Discs</li> <li>• Ethernet/IP, 4-20mA</li> <li>• Remote Transmitter, 60' cable</li> </ul>
2 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>• 871P VersaCube 2-wire AC/DC Rectangular Sensor</li> </ul>
2 ea.	Water On Floor Level Switch, GEMS <ul style="list-style-type: none"> <li>• LS-270 Series, Single-Point Level Switch</li> </ul>
<b>MISC EQUIPMENT</b>	
1 ea.	Power Panel <ul style="list-style-type: none"> <li>• QTY 1 - 60A Main Circuit Breaker</li> <li>• QTY 4 - 15A Circuit Breaker</li> <li>• QTY 4 - 20A Circuit Breaker</li> </ul>

<b>Valley PRV Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Pressure Transmitter, Endress+Hauser Cerabar PMP71 <ul style="list-style-type: none"> <li>• Diaphragm Seal, factory installed</li> </ul> Pressure Switch, Ashcroft Pressure Gauge, Ashcroft Pressure Tree 10-12 week lead time
1 ea.	Electronic Flow Meter, Endress+Hauser Promag W 500 <ul style="list-style-type: none"> <li>• 10" Pipe Size</li> <li>• Stainless Ground Discs</li> <li>• Ethernet/IP, 4-20mA</li> <li>• Remote Transmitter, 60' cable</li> </ul>
2 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>• 871P VersaCube 2-wire AC/DC Rectangular Sensor</li> </ul>
2 ea.	Water On Floor Level Switch, GEMS <ul style="list-style-type: none"> <li>• LS-270 Series, Single-Point Level Switch</li> </ul>
<b>MISC EQUIPMENT</b>	
1 ea.	Power Panel <ul style="list-style-type: none"> <li>• QTY 1 - 60A Main Circuit Breaker</li> <li>• QTY 4 - 15A Circuit Breaker</li> <li>• QTY 4 - 20A Circuit Breaker</li> </ul>



<b>Castlewood 1 Lift Station Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Bubbler System <ul style="list-style-type: none"> <li>Pressure Transducer, E+H</li> <li>Compressor/Vacuum Pump, GAST (3)</li> <li>Pneumatic Pressure Gauge, Wika</li> <li>Float Flowmeter, Dwyer</li> <li>Flowmeter Regulator, Dwyer</li> <li>Enclosure and back panel</li> </ul>
1 ea.	Electronic Flow Meter, Endress+Hauser Promag W 500 <ul style="list-style-type: none"> <li>4" Pipe Size</li> <li>Stainless Ground Discs</li> <li>Ethernet/IP, 4-20mA</li> <li>Remote Transmitter, 60' cable</li> <li>Class 1 Div 1</li> </ul>
1 ea.	High Pressure Switch, Ashcroft <ul style="list-style-type: none"> <li>Class 1 Div 1</li> </ul>
1 ea.	Water On Floor Level Switch, GEMS <ul style="list-style-type: none"> <li>LS-270 Series, Single-Point Level Switch</li> </ul>
4 ea.	Float Switch, SJE Rhombus <ul style="list-style-type: none"> <li>3 Wire - SPDT</li> </ul>
<b>ADDITIONAL SCOPE</b>	
1 ea.	Explosion-proof RTD Temperature Transmitter, Dwyer <ul style="list-style-type: none"> <li>4-20mA Output</li> </ul>
<b>MISC EQUIPMENT</b>	
1 ea.	Alarm Dialer, RACO <ul style="list-style-type: none"> <li>Catalyst EtherNet/IP, 256 ch</li> </ul>

<b>Castlewood 2 Lift Station Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Bubbler System <ul style="list-style-type: none"> <li>Pressure Transducer, E+H</li> <li>Compressor/Vacuum Pump, GAST (3)</li> <li>Pneumatic Pressure Gauge, Wika</li> <li>Float Flowmeter, Dwyer</li> <li>Flowmeter Regulator, Dwyer</li> <li>Enclosure and back panel</li> </ul>
1 ea.	Electronic Flow Meter, Endress+Hauser Promag W 500 <ul style="list-style-type: none"> <li>8" Pipe Size</li> <li>Stainless Ground Discs</li> <li>Ethernet/IP, 4-20mA</li> <li>Remote Transmitter, 60' cable</li> <li>Class 1 Div 1</li> </ul>
1 ea.	High Pressure Switch, Ashcroft <ul style="list-style-type: none"> <li>Class 1 Div 1</li> </ul>
1 ea.	Water On Floor Level Switch, GEMS <ul style="list-style-type: none"> <li>LS-270 Series, Single-Point Level Switch</li> </ul>

4 ea.	Float Switch, SJE Rhombus <ul style="list-style-type: none"> <li>• 3 Wire - SPDT</li> </ul>
<b>ADDITIONAL SCOPE</b>	
1 ea.	Explosion-proof RTD Temperature Transmitter, Dwyer <ul style="list-style-type: none"> <li>• 4-20mA Output</li> </ul>
<b>MISC EQUIPMENT</b>	
1 ea.	Alarm Dialer, RACO <ul style="list-style-type: none"> <li>• Catalyst EtherNet/IP, 256 ch</li> </ul>

<b>Maher Lift Station Instrumentation</b>	
Qty	Description
1 ea.	Bubbler System <ul style="list-style-type: none"> <li>• Pressure Transducer, E+H</li> <li>• Compressor/Vacuum Pump, GAST (3)</li> <li>• Pneumatic Pressure Gauge, Wika</li> <li>• Float Flowmeter, Dwyer</li> <li>• Flowmeter Regulator, Dwyer</li> <li>• Enclosure and back panel</li> </ul>
1 ea.	Electronic Flow Meter, Endress+Hauser Promag W 500 <ul style="list-style-type: none"> <li>• 8" Pipe Size</li> <li>• Stainless Ground Discs</li> <li>• Ethernet/IP, 4-20mA</li> <li>• Remote Transmitter, 60' cable</li> <li>• <b>Class 1 Div 1</b></li> </ul>
4 ea.	Float Switch, SJE Rhombus <ul style="list-style-type: none"> <li>• 3 Wire - SPDT</li> </ul>
<b>MISC EQUIPMENT</b>	
1 ea.	Alarm Dialer, RACO <ul style="list-style-type: none"> <li>• Catalyst EtherNet/IP, 256 ch</li> </ul>

<b>Mitchell Creek Lift Station Instrumentation</b>	
Qty	Description
1 ea.	Electronic Flow Meter, Endress+Hauser Promag W 500 <ul style="list-style-type: none"> <li>• 10" Pipe Size</li> <li>• Stainless Ground Discs</li> <li>• Ethernet/IP, 4-20mA</li> <li>• Remote Transmitter, 60' cable</li> <li>• <b>Class 1 Div 1</b></li> </ul>
4 ea.	Float Switch, SJE Rhombus <ul style="list-style-type: none"> <li>• 3 Wire - SPDT</li> </ul>
<b>ADDITIONAL SCOPE</b>	
1 ea.	Pressure Transmitter, Endress+Hauser Cerabar PMP71 <ul style="list-style-type: none"> <li>• Diaphragm Seal, factory installed</li> <li>• <b>Class 1 Div 1</b></li> </ul> Pressure Switch, Ashcroft Pressure Gauge, Ashcroft Pressure Tree 10-12 week lead time



<b>Mitchell Creek Lift Station Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Water On Floor Level Switch, GEMS <ul style="list-style-type: none"> <li>LS-270 Series, Single-Point Level Switch</li> </ul>
1 ea.	Float Switch, SJE Rhombus <ul style="list-style-type: none"> <li>3 Wire - SPDT</li> </ul>
2 ea.	Radar Level Transmitter, Endress+Hauser Micropilot FMR20 <ul style="list-style-type: none"> <li>Class 1 Div 1</li> </ul>
<b>MISC EQUIPMENT</b>	
1 ea.	Alarm Dialer, RACO <ul style="list-style-type: none"> <li>Catalyst EtherNet/IP, 256 ch</li> </ul>

<b>Sellars Lift Station Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Bubbler System <ul style="list-style-type: none"> <li>Pressure Transducer, E+H</li> <li>Compressor/Vacuum Pump, GAST (3)</li> <li>Pneumatic Pressure Gauge, Wika</li> <li>Float Flowmeter, Dwyer</li> <li>Flowmeter Regulator, Dwyer</li> <li>Enclosure and back panel</li> </ul>
1 ea.	High Pressure Switch, Ashcroft <ul style="list-style-type: none"> <li>Class 1 Div 1</li> </ul>
4 ea.	Float Switch, SJE Rhombus <ul style="list-style-type: none"> <li>3 Wire - SPDT</li> </ul>
1 ea.	High and Low Temperature Switch, Mercoid <ul style="list-style-type: none"> <li>Explosion-Proof / Heavy-Duty Thermostat</li> </ul>
1 ea.	Electronic Flow Meter Cable, Endress+Hauser <ul style="list-style-type: none"> <li>60" factory cable</li> </ul>
<b>ADDITIONAL SCOPE</b>	
0 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>871P VersaCube 2-wire AC/DC Rectangular Sensor</li> </ul>
1 ea.	Water On Floor Level Switch, GEMS <ul style="list-style-type: none"> <li>LS-270 Series, Single-Point Level Switch</li> </ul>
1 ea.	Float Switch, SJE Rhombus <ul style="list-style-type: none"> <li>3 Wire - SPDT</li> </ul>

<b>Meadows Grinder Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>82PR Limit Switch Style Inductive Sensor – 2 Wire</li> <li>Class 1 Div 1</li> </ul>
1 ea.	Float Switch, SJE Rhombus <ul style="list-style-type: none"> <li>3 Wire - SPDT</li> </ul>
<b>ADDITIONAL SCOPE</b>	
1 ea.	Float Switch, SJE Rhombus <ul style="list-style-type: none"> <li>3 Wire - SPDT</li> </ul>

<b>Main Flume Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Float Switch, SJE Rhombus <ul style="list-style-type: none"> <li>• 3 Wire - SPDT</li> </ul>
<b>ADDITIONAL SCOPE</b>	
1 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>• 82PR Limit Switch Style Inductive Sensor – 2 Wire</li> <li>• Class 1 Div 1</li> </ul>

<b>Meadows Flume Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Float Switch, SJE Rhombus <ul style="list-style-type: none"> <li>• 3 Wire - SPDT</li> </ul>
<b>ADDITIONAL SCOPE</b>	
1 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>• 82PR Limit Switch Style Inductive Sensor – 2 Wire</li> <li>• Class 1 Div 1</li> </ul>
<b>MISC EQUIPMENT</b>	
1 ea.	Power Panel <ul style="list-style-type: none"> <li>• QTY 1 - 60A Main Circuit Breaker</li> <li>• QTY 4 – 15A Circuit Breaker</li> <li>• QTY 4 – 20A Circuit Breaker</li> </ul>

<b>North Flume Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Float Switch, SJE Rhombus <ul style="list-style-type: none"> <li>• 3 Wire - SPDT</li> </ul>
<b>ADDITIONAL SCOPE</b>	
1 ea.	Intrusion Switch, Allen Bradley <ul style="list-style-type: none"> <li>• 82PR Limit Switch Style Inductive Sensor – 2 Wire</li> <li>• Class 1 Div 1</li> </ul>

<b>Red Hawk Pond Instrumentation</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	Float Switch, SJE Rhombus <ul style="list-style-type: none"> <li>• 3 Wire - SPDT</li> </ul>
1 ea.	Submersible Level Transducer, Endress+Hauser Waterpilot FMX21 <ul style="list-style-type: none"> <li>• 4-20mA, HART</li> </ul>

**Control Panels, Remote I/O Panels (RIO), and Motor Control Panels:**

In support of the scope of this proposal LSI will be providing the following control panels:

<b>Miller WTP Main Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>72x72x12 NEMA 4/12 Enclosure</li> <li>Back Panel</li> <li>12" floor stands</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>Protocol Converter</li> <li>Surge Protector</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>Panel Intrusion Switch</li> <li>Enclosure Light</li> <li>Exhaust Grille, Intake Fan</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)
<b>Miller RIO Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>72x72x12 NEMA 4/12 Enclosure</li> <li>Back Panel</li> <li>12" floor stands</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>Surge Protector</li> <li>Panel Intrusion Switch</li> <li>Enclosure Light</li> <li>Exhaust Grille, Intake Fan</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)
<b>Miller PD Pump VFD Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>60x36x12 NEMA 4 Enclosure</li> <li>Back Panel</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>Panel Intrusion Switch</li> <li>Enclosure Light</li> <li>Exhaust Grille, Intake Fan</li> </ul>
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Bell Mountain Well 1A &amp; 1D Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>• 72x48x24 NEMA 4 Enclosure</li> <li>• Back Panel</li> <li>• Side Plate (2)</li> <li>• 12" floor stands</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>• Surge Protector</li> <li>• Panel Intrusion Switch</li> <li>• Enclosure Light</li> <li>• Enclosure Heater</li> <li>• Locking HMI Cover</li> <li>• Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Bell Mountain Well 2 Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>• 72x48x24 NEMA 4 Enclosure</li> <li>• Back Panel</li> <li>• Side Plate (2)</li> <li>• 12" floor stands</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>• Surge Protector</li> <li>• Panel Intrusion Switch</li> <li>• Enclosure Light</li> <li>• Enclosure Heater</li> <li>• Locking HMI Cover</li> <li>• Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>RT6ABC Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>• 60x36x12 NEMA 4 Enclosure</li> <li>• Back Panel</li> <li>• Mounting Feet Kit</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>• Surge Protector</li> <li>• Panel Intrusion Switch</li> <li>• Enclosure Light</li> <li>• Enclosure Heater</li> <li>• Locking HMI Cover</li> <li>• Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>RT14 Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>• 60x36x12 NEMA 4 Enclosure</li> <li>• Back Panel</li> <li>• Mounting Feet Kit</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>• Surge Protector</li> <li>• Panel Intrusion Switch</li> <li>• Enclosure Light</li> <li>• Enclosure Heater</li> <li>• Locking HMI Cover</li> <li>• Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Well 7 Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>• 72x48x24 NEMA 4 Enclosure</li> <li>• Back Panel</li> <li>• Side Plate (2)</li> <li>• 12" floor stands</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>• Surge Protector</li> <li>• Panel Intrusion Switch</li> <li>• Enclosure Light</li> <li>• Enclosure Heater</li> <li>• Locking HMI Cover</li> <li>• Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>W7 Well Motor Starter Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>• 72x48x24 NEMA 4 Enclosure</li> <li>• Back Panel</li> <li>• Side Plate (2)</li> <li>• 12" floor stands</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>• Surge Protector</li> <li>• Panel Intrusion Switch</li> <li>• Enclosure Light</li> <li>• Enclosure Heater</li> <li>• Locking HMI Cover</li> <li>• Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, Push to Test Lights, HOA Switch, etc.)

<b>Citadel Pump Station Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>• 72x48x18 NEMA 4 Enclosure</li> <li>• Back Panel</li> <li>• 12" floor stands</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>• Surge Protector</li> <li>• Panel Intrusion Switch</li> <li>• Enclosure Light</li> <li>• Enclosure Heater</li> <li>• Locking HMI Cover</li> <li>• Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Hillside Pump Station Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>• 72x48x18 NEMA 4 Enclosure</li> <li>• Back Panel</li> <li>• 12" floor stands</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>• Surge Protector</li> <li>• Panel Intrusion Switch</li> <li>• Enclosure Light</li> <li>• Enclosure Heater</li> <li>• Locking HMI Cover</li> <li>• Exhaust Grille, Intake Fan</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Plum Creek Pump Station Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>• 72x48x24 NEMA 4 Enclosure</li> <li>• Back Panel</li> <li>• 12" floor stands</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>• Surge Protector</li> <li>• Panel Intrusion Switch</li> <li>• Enclosure Light</li> <li>• Enclosure Heater</li> <li>• Locking HMI Cover</li> <li>• Exhaust Grille, Intake Fan</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Black Feather PRV Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>• 60x36x12 NEMA 4 Enclosure</li> <li>• Back Panel</li> <li>• Mounting Feet Kit</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>• Surge Protector</li> <li>• Panel Intrusion Switch</li> <li>• Enclosure Light</li> <li>• Enclosure Heater</li> <li>• Locking HMI Cover</li> <li>• Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Briscoe PRV Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>• 20x20x12 NEMA 4X Enclosure</li> <li>• Back Panel</li> <li>• Keylocking "L" Handle with Key</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>• Panel Intrusion Switch</li> </ul>
1 lot	24V DC Power Supply
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Scott PRV Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>• 60x36x12 NEMA 4 Enclosure</li> <li>• Back Panel</li> <li>• Mounting Feet Kit</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>• Surge Protector</li> <li>• Panel Intrusion Switch</li> <li>• Enclosure Light</li> <li>• Enclosure Heater</li> <li>• Locking HMI Cover</li> <li>• Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)



<b>Valley PRV Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>60x36x12 NEMA 4 Enclosure</li> <li>Back Panel</li> <li>Mounting Feet Kit</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>Surge Protector</li> <li>Panel Intrusion Switch</li> <li>Enclosure Light</li> <li>Enclosure Heater</li> <li>Locking HMI Cover</li> <li>Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Castlewood 1 Lift Station Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>72x48x18 NEMA 4 Enclosure</li> <li>Back Panel</li> <li>12" floor stands</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>Surge Protector</li> <li>Panel Intrusion Switch</li> <li>Enclosure Light</li> <li>Enclosure Heater</li> <li>Locking HMI Cover</li> <li>Exhaust Grille, Intake Fan</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Castlewood 1 Lift Station Motor Starter Control Panel</b>	
<b>Qty</b>	<b>Description</b>
4 ea.	<ul style="list-style-type: none"> <li>15 HP (21 Amp) Soft Motor Starter Panel</li> </ul>
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, Push to Test Lights, HOA Switch, etc.)

<b>Castlewood 1 ISR Junction Box</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>16x16x6 NEMA 4 Enclosure</li> </ul>
5 ea.	<ul style="list-style-type: none"> <li>ISR – DI ISO Barrier</li> </ul>
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)



<b>Castlewood 2 Lift Station Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>72x48x18 NEMA 4 Enclosure</li> <li>Back Panel</li> <li>12" floor stands</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>Surge Protector</li> <li>Panel Intrusion Switch</li> <li>Enclosure Light</li> <li>Enclosure Heater</li> <li>Locking HMI Cover</li> <li>Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)
<b>Castlewood 2 Lift Station Motor Starter Control Panel</b>	
<b>Qty</b>	<b>Description</b>
2 ea.	<ul style="list-style-type: none"> <li>25 HP (32 Amp) Soft Motor Starter Panel</li> </ul>
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, Push to Test Lights, HOA Switch, etc.)
<b>Castlewood 2 Lift Station ISR Junction Box</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	16x16x6 NEMA 4 Enclosure
5 ea.	ISR – DI ISO Barrier
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Maher Lift Station Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>72x48x18 NEMA 4 Enclosure</li> <li>Back Panel</li> <li>12" floor stands</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>Surge Protector</li> <li>Panel Intrusion Switch</li> <li>Enclosure Light</li> <li>Enclosure Heater</li> <li>Locking HMI Cover</li> <li>Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)
<b>Maher Lift Station Motor Starter Control Panel</b>	
<b>Qty</b>	<b>Description</b>
2 ea.	<ul style="list-style-type: none"> <li>64 HP (84.7 Amp) Soft Motor Starter Panel</li> </ul>
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, Push to Test Lights, HOA Switch, etc.)
<b>Maher Lift Station ISR Junction Box</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	16x16x6 NEMA 4 Enclosure
4 ea.	ISR – DI ISO Barrier
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Mitchell Lift Station Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>72x48x18 NEMA 4 Enclosure</li> <li>Back Panel</li> <li>12" floor stands</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>Surge Protector</li> <li>Panel Intrusion Switch</li> <li>Enclosure Light</li> <li>Enclosure Heater</li> <li>Locking HMI Cover</li> <li>Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)
<b>Mitchell Lift Station ISR Junction Box</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	16x16x6 NEMA 4 Enclosure
6 ea.	ISR – DI ISO Barrier
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Sellars Lift Station Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>72x48x18 NEMA 4 Enclosure</li> <li>Back Panel</li> <li>12" floor stands</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>Surge Protector</li> <li>Panel Intrusion Switch</li> <li>Enclosure Light</li> <li>Enclosure Heater</li> <li>Locking HMI Cover</li> <li>Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)
<b>Sellars Lift Station Motor Starter Control Panel</b>	
<b>Qty</b>	<b>Description</b>
3 ea.	30 HP (40 Amp) Soft Motor Starter Panel
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, Push to Test Lights, HOA Switch, etc.)
<b>Sellars Lift Station ISR Junction Box</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	16x16x6 NEMA 4 Enclosure
6 ea.	ISR – DI ISO Barrier
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Meadows Grinder Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>60x36x12 NEMA 4 Enclosure</li> <li>Back Panel</li> <li>Mounting Feet Kit</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>Surge Protector</li> <li>Panel Intrusion Switch</li> <li>Enclosure Light</li> <li>Enclosure Heater</li> <li>Locking HMI Cover</li> <li>Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)
<b>Meadows Grinder 480V Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>5 HP (7.1 Amp) Full Voltage Reversing Contactor Panel</li> </ul>
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, Push to Test Lights, HOA Switch, etc.)
<b>Meadows Grinder ISR Junction Box</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	16x16x6 NEMA 4 Enclosure
2 ea.	ISR – DI ISO Barrier
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Main Flume Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>60x36x12 NEMA 4 Enclosure</li> <li>Back Panel</li> <li>Mounting Feet Kit</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>Surge Protector</li> <li>Panel Intrusion Switch</li> <li>Enclosure Light</li> <li>Enclosure Heater</li> <li>Locking HMI Cover</li> <li>Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)
<b>Main Flume ISR Junction Box</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	16x16x6 NEMA 4 Enclosure
2 ea.	ISR – DI ISO Barrier
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

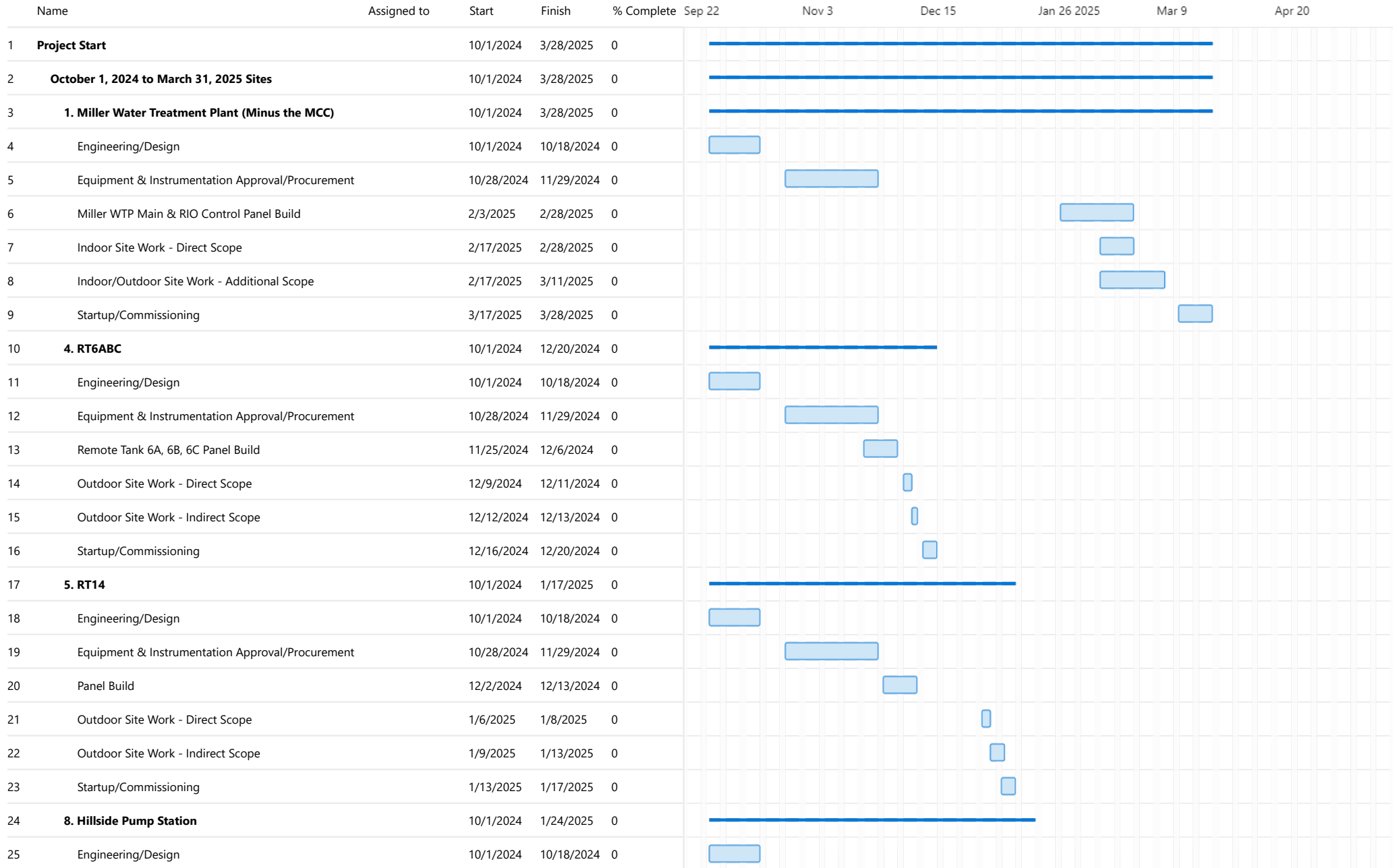
<b>Meadows Flume Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>• 60x36x12 NEMA 4 Enclosure</li> <li>• Back Panel</li> <li>• Mounting Feet Kit</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>• Surge Protector</li> <li>• Panel Intrusion Switch</li> <li>• Enclosure Light</li> <li>• Enclosure Heater</li> <li>• Locking HMI Cover</li> <li>• Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)
<b>Meadows Flume ISR Junction Box</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	16x16x6 NEMA 4 Enclosure
2 ea.	ISR – DI ISO Barrier
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>North Flume Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>• 60x36x12 NEMA 4 Enclosure</li> <li>• Back Panel</li> <li>• Mounting Feet Kit</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>• Surge Protector</li> <li>• Panel Intrusion Switch</li> <li>• Enclosure Light</li> <li>• Enclosure Heater</li> <li>• Locking HMI Cover</li> <li>• Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)
<b>North Flume ISR Junction Box</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	16x16x6 NEMA 4 Enclosure
2 ea.	ISR – DI ISO Barrier
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

<b>Red Hawk Pond Control Panel</b>	
<b>Qty</b>	<b>Description</b>
1 ea.	<ul style="list-style-type: none"> <li>• 48x36x12 NEMA 4 Enclosure</li> <li>• Back Panel</li> <li>• Mounting Feet Kit</li> </ul>
1 ea.	<ul style="list-style-type: none"> <li>• Surge Protector</li> <li>• Panel Intrusion Switch</li> <li>• Enclosure Light</li> <li>• Enclosure Heater</li> <li>• Locking HMI Cover</li> <li>• Exhaust Grille, Intake Fan, Grille/Fan Hood (2)</li> </ul>
1 lot	UPS, Battery, 24V DC Power Supplies (2), Redundancy Module
1 lot	Panel Supplies (Wire, Wireway, Labels, Terminal Blocks, etc.)

# Exhibit 7

## 28091F - CRW SCADA Master Plan - P4 - Proposal



28091F - CRW SCADA Master Plan - P4 - Proposal

Name	Assigned to	Start	Finish	% Complete	Sep 22	Nov 3	Dec 15	Jan 26 2025	Mar 9	Apr 20	
26	Equipment & Instrumentation Approval/Procurement	10/28/2024	11/29/2024	0		█					
27	Panel Build	12/9/2024	12/20/2024	0			█				
28	Indoor Site Work - Direct Scope	1/13/2025	1/15/2025	0				█			
29	Indoor Site Work - Indirect Scope	1/16/2025	1/17/2025	0				█			
30	Startup/Commissioning	1/20/2025	1/24/2025	0				█			
31	<b>9. Plum Creek Pump Station</b>	10/1/2024	1/31/2025	0	█						
32	Engineering/Design	10/1/2024	10/18/2024	0	█						
33	Equipment & Instrumentation Approval/Procurement	10/28/2024	11/29/2024	0		█					
34	Panel Build	12/16/2024	1/3/2025	0			█				
35	Indoor Site Work - Direct Scope	1/20/2025	1/22/2025	0				█			
36	Indoor Site Work - Indirect Scope	1/23/2025	1/24/2025	0				█			
37	Startup/Commissioning	1/27/2025	1/31/2025	0				█			
38	<b>10. Black Feather PRV</b>	10/1/2024	2/7/2025	0	█						
39	Engineering/Design	10/1/2024	10/18/2024	0	█						
40	Equipment & Instrumentation Approval/Procurement	10/28/2024	11/29/2024	0		█					
41	Panel Build	1/6/2025	1/17/2025	0				█			
42	Outdoor Site Work - Direct Scope	1/27/2025	1/29/2025	0				█			
43	Outdoor Site Work - Indirect Scope	1/30/2025	1/31/2025	0				█			
44	Startup/Commissioning	2/3/2025	2/7/2025	0				█			
45	<b>12. Scott PRV</b>	10/1/2024	2/14/2025	0	█						
46	Engineering/Design	10/1/2024	10/18/2024	0	█						
47	Equipment & Instrumentation Approval/Procurement	10/28/2024	11/29/2024	0		█					
48	Panel Build	1/13/2025	1/24/2025	0				█			
49	Outdoor Site Work - Direct Scope	2/3/2025	2/5/2025	0				█			
50	Outdoor Site Work - Indirect Scope	2/6/2025	2/7/2025	0				█			

28091F - CRW SCADA Master Plan - P4 - Proposal

Name	Assigned to	Start	Finish	% Complete	Sep 22	Nov 3	Dec 15	Jan 26 2025	Mar 9	Apr 20	
51	Startup/Commissioning	2/10/2025	2/14/2025	0							
52	<b>13. Valley PRV</b>	10/1/2024	2/21/2025	0							
53	Engineering/Design	10/1/2024	10/18/2024	0							
54	Equipment & Instrumentation Approval/Procurement	10/28/2024	11/29/2024	0							
55	Panel Build	1/20/2025	1/31/2025	0							
56	Outdoor Site Work - Direct Scope	2/10/2025	2/12/2025	0							
57	Outdoor Site Work - Indirect Scope	2/13/2025	2/14/2025	0							
58	Outdoor Site Work - Additional Scope	2/14/2025	2/14/2025	0							
59	Startup/Commissioning	2/17/2025	2/21/2025	0							
60	<b>February 28, 2026 Sites</b>			0							
61	<b>1. Miller Water Treatment Plant MCC</b>			0							
62	MCC & VFD Engineering/Design			0							
63	Approval/Procurement			0							
64	MCC/VFD Modifications			0							
65	Indoor Site Work			0							
66	Startup/Commissioning			0							
67	<b>2. BM1A D Well</b>			0							
68	Engineering/Design			0							
69	Equipment Approval/Procurement			0							
70	Panel Build			0							
71	Outdoor Site Work			0							
72	Startup/Commissioning			0							
73	<b>3. BM2 Well</b>			0							
74	Engineering/Design			0							
75	Equipment Approval/Procurement			0							



28091F - CRW SCADA Master Plan - P4 - Proposal

Name	Assigned to	Start	Finish	% Complete	Sep 22	Nov 3	Dec 15	Jan 26 2025	Mar 9	Apr 20
76	Panel Build			0						
77	Outdoor Site Work			0						
78	Startup/Commissioning			0						
79	<b>6. W7 Well</b>			0						
80	Engineering/Design			0						
81	Equipment Approval/Procurement			0						
82	Panel Build			0						
83	Outdoor Site Work			0						
84	Startup/Commissioning			0						
85	<b>7. Citadel Pump Station</b>			0						
86	Engineering/Design			0						
87	Equipment Approval/Procurement			0						
88	Panel Build			0						
89	Indoor Site Work			0						
90	Startup/Commissioning			0						
91	<b>11. Briscoe PRV</b>			0						
92	Engineering/Design			0						
93	Equipment Approval/Procurement			0						
94	Panel Build			0						
95	Outdoor Site Work			0						
96	Startup/Commissioning			0						
97	<b>14. Castlewood 1 Lift Station</b>			0						
98	Engineering/Design			0						
99	Equipment Approval/Procurement			0						
100	Panel Build			0						

28091F - CRW SCADA Master Plan - P4 - Proposal

Name	Assigned to	Start	Finish	% Complete	Sep 22	Nov 3	Dec 15	Jan 26 2025	Mar 9	Apr 20
101	Indoor Site Work			0						
102	Startup/Commissioning			0						
103	<b>15. Castlewood 2 Lift Station</b>			0						
104	Engineering/Design			0						
105	Equipment Approval/Procurement			0						
106	Panel Build			0						
107	Indoor Site Work			0						
108	Startup/Commissioning			0						
109	<b>16. Maher Lift Station</b>			0						
110	Engineering/Design			0						
111	Equipment Approval/Procurement			0						
112	Panel Build			0						
113	Indoor Site Work			0						
114	Startup/Commissioning			0						
115	<b>17. Mitchell Creek Lift Station</b>			0						
116	Engineering/Design			0						
117	Equipment Approval/Procurement			0						
118	Panel Build			0						
119	Indoor Site Work			0						
120	Startup/Commissioning			0						
121	<b>18. Sellars Lift Station</b>			0						
122	Engineering/Design			0						
123	Equipment Approval/Procurement			0						
124	Panel Build			0						
125	Indoor Site Work			0						

28091F - CRW SCADA Master Plan - P4 - Proposal

Name	Assigned to	Start	Finish	% Complete	Sep 22	Nov 3	Dec 15	Jan 26 2025	Mar 9	Apr 20
126				0						
	Startup/Commissioning									
127				0						
	<b>19. Meadows Grinder</b>									
128				0						
	Engineering/Design									
129				0						
	Equipment Approval/Procurement									
130				0						
	Panel Build									
131				0						
	Outdoor Site Work									
132				0						
	Startup/Commissioning									
133				0						
	<b>20. Main Flume</b>									
134				0						
	Engineering/Design									
135				0						
	Equipment Approval/Procurement									
136				0						
	Panel Build									
137				0						
	Outdoor Site Work									
138				0						
	Startup/Commissioning									
139				0						
	<b>21. Meadows Flume</b>									
140				0						
	Engineering/Design									
141				0						
	Equipment Approval/Procurement									
142				0						
	Outdoor Panel Build									
143				0						
	Site Work									
144				0						
	Startup/Commissioning									
145				0						
	<b>22. North Flume</b>									
146				0						
	Engineering/Design									
147				0						
	Equipment Approval/Procurement									
148				0						
	Panel Build									
149				0						
	Outdoor Site Work									
150				0						
	Startup/Commissioning									

28091F - CRW SCADA Master Plan - P4 - Proposal

Name	Assigned to	Start	Finish	% Complete	Sep 22	Nov 3	Dec 15	Jan 26 2025	Mar 9	Apr 20
151	<b>23. Red Hawk Pond</b>			0						
152	Engineering/Design			0						
153	Equipment Approval/Procurement			0						
154	Panel Build			0						
155	Indoor Site Work			0						
156	Startup/Commissioning			0						
157	Project Final Completion - 2/28/2026 (240 days)			0						



**Expiration Date: 08/22/24**

## Quotation

**TO:**  
 LOGICAL SYSTEMS INC BARTLETT TN  
 PO BOX 341321  
 MEMPHIS, TN 38184-1321

**Project Info:**  
 Project: Castlerock Water  
 Job #: 675253  
 Bid Date: 07/23/24  
 Bid Time: 03:00 PM EDT  
 Quoter: Dominic Delfiaccio

Type	Quantity	Vendor	Description	Unit or Lot#	Unit Price	Ext Price
Budgetary Proposal Only. Not intended for purchase at this time.						

<b>MCC</b>	1	ROCKWELL	MCC - per attached (Lead-time: 6-8 weeks for drawings + 31-36 weeks after release to manufacturing)	Unit		
<b>Data CD</b>	1	ROCKWELL	IntelliCENTER Data CD	Unit		
<b>VFD Startup</b>	1		RXSVC - REXEL SERVICES DRIVE START-UP ESTIMATE 4 HOURS OF LABOR PER DRIVE; ACTUAL HOURS/PRICE MAY VARY.	Unit		

**From:**  
 7325 DEN DENVER  
 SALES PHONE 303-572-7100  
 425 QUIVAS ST  
 DENVER, CO 80204-4913  
 Printed By: Dominic Delfiaccio

**Notes**

LSI / Castle Rock Water Confidential



Project: Castlerock Water  
Expiration 08/22/24

# Quotation

Type	Quantity	Vendor	Description	LOT #	Unit Price	Ext Price
------	----------	--------	-------------	-------	------------	-----------

<b>Project Management</b>	1	Stock	PREMIER PROJECT SUPPORT PLAN	Unit	0.000/EA	0.00
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**From:**  
 7325 DEN DENVER  
 SALES PHONE 303-572-7100  
 425 QUIVAS ST  
 DENVER, CO 80204-4913  
 Printed By: Dominic Delfiaccio

**Notes**

## Clarifications

Specification:

MCC specification shown as Div 26 on cover page but is shown in Division 40 Specification

**26 24 19** 2.01 B. no modifications to existing MCCs are included in this proposal

2.02 G. by others

2.03 A 4. one switch configured for entire MCC lineup

2.03 A 9. Class I type B-T wiring provided. Any Class II wiring to be provided by others

2.03 C. 2. b. vertical power bus will not have 'sandwich type insulation'

2.03 C. 4. ground but can be 500A or 900A rated. 500A rated is configured

2.03 D. 1. No one-line or unit diagrams provided at time of quotation

2.03 D. 4. f. 2) isolation contactor provided, not a true bypass

2.03 K SPD – 300kA per phase configured. Section 26 43 13 is referenced but not included in bid documents

**Scope:** All control panels, components and sites not listed below are not in the scope of this proposal

### **Miller Water Treatment Plant**

Addendum 4 calls for feeder breakers for external VFDs but Addendum 5 shows FVNRs

- FVNRs configured

# Rockwell Automation

## Centerline 2100 Motor Control Center

### Basic Structure Information

Project Name: Castlerock  
Project Item: MCC  
Project ID #: 5334043/2

Salesperson: Dominic Del Fiacco  
Created By: Dominic Del Fiacco  
Date/Time: 07/22/24 - 15:05

#### Motor Control Center Details

This MCC(s) was developed using an available fault current of 50,001 to 65,000 A.  
MCC configuration & pricing subject to change, if actual Available Fault Current differs.

#### Motor Control Center Details

**Power System Type:** Wye, 3-phase, 4-wire with solidly grounded neutral  
**Voltage:** 480 Volts / 60 Hertz  
**Available Fault Current:** 50,001 to 65,000 A  
**Unit Nameplate Type:** Acrylic - Black letters on white - Stainless Steel Screws  
**Wiring Type:** B-T Control and Power Terminal Blocks  
**Wiring Diagram Location:** Central location  
**Arc Resistant MCC:** No  
**IntelliCENTER Network:** Ethernet  
**IMC Device Firmware:** Upgraded to latest available version (saves up to 1 hour of customer configuration time per section)

**Horizontal Ground Bus Size:** 1/4" X 1"  
**Horizontal Ground Bus Plating:** Tin plated Copper  
**Horizontal Ground Bus Location:** Bottom  
**Vertical Ground Bus Type:** Plug-in Copper  
**Incoming Ground Lug Size:** #6 AWG - 250 kcmil (2 Supplied as Standard)  
**Incoming Ground Cable Size:** None Selected  
**Outgoing Equipment Ground Lug:** Yes

**Horizontal Neutral Bus Rating:** Same as Main Bus Rating  
**Horizontal Neutral Bus Location:** Below Main Bus  
**Neutral Connection Plate:** Yes  
**Neutral Connection Plate Location:** Bottom

#### Incoming Line Details

**MCC Connection Type:** Main Circuit Breaker  
**Incoming Line Cable Entry:** Top Mounted

#### Enclosure Details

**Enclosure Type:** 12 - Fully Gasketed with Bottom Plates  
**NEMA 3R/4 Lifting Angle:** No  
**Section Depth:** Front Mounted, 20" Deep  
**Section Height:** 90" High  
**Stab Opening Protection:** Automatic Shutters  
**Wireway Tie Bar:** Yes

#### Bus Details

**Main Bus Rating:** 1200A  
**Main Bus Material:** Copper / Tin Plated  
**Main Bus Bracing:** 65kA (rms symmetrical)  
**Insulated Bus:** CMOD Added

**Total Shipping Block(s):** 2  
**Total Section(s):** 5  
**Total Unit(s):** 21

#### Ethernet Network Information

Full Ethernet Network Information can be found on the One-Line Diagram associated with this project item. This drawing can be obtained by requesting Pre-order drawings through PowerControl Builder.

#### Section Modifications (Qty/Mods)

##### **Section 1 Modifications (Quantity/Mods)**

(1) Insulated Bus - 1600A and below, 20" wide sections only - PolyPro Flame Retardant Material  
(No Tape on Bus) - UL Rated

##### **Section 2 Modifications (Quantity/Mods)**

(1) Insulated Bus - 1600A and below, 20" wide sections only - PolyPro Flame Retardant Material  
(No Tape on Bus) - UL Rated



**Section 3 Modifications (Quantity/Mods)**

(1) Insulated Bus - 1600A and below, 20" wide sections only - PolyPro Flame Retardant Material  
(No Tape on Bus) - UL Rated

**Section 4 Modifications (Quantity/Mods)**

(1) Insulated Bus - 1600A and below, 20" wide sections only - PolyPro Flame Retardant Material  
(No Tape on Bus) - UL Rated

**Section 5 Modifications (Quantity/Mods)**

(1) Insulated Bus - 1600A and below, 20" wide sections only - PolyPro Flame Retardant Material  
(No Tape on Bus) - UL Rated

<b>Section Number</b>	<b>Section Width (inches)</b>	<b>Options/Modifications</b>
1	20"	Horizontal Neutral Bus
2	20"	Horizontal Neutral Bus
3	20"	Horizontal Neutral Bus
4	20"	Horizontal Neutral Bus
5	20"	600A Vertical Bus Neutral Connection Plate Horizontal Neutral Bus

# Rockwell Automation

## Centerline 2100 Motor Control Center

### Unit List

Project Name: Castlerock  
 Project Item: MCC  
 Project ID #: 5334043/2

Salesperson: Dominic Del Fiocco  
 Created By: Dominic Del Fiocco  
 Date/Time: 07/22/24 - 15:05

ID	QTY	Catalog Number / Unit Description
1	1	2193MT-GJC-56TNMG-88FN-760A / Main Circuit Breaker - 1200A Frame Rating - Top Mounted with 1200A Trip w/ Maintenance Mode
2	1	2100-EPS8JBH-30TGM-79UT-751S / Ethernet Power Supply Unit with Circuit Breaker Thermal Magnetic (15A Trip)
3	1	2100-ESW5220J-T10GNP-751S-768C-768D-768E / Stratix 5200 20-Port
4	1	2100M-CJC-32TGM-79UT / Empty Unit Insert - 1.5 Space Factor with Circuit Breaker Thermal Magnetic (30A Trip)
5	1	2113B-BDB-3-5LG-6P-7FE3EDCN3VR-37TGA-79UT-90-91-600PAX-750-751S / Full Voltage Non-Reversing Starter w/CB - 2 HP with Circuit Breaker Instantaneous MCP (7A Trip)
6	1	2113B-BDB-3-5LG-6P-7FE3EDCN3VR-41TGA-79UT-90-91-600PAX-750-751S / Full Voltage Non-Reversing Starter w/CB - 10 HP with Circuit Breaker Instantaneous MCP (30A Trip)
7	1	2113B-CDB-3-5LG-6P-7FE3EDCN6VR-44TGA-79UT-90-91-600PAX-750-751S / Full Voltage Non-Reversing Starter w/CB - 25 HP with Circuit Breaker Instantaneous MCP (50A Trip)
8	1	2113B-CDB-3-5LG-6P-7FE3EDCN6VR-44TGA-79UT-90-91-600PAX-750-751S / Full Voltage Non-Reversing Starter w/CB - 25 HP with Circuit Breaker Instantaneous MCP (50A Trip)
9	1	2113B-DDB-3-5LG-6P-7FE3EDCN1VR-47TGA-79UT-90-91-600PAX-750-751S / Full Voltage Non-Reversing Starter w/CB - 50 HP with Circuit Breaker Instantaneous MCP (100A Trip)
10	1	2113B-EDB-3-5LG-6P-7FE3EDCN5VR-48TJA-79UT-90-91-600PAX-750-751S / Full Voltage Non-Reversing Starter w/CB - 60 HP with Circuit Breaker Instantaneous MCP (150A Trip)
11	2	2163WB-010JB-3F-5LR-14DFCC-14HC2S-14RLX-39TGM-79UT-600PAX-751S / PowerFlex 525 AC Drive w/CB - 5 HP with Circuit Breaker Thermal Magnetic (20A Trip)
12	1	2190-CJB-56M-79UT-86W54DXB-750-751S / Metering Unit - Bul 1426-M5 PM 5000 w/Ethernet
13	2	2193F-CJC-45TJM-79UT / Feeder Circuit Breaker - 250A Frame Rating with 225A Trip
14	1	2193FZ-BJC-61THML-79UT / Feeder Circuit Breaker - 125A Frame Rating with 25A Trip
15	1	2193FZ-AJB-32TGM-79UT / Feeder Circuit Breaker - 125A Frame Rating with 30A Trip
16	1	2193FZ-AJB-40TGM-79UT / Feeder Circuit Breaker - 125A Frame Rating with 100A Trip
17	3	2100-BJ10 / Blank Unit Door - 1.0 Space Factor

# Rockwell Automation

## Centerline 2100 Motor Control Center

### Unit Description

Project Name: Castlerock  
 Project Item: MCC  
 Project ID #: 5334043/2

Salesperson: Dominic Del Fiocco  
 Created By: Dominic Del Fiocco  
 Date/Time: 07/22/24 - 15:05

#### General Information

Line Voltage / Frequency: 480 Volts / 60 Hertz  
 Power System Configuration: Wye, 3-phase, 4-wire with solidly grounded neutral  
 Class I Wiring Type: B-T Control and Power Terminal Blocks  
 NEMA Enclosure Type: 12 - Fully Gasketed with Bottom Plates  
 Available Fault Current: 50,001 to 65,000 A  
 Unit Nameplate Type: Acrylic - Black letters on white - Stainless Steel Screws  
 Delivery Program: ENG

#### Unit Information

Description	Unit Features
<p><b>Unit Loc: 01A</b>      <b>Del Prog: PEII</b>  <b>Unit ID: 1</b>            MCB - Main Circuit Breaker</p> <p><u>Rating</u>            1200A</p> <p><u>Wiring Diagram</u>            10007961252</p> <p><u>Name Plate Information</u>            MAIN BREAKER</p>	<p><b>Catalog Number: 2193MT-GJC-56TNMG-88FN-760A</b>            Total Space Factor = 4.5            Circuit Breaker: Electronic (LSIG) - Maint. Mode, 65kA at 480V (1200) with Frame Rating of 1200A (N6I Frame) w/ Maintenance Mode, Top Mounted, 1200A Trip, with Internal Ground Fault Protection            Lugs Supplied: Std Mech/Lug Pads, 500 kcmil Size Wire, 4 Cables per Phase</p> <p><u>Features Included</u>            INC_NEUT_BUS Full-rated (-88FN)            24V Power Supply, Selector Switch, Pilot Light for N- &amp; R-Frame MM (-760A)</p>
<p><b>Unit Loc: 01K</b>      <b>Del Prog: SCII</b>  <b>Unit ID: 13</b>            FCB - Feeder Circuit Breaker</p> <p><u>Rating</u>            225A</p> <p><u>Wiring Diagram</u>            10004021873</p> <p><u>Name Plate Information</u>            SERVICE PUMP 4</p> <p><u>Overload Relay(s)</u>            Motor Full Load Current (FLC) = Not Available</p>	<p><b>Catalog Number: 2193F-CJC-45TJM-79UT</b>            Total Space Factor = 1.5            Circuit Breaker: Thermal Magnetic, 65kA at 480V (225) with Frame Rating of 250A (J6 Frame), Plug-In Unit, 225A Trip            Lugs Supplied: Std Mech/Lug Pads, 250 kcmil Size Wire, 1 Cables per Phase</p> <p><u>Features Included</u>            Unit Grd Stab Tin Plated Cu (-79UT)</p>

<p><b>Unit Loc: 02A</b>      <b>Del Prog: ENG</b>  <b>Unit ID: 4</b>  FCBX - Empty Unit Insert</p> <p><u><b>Wiring Diagram</b></u>  10002693814</p> <p><u><b>Name Plate Information</b></u>  SPD</p>	<p><b>Catalog Number: 2100M-CJC-32TGM-79UT</b>  Total Space Factor = 1.5  Circuit Breaker: Thermal Magnetic, 65kA at 480V (G6C Frame) (30A Trip)  Disconnect Type Circuit Breaker</p> <p><u><b>Features Included</b></u>  Unit Grd Stab Tin Plated Cu (-79UT)</p> <p><u><b>Engineered Spec(s)/Modification(s)</b></u>  (1) ASCO SPD - 300 ka/phase (At 600V Wye only) - UL Rated,450****P30ACCN20  (1) Engineered Modification and/or Custom Diagram</p>									
<p><b>Unit Loc: 02D</b>      <b>Del Prog: SCII</b>  <b>Unit ID: 12</b>  METR - Metering Unit</p> <p><u><b>Wiring Diagram</b></u>  10005054150</p> <p><u><b>Name Plate Information</b></u>  POWER MONITOR</p> <p><u><b>Ethernet Information</b></u></p> <table border="1"> <thead> <tr> <th>Device Type</th> <th>IP Address</th> <th>Subnet Mask</th> </tr> </thead> <tbody> <tr> <td>2190</td> <td>192.168.1.2</td> <td>255.255.255.0</td> </tr> <tr> <td>2190</td> <td>192.168.1.3</td> <td>255.255.255.0</td> </tr> </tbody> </table> <p>Cable Length: 2.16 m</p> <p>Power Monitor Firmware Version: LATEST</p>	Device Type	IP Address	Subnet Mask	2190	192.168.1.2	255.255.255.0	2190	192.168.1.3	255.255.255.0	<p><b>Catalog Number: 2190-CJB-56M-79UT-86W54DXB-750-751S</b>  Total Space Factor = 1.5  Metering Type: Bul 1426-M5 PM 5000 w/Ethernet  Ammeter Scale 1200</p> <p><u><b>Features Included</b></u>  Unit Grd Stab Tin Plated Cu (-79UT)  #14 AWG MTW (TEW) Cu (Tinned) (-750)  Sleeve Type Markers (-751S)</p>
Device Type	IP Address	Subnet Mask								
2190	192.168.1.2	255.255.255.0								
2190	192.168.1.3	255.255.255.0								

**Unit Loc: 02G**      **Del Prog: PEII**  
**Unit ID: 9**  
FVNR - Full Voltage Non-Reversing Starter w/CB

**Rating**  
50 HP

**Name Plate Information**  
WELL 16R

**Overload Relay(s)**  
E300 Comm Based Overload (7FE3)  
E300 Communication Option = EtherNet/IP  
E300 Voltage Code = 120V AC  
E300 Control Module = Control Only  
E300 Sensing Module = 10-100A Curr/Grnd Fault/Volt  
E300 Operator Station = Electronic Reset  
E300 Expansion Module = Not Available  
Motor RPM = 1800  
Motor Full Load Current (FLC) = 62.3  
Motor Service Factor = 1.15

**Ethernet Information**

Device Type	IP Address	Subnet Mask
2113	192.168.1.4	255.255.255.0

Cable Length: 2.55 m

E300 Overload Firmware Version: LATEST

**Catalog Number: 2113B-DDB-3-5LG-6P-7FE3EDCN1VR-47TGA-79UT-90-91-600PAX-750-751S**

Size: NEMA Size 3  
Total Space Factor = 1.5  
Wiring: NEMA Type B wiring  
Circuit Breaker: Instantaneous MCP, 100kA at 480V (G8P Frame) (100A Trip)  
Control: Transformer with Secondary Fuse, Standard Capacity, Primary Fusing, 120V/60Hz  
Control Wiring: #14 AWG MTW (TEW) Cu (Tinned)

**Features Included**  
Selector Switch: HAND-OFF-AUTO (-3)  
Pilot Light(s): ON Type: LED Push To Test, Color(s): Green (-5LG)  
Std Capacity Control Power Transformer W/Primary Fuses (-6P)  
Unit Grd Stab Tin Plated Cu (-79UT)  
1 NO on Starter (-90)  
1 NC on Starter (-91)  
Wiring configured for PlantPax usage (-600PAX)  
#14 AWG MTW (TEW) Cu (Tinned) (-750)  
Sleeve Type Markers (-751S)

**Unit Loc: 02K**      **Del Prog: SCII**  
**Unit ID: 13**  
FCB - Feeder Circuit Breaker

**Rating**  
225A

**Wiring Diagram**  
10004021873

**Name Plate Information**  
SERVICE PUMP 5

**Overload Relay(s)**  
Motor Full Load Current (FLC) = Not Available

**Catalog Number: 2193F-CJC-45TJM-79UT**  
Total Space Factor = 1.5  
Circuit Breaker: Thermal Magnetic, 65kA at 480V (225) with Frame Rating of 250A (J6 Frame), Plug-In Unit, 225A Trip  
Lugs Supplied: Std Mech/Lug Pads, 250 kcmil Size Wire, 1 Cables per Phase

**Features Included**  
Unit Grd Stab Tin Plated Cu (-79UT)

<p><b>Unit Loc: 03A</b>      <b>Del Prog: PEII</b>  <b>Unit ID: 3</b>  ENSW - Stratix 5200 20-Port</p> <p><u><b>Wiring Diagram</b></u>  10007842549</p> <p><u><b>Name Plate Information</b></u>  ETHERNET  SWITCH</p> <p><u><b>Ethernet Information</b></u></p> <table border="0"> <tr> <td>Device Type</td> <td>IP Address</td> <td>Subnet Mask</td> </tr> <tr> <td>2100-ESW</td> <td>192.168.1.1</td> <td>255.255.255.0</td> </tr> </table> <p>No Cable Length</p> <p>Ethernet Switch Firmware Version: LATEST</p>	Device Type	IP Address	Subnet Mask	2100-ESW	192.168.1.1	255.255.255.0	<p><b>Catalog Number: 2100-ESW5220J-T10GNP-751S-768C-768D-768E</b>  Total Space Factor = 1  Full Stratix 5200 Firmware  NAT (Network Address Translation)  Power Adapters (w/Unit Mtg)</p> <p><u><b>Features Included</b></u>  Sleeve Type Markers (-751S)  Redundant ENet Power Supply (-768C)  Input/Output Block (-768D)  Industrial SD Card Provided (-768E)  SmartPort Enabled (-SP)  DHCP Port Persistence Enabled (-DHCP_PP)  Resilient Ethernet Protocol Enabled (-REP)</p>
Device Type	IP Address	Subnet Mask					
2100-ESW	192.168.1.1	255.255.255.0					
<p><b>Unit Loc: 03C</b>      <b>Del Prog: SCII</b>  <b>Unit ID: 2</b>  ENPS - Ethernet Power Supply Unit</p> <p><u><b>Rating</b></u>  125A</p> <p><u><b>Wiring Diagram</b></u>  10007930735</p> <p><u><b>Name Plate Information</b></u>  ETHERNET  POWER SUPPLY</p>	<p><b>Catalog Number: 2100-EPS8JBH-30TGM-79UT-751S</b>  Total Space Factor = 1  Circuit Breaker: Thermal Magnetic, 65kA at 480V (G6C Frame) (15A Trip)  Disconnect Type = Circuit Breaker  Control: Transformer with Secondary Fuse, Standard Capacity, Primary Fusing, V/60Hz  Control Wiring: #16 AWG MTW(TEW) Cu</p> <p><u><b>Features Included</b></u>  Unit Grd Stab Tin Plated Cu (-79UT)  Sleeve Type Markers (-751S)</p>						
<p><b>Unit Loc: 03E</b>      <b>Del Prog: SCII</b>  <b>Unit ID: 16</b>  FCB - Feeder Circuit Breaker</p> <p><u><b>Rating</b></u>  100A</p> <p><u><b>Wiring Diagram</b></u>  10004092283</p> <p><u><b>Name Plate Information</b></u>  25KVA XFMR</p> <p><u><b>Overload Relay(s)</b></u>  Motor Full Load Current (FLC) = Not Available</p>	<p><b>Catalog Number: 2193FZ-AJB-40TGM-79UT</b>  Total Space Factor = 0.5  Circuit Breaker: Thermal Magnetic, 65kA at 480V (100) with Frame Rating of 125A (G6C Frame), Plug-In Unit, 100A Trip  Lugs Supplied: Std Mech/Lug Pads, 1/0 AWG Size Wire, 1 Cables per Phase</p> <p><u><b>Features Included</b></u>  Unit Grd Stab Tin Plated Cu (-79UT)</p>						

<p><b>Unit Loc: 03F</b>      <b>Del Prog: SCII</b>  <b>Unit ID: 15</b>  FCB - Feeder Circuit Breaker</p> <p><b><u>Rating</u></b>  30A</p> <p><b><u>Wiring Diagram</u></b>  10004092180</p> <p><b><u>Name Plate Information</u></b>  UNIT HEATERS  UH-1, 2, -3</p> <p><b><u>Overload Relay(s)</u></b>  Motor Full Load Current (FLC) = Not Available</p>	<p><b>Catalog Number: 2193FZ-AJB-32TGM-79UT</b>  Total Space Factor = 0.5  Circuit Breaker: Thermal Magnetic, 65kA at 480V (30) with Frame Rating of 125A (G6C Frame), Plug-In Unit, 30A Trip  Lugs Supplied: Std Mech/Lug Pads, 1/0 AWG Size Wire, 1 Cables per Phase</p> <p><b><u>Features Included</u></b>  Unit Grd Stab Tin Plated Cu (-79UT)</p>
<p><b>Unit Loc: 03G</b>      <b>Del Prog: PEII</b>  <b>Unit ID: 14</b>  FCB - Feeder Circuit Breaker</p> <p><b><u>Rating</u></b>  25A</p> <p><b><u>Wiring Diagram</u></b>  10004708959</p> <p><b><u>Name Plate Information</u></b>  UH-5</p> <p><b><u>Overload Relay(s)</u></b>  Motor Full Load Current (FLC) = Not Available</p>	<p><b>Catalog Number: 2193FZ-BJC-61THML-79UT</b>  Total Space Factor = 0.5  Circuit Breaker: Electronic (LSI), 65kA at 480V (25) with Frame Rating of 125A (H6H Frame), Plug-In Unit, 25A Trip  Lugs Supplied: Std Mech/Lug Pads, 1/0 AWG Size Wire, 1 Cables per Phase</p> <p><b><u>Features Included</u></b>  Unit Grd Stab Tin Plated Cu (-79UT)</p>

**Unit Loc: 03H**      **Del Prog: PEII**  
**Unit ID: 10**  
FVNR - Full Voltage Non-Reversing Starter w/CB

**Rating**  
60 HP

**Name Plate Information**  
WELL 15R

**Overload Relay(s)**  
E300 Comm Based Overload (7FE3)  
E300 Communication Option = EtherNet/IP  
E300 Voltage Code = 120V AC  
E300 Control Module = Control Only  
E300 Sensing Module = 0.5..30A Pass Thru  
Current/Volt  
E300 Operator Station = Electronic Reset  
E300 Expansion Module = Not Available  
Motor RPM = 1800  
Motor Full Load Current (FLC) = 74.3  
Motor Service Factor = 1.15

**Ethernet Information**

Device Type	IP Address	Subnet Mask
2113	192.168.1.5	255.255.255.0

Cable Length: 2.9 m

E300 Overload Firmware Version: LATEST

**Catalog Number: 2113B-EDB-3-5LG-6P-7FE3EDCN5VR-48TJA-79UT-90-91-600PAX-750-751S**

Size: NEMA Size 4  
Total Space Factor = 2.5  
Wiring: NEMA Type B wiring  
Circuit Breaker: Instantaneous MCP, 100kA at 480V (J8P Frame) (150A Trip)  
Control: Transformer with Secondary Fuse, Standard Capacity, Primary Fusing, 120V/60Hz  
Control Wiring: #14 AWG MTW (TEW) Cu (Tinned)

**Features Included**  
Selector Switch: HAND-OFF-AUTO (-3)  
Pilot Light(s): ON Type: LED Push To Test, Color(s): Green (-5LG)  
Std Capacity Control Power Transformer W/Primary Fuses (-6P)  
Unit Grd Stab Tin Plated Cu (-79UT)  
1 NO on Starter (-90)  
1 NC on Starter (-91)  
Wiring configured for PlantPax usage (-600PAX)  
#14 AWG MTW (TEW) Cu (Tinned) (-750)  
Sleeve Type Markers (-751S)



**Unit Loc: 04A**      **Del Prog: PEII**  
**Unit ID: 6**  
FVNR - Full Voltage Non-Reversing Starter w/CB

**Rating**  
10 HP

**Name Plate Information**  
SF-1

**Overload Relay(s)**  
E300 Comm Based Overload (7FE3)  
E300 Communication Option = EtherNet/IP  
E300 Voltage Code = 120V AC  
E300 Control Module = Control Only  
E300 Sensing Module = 0.5-30A Curr/Grnd Fault/Volt  
E300 Operator Station = Electronic Reset  
E300 Expansion Module = Not Available  
Motor RPM = 1800  
Motor Full Load Current (FLC) = 13.65  
Motor Service Factor = 1.15

**Ethernet Information**

Device Type	IP Address	Subnet Mask
2113	192.168.1.6	255.255.255.0

Cable Length: 1.8 m

E300 Overload Firmware Version: LATEST

**Catalog Number: 2113B-BDB-3-5LG-6P-7FE3EDCN3VR-41TGA-79UT-90-91-600PAX-750-751S**

Size: NEMA Size 1  
Total Space Factor = 1  
Wiring: NEMA Type B wiring  
Circuit Breaker: Instantaneous MCP, 100kA at 480V (G8P Frame) (30A Trip)  
Control: Transformer with Secondary Fuse, Standard Capacity, Primary Fusing, 120V/60Hz  
Control Wiring: #14 AWG MTW (TEW) Cu (Tinned)

**Features Included**  
Selector Switch: HAND-OFF-AUTO (-3)  
Pilot Light(s): ON Type: LED Push To Test, Color(s): Green (-5LG)  
Std Capacity Control Power Transformer W/Primary Fuses (-6P)  
Unit Grd Stab Tin Plated Cu (-79UT)  
1 NO on Starter (-90)  
1 NC on Starter (-91)  
Wiring configured for PlantPax usage (-600PAX)  
#14 AWG MTW (TEW) Cu (Tinned) (-750)  
Sleeve Type Markers (-751S)

<p><b>Unit Loc: 04C</b>      <b>Del Prog: PEII</b>  <b>Unit ID: 7</b>  FVNR - Full Voltage Non-Reversing Starter w/CB</p> <p><b><u>Rating</u></b>  25 HP</p> <p><b><u>Name Plate Information</u></b>  BACKWASH PUMP</p> <p><b><u>Overload Relay(s)</u></b>  E300 Comm Based Overload (7FE3)  E300 Communication Option = EtherNet/IP  E300 Voltage Code = 120V AC  E300 Control Module = Control Only  E300 Sensing Module = 6-60A Curr/Grnd Fault/Volt  E300 Operator Station = Electronic Reset  E300 Expansion Module = Not Available  Motor RPM = 1800  Motor Full Load Current (FLC) = 32.34  Motor Service Factor = 1.15</p> <p><b><u>Ethernet Information</u></b></p> <table border="0"> <tr> <td>Device Type</td> <td>IP Address</td> <td>Subnet Mask</td> </tr> <tr> <td>2113</td> <td>192.168.1.7</td> <td>255.255.255.0</td> </tr> </table> <p>Cable Length: 2.13 m</p> <p>E300 Overload Firmware Version: LATEST</p>	Device Type	IP Address	Subnet Mask	2113	192.168.1.7	255.255.255.0	<p><b>Catalog Number: 2113B-CDB-3-5LG-6P-7FE3EDCN6VR-44TGA-79UT-90-91-600PAX-750-751S</b>  Size: NEMA Size 2  Total Space Factor = 1  Wiring: NEMA Type B wiring  Circuit Breaker: Instantaneous MCP, 100kA at 480V (G8P Frame) (50A Trip)  Control: Transformer with Secondary Fuse, Standard Capacity, Primary Fusing, 120V/60Hz  Control Wiring: #14 AWG MTW (TEW) Cu (Tinned)</p> <p><b><u>Features Included</u></b>  Selector Switch: HAND-OFF-AUTO (-3)  Pilot Light(s): ON Type: LED Push To Test, Color(s): Green (-5LG)  Std Capacity Control Power Transformer W/Primary Fuses (-6P)  Unit Grd Stab Tin Plated Cu (-79UT)  1 NO on Starter (-90)  1 NC on Starter (-91)  Wiring configured for PlantPax usage (-600PAX)  #14 AWG MTW (TEW) Cu (Tinned) (-750)  Sleeve Type Markers (-751S)</p>
Device Type	IP Address	Subnet Mask					
2113	192.168.1.7	255.255.255.0					
<p><b>Unit Loc: 04E</b>      <b>Del Prog: SCII</b>  <b>Unit ID: 17</b>  DOOR - Blank Unit Door</p> <p><b><u>Name Plate Information</u></b>  SPACE</p>	<p><b>Catalog Number: 2100-BJ10</b>  Total Space Factor = 1</p>						
<p><b>Unit Loc: 04G</b>      <b>Del Prog: SCII</b>  <b>Unit ID: 17</b>  DOOR - Blank Unit Door</p> <p><b><u>Name Plate Information</u></b>  SPACE</p>	<p><b>Catalog Number: 2100-BJ10</b>  Total Space Factor = 1</p>						

**Unit Loc: 04J**      **Del Prog: PEII**  
**Unit ID: 5**  
FVNR - Full Voltage Non-Reversing Starter w/CB

**Rating**  
2 HP

**Name Plate Information**  
DECANT PUMP

**Overload Relay(s)**  
E300 Comm Based Overload (7FE3)  
E300 Communication Option = EtherNet/IP  
E300 Voltage Code = 120V AC  
E300 Control Module = Control Only  
E300 Sensing Module = 0.5-30A Curr/Grnd Fault/Volt  
E300 Operator Station = Electronic Reset  
E300 Expansion Module = Not Available  
Motor RPM = 1800  
Motor Full Load Current (FLC) = 3.11  
Motor Service Factor = 1.15

**Ethernet Information**

Device Type	IP Address	Subnet Mask
2113	192.168.1.8	255.255.255.0

Cable Length: 3.13 m

E300 Overload Firmware Version: LATEST

**Catalog Number: 2113B-BDB-3-5LG-6P-7FE3EDCN3VR-37TGA-79UT-90-91-600PAX-750-751S**

Size: NEMA Size 1  
Total Space Factor = 1  
Wiring: NEMA Type B wiring  
Circuit Breaker: Instantaneous MCP, 65kA at 480V (G8P Frame) (7A Trip)  
Control: Transformer with Secondary Fuse, Standard Capacity, Primary Fusing, 120V/60Hz  
Control Wiring: #14 AWG MTW (TEW) Cu (Tinned)

**Features Included**  
Selector Switch: HAND-OFF-AUTO (-3)  
Pilot Light(s): ON Type: LED Push To Test, Color(s): Green (-5LG)  
Std Capacity Control Power Transformer W/Primary Fuses (-6P)  
Unit Grd Stab Tin Plated Cu (-79UT)  
1 NO on Starter (-90)  
1 NC on Starter (-91)  
Wiring configured for PlantPAX usage (-600PAX)  
#14 AWG MTW (TEW) Cu (Tinned) (-750)  
Sleeve Type Markers (-751S)

<p><b>Unit Loc: 04L</b>      <b>Del Prog: PEII</b>  <b>Unit ID: 8</b>  FVNR - Full Voltage Non-Reversing Starter w/CB</p> <p><b><u>Rating</u></b>  25 HP</p> <p><b><u>Name Plate Information</u></b>  BLOWER</p> <p><b><u>Overload Relay(s)</u></b>  E300 Comm Based Overload (7FE3)  E300 Communication Option = EtherNet/IP  E300 Voltage Code = 120V AC  E300 Control Module = Control Only  E300 Sensing Module = 6-60A Curr/Grnd Fault/Volt  E300 Operator Station = Electronic Reset  E300 Expansion Module = Not Available  Motor RPM = 1800  Motor Full Load Current (FLC) = 32.34  Motor Service Factor = 1.15</p> <p><b><u>Ethernet Information</u></b></p> <table border="0"> <tr> <td>Device Type</td> <td>IP Address</td> <td>Subnet Mask</td> </tr> <tr> <td>2113</td> <td>192.168.1.9</td> <td>255.255.255.0</td> </tr> </table> <p>Cable Length: 3.46 m</p> <p>E300 Overload Firmware Version: LATEST</p>	Device Type	IP Address	Subnet Mask	2113	192.168.1.9	255.255.255.0	<p><b>Catalog Number: 2113B-CDB-3-5LG-6P-7FE3EDCN6VR-44TGA-79UT-90-91-600PAX-750-751S</b>  Size: NEMA Size 2  Total Space Factor = 1  Wiring: NEMA Type B wiring  Circuit Breaker: Instantaneous MCP, 100kA at 480V (G8P Frame) (50A Trip)  Control: Transformer with Secondary Fuse, Standard Capacity, Primary Fusing, 120V/60Hz  Control Wiring: #14 AWG MTW (TEW) Cu (Tinned)</p> <p><b><u>Features Included</u></b>  Selector Switch: HAND-OFF-AUTO (-3)  Pilot Light(s): ON Type: LED Push To Test, Color(s): Green (-5LG)  Std Capacity Control Power Transformer W/Primary Fuses (-6P)  Unit Grd Stab Tin Plated Cu (-79UT)  1 NO on Starter (-90)  1 NC on Starter (-91)  Wiring configured for PlantPax usage (-600PAX)  #14 AWG MTW (TEW) Cu (Tinned) (-750)  Sleeve Type Markers (-751S)</p>
Device Type	IP Address	Subnet Mask					
2113	192.168.1.9	255.255.255.0					
<p><b>Unit Loc: 05A</b>      <b>Del Prog: SCII</b>  <b>Unit ID: 17</b>  DOOR - Blank Unit Door</p> <p><b><u>Name Plate Information</u></b>  SPACE</p>	<p><b>Catalog Number: 2100-BJ10</b>  Total Space Factor = 1</p>						
<p><b>Unit Loc: 05C</b>      <b>Del Prog: SCII</b>  <b>Unit ID: 11</b>  VFD - PowerFlex 525 AC Drive w/CB</p> <p><b><u>Rating</u></b>  5 HP</p> <p><b><u>Name Plate Information</u></b>  PD</p> <p><b><u>Ethernet Information</u></b></p> <table border="0"> <tr> <td>Device Type</td> <td>IP Address</td> <td>Subnet Mask</td> </tr> <tr> <td>2163W</td> <td>192.168.1.11</td> <td>255.255.255.0</td> </tr> </table> <p>Cable Length: 3.62 m</p> <p>PowerFlex 525 Firmware Version: LATEST</p>	Device Type	IP Address	Subnet Mask	2163W	192.168.1.11	255.255.255.0	<p><b>Catalog Number: 2163WB-010JB-3F-5LR-14DFCC-14HC2S-14RLX-39TGM-79UT-600PAX-751S</b>  Total Space Factor = 2.5  Wiring: NEMA Type B wiring  Output Current Rating: 10A  Circuit Breaker: Thermal Magnetic, 65kA at 480V (G6C Frame) (20A Trip)  Human Interface Module: Drive HIM LCD Door display-digital keypd  Control: Transformer with Secondary Fuse, Standard Capacity, Primary Fusing, 120V/60Hz  Control Wiring: #16 AWG MTW(TEW) Cu</p> <p><b><u>Features Included</u></b>  Selector Switch: HAND-OFF-AUTO (-3F)  Pilot Light(s): RUN Type: LED Push To Test, Color(s): Red (-5LR)  Drive I/P fuses - Class CC (-14DFCC)  Drive Line Reactor (-14RLX)  Unit Grd Stab Tin Plated Cu (-79UT)  Wiring configured for PlantPax usage (-600PAX)  Sleeve Type Markers (-751S)</p>
Device Type	IP Address	Subnet Mask					
2163W	192.168.1.11	255.255.255.0					

<p><b>Unit Loc: 05H</b>      <b>Del Prog: SCII</b>  <b>Unit ID: 11</b>  VFD - PowerFlex 525 AC Drive w/CB</p> <p><b><u>Rating</u></b>  5 HP</p> <p><b><u>Name Plate Information</u></b>  PD</p> <p><b><u>Ethernet Information</u></b></p> <table border="0"> <tr> <td>Device Type</td> <td>IP Address</td> <td>Subnet Mask</td> </tr> <tr> <td>2163W</td> <td>192.168.1.10</td> <td>255.255.255.0</td> </tr> </table> <p>Cable Length: 4.45 m</p> <p>PowerFlex 525 Firmware Version: LATEST</p>	Device Type	IP Address	Subnet Mask	2163W	192.168.1.10	255.255.255.0	<p><b>Catalog Number: 2163WB-010JB-3F-5LR-14DFCC-14HC2S-14RLX-39TGM-79UT-600PAX-751S</b></p> <p>Total Space Factor = 2.5  Wiring: NEMA Type B wiring  Output Current Rating: 10A  Circuit Breaker: Thermal Magnetic, 65kA at 480V (G6C Frame) (20A Trip)  Human Interface Module: Drive HIM LCD Door display-digital keypd  Control: Transformer with Secondary Fuse, Standard Capacity, Primary Fusing, 120V/60Hz  Control Wiring: #16 AWG MTW(TEW) Cu</p> <p><b><u>Features Included</u></b></p> <p>Selector Switch: HAND-OFF-AUTO (-3F)  Pilot Light(s): RUN Type: LED Push To Test, Color(s): Red (-5LR)  Drive I/P fuses - Class CC (-14DFCC)  Drive Line Reactor (-14RLX)  Unit Grd Stab Tin Plated Cu (-79UT)  Wiring configured for PlantPax usage (-600PAX)  Sleeve Type Markers (-751S)</p>
Device Type	IP Address	Subnet Mask					
2163W	192.168.1.10	255.255.255.0					

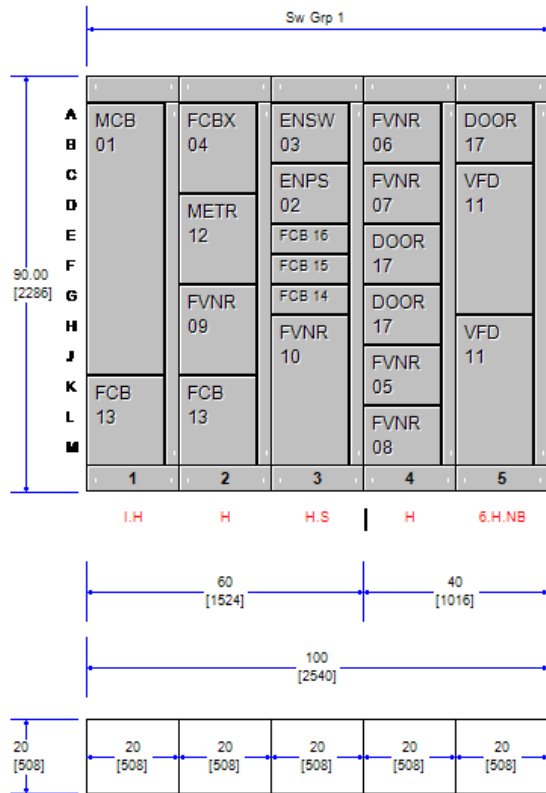
# Rockwell Automation

## Centerline 2100 Motor Control Center Front Elevation

Project Name: Castlerock  
 Project Item: MCC  
 Project ID #: 5334043/2

Salesperson: Dominic Del Fiacco  
 Created By: Dominic Del Fiacco  
 Date/Time: 07/22/24 - 15:05

Rockwell Automation/Allen-Bradley  
 PowerControl Builder Lineup



NOTE: Dimensions are subject to change after design review.  
 ENCLOSURE: NEMA Type 12 (Fully Gasketed with Bottom Closing Plates)

Estimated Heat Loss: 1865 watts.  
 BTU/hr. Required: 6363  
 Air Conditioning Tons: 0.53  
 Estimated Weight: 2500 lbs. (1134 kg)  
 Heat loss values are for estimating purposes only.

# Rockwell Automation

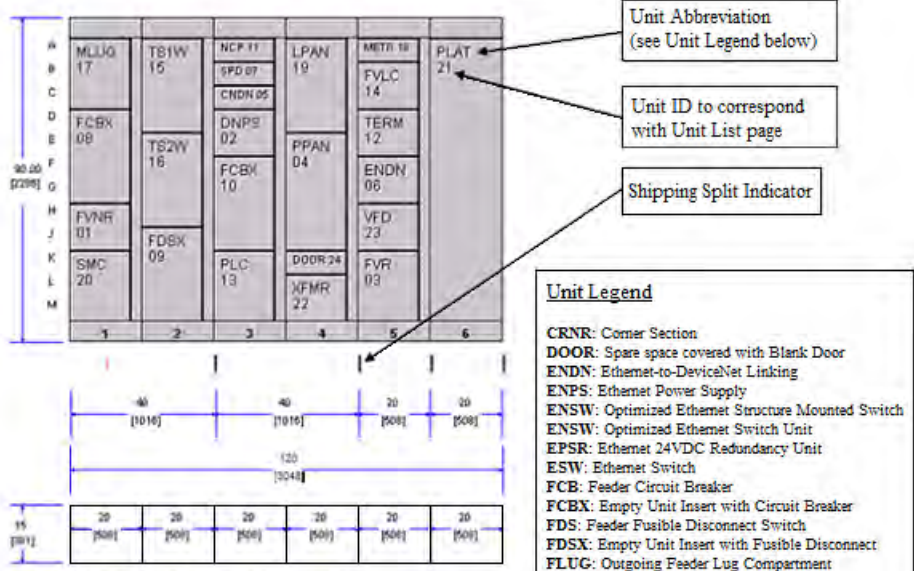
## Centerline 2100 Motor Control Center

### Front Elevation Explanation

Project Name: Castlerock  
 Project Item:  
 Project ID #: 5334043/2

Salesperson: Dominic Del Fiacco  
 Created By: Dominic Del Fiacco  
 Date/Time: 07/22/24 - 15:05

#### Understanding Rockwell Automation Layouts



ENCLOSURE : NEMA Type 1 (General Purpose)

#### Section Code Legend

- 6 = 600A vertical bus in section
- 8 = PowerFlex 755 Floor Mounted Drive Section
- 9 = 9" wireway section
- C = Corner section
- H = Horizontal neutral bus
- I = Incoming line section
- NB = Neutral connection plate in bottom of section
- NT = Neutral connection plate in top of section
- P = Pull box mounted on top of section
- S = Ethernet switch
- T = 5" PowerFlex 755 Floor Mounted Drive Transition Section
- V = 9" wireway has vertical neutral bus

Space Factor (SF) is 13.0" (330mm) of vertical height

#### Unit Legend

- CRNR: Corner Section
- DOOR: Spare space covered with Blank Door
- ENDN: Ethernet-to-DeviceNet Linking
- ENPS: Ethernet Power Supply
- ENSW: Optimized Ethernet Structure Mounted Switch
- ENSW: Optimized Ethernet Switch Unit
- EPSR: Ethernet 24VDC Redundancy Unit
- ESW: Ethernet Switch
- FCB: Feeder Circuit Breaker
- FCBX: Empty Unit Insert with Circuit Breaker
- FDS: Feeder Fusible Disconnect Switch
- FDSX: Empty Unit Insert with Fusible Disconnect
- FLUG: Outgoing Feeder Lug Compartment
- FVLC: Full Voltage Lighting Contactor
- FVNR: Full Voltage Non-Reversing Starter
- FVR: Full Voltage Reversing Starter
- INSR: Empty Unit Insert
- LPAN: Frame-Mounted Lighting Panel
- MCB: Main Circuit Breaker
- METR: Metering Compartment
- MFDS: Main Fusible Disconnect Switch
- MLUG: Incoming Main Lug Compartment
- NCP: Neutral Connection Plate
- PLAT: Full Section Blank Mounting Plate
- PLC: Programmable I/O Chassis
- PPAN: Power Panel
- SMC: Soft Starter Motor Controller
- SPD: Surge Protective Device
- TERM: NEMA Type "C" Terminal Board
- TS1W: Two-Speed 1-Winding Starter
- TS2W: Two-Speed 2-Winding Starter
- VFD: Variable Frequency Drive
- XFMR: Control & Lighting Transformer

Exhibit 3\_R1

No.	Site Name	Quantity	Unit	Labor Price	Equipment Price	Additional Scope Price	Total Price
1	Miller Water Treatment Plant	1	LS	\$337,290	\$554,940	\$143,460.00	\$1,035,690.00
2	BM1A_D Well	1	LS	\$91,930	\$36,240	n/a	\$128,170.00
3	BM2 Well	1	LS	\$93,760	\$41,750	n/a	\$135,510.00
4	RT6ABC	1	LS	\$90,050	\$32,290	n/a	\$122,340.00
5	RT14	1	LS	\$87,780	\$24,300	n/a	\$112,080.00
6	W7 Well	1	LS	\$110,010	\$60,790	\$4,550.00	\$175,350.00
7	Citadel Pump Station	1	LS	\$118,000	\$57,210	n/a	\$175,210.00
8	Hillside Pump Station	1	LS	\$105,650	\$47,190	\$510.00	\$153,350.00
9	Plum Creek Pump Station	1	LS	\$113,190	\$77,870	\$660.00	\$191,720.00
10	Black Feather PRV	1	LS	\$95,370	\$59,880	n/a	\$155,250.00
11	Briscoe PRV	1	LS	\$87,280	\$27,820	n/a	\$115,100.00
12	Scott PRV	1	LS	\$87,280	\$48,460	n/a	\$135,740.00
13	Valley PRV	1	LS	\$87,280	\$44,500	n/a	\$131,780.00
14	Castlewood 1 Lift Station	1	LS	\$149,640	\$75,840	\$4,730.00	\$230,210.00
15	Castlewood 2 Lift Station	1	LS	\$147,430	\$73,440	\$1,450.00	\$222,320.00
16	Maher Lift Station	1	LS	\$140,840	\$76,920	n/a	\$217,760.00
17	Mitchell Creek Lift Station	1	LS	\$127,260	\$76,790	\$18,320.00	\$222,370.00
18	Sellers Lift Station	1	LS	\$145,030	\$59,130	\$15,370.00	\$219,530.00
19	Meadows Grinder	1	LS	\$83,870	\$29,870	\$3,280.00	\$117,020.00
20	Main Flume	1	LS	\$74,810	\$20,210	\$1,560.00	\$96,580.00
21	Meadows Flume	1	LS	\$75,870	\$21,380	\$6,490.00	\$103,740.00
22	North Flume	1	LS	\$71,740	\$19,310	\$1,560.00	\$92,610.00
23	Red Hawk Pond	1	LS	\$68,840	\$19,910	n/a	\$88,750.00
24	General Conditions (Division 01)	1	LS	n/a	n/a	n/a	\$0.00
25	Conduit Allowance	1	LS	n/a	n/a	n/a	\$50,000.00
26	Warranties - Alternate 1	1	LS	n/a	n/a	n/a	\$0.00
27	Warranties - Alternate 2	1	LS	n/a	n/a	n/a	\$47,540.00
<b>Sum Total</b>							<b>\$4,475,720.00</b>

LSI / Castle Rock Water Confidential





**EXHIBIT 2**

CONTRACTOR'S CERTIFICATE OF INSURANCE



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

6/28/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> McDaniel-Whitley, Inc. P.O. Box 382007  Memphis TN 38183-2007	<b>CONTACT NAME:</b> Tammy Quinn	
	<b>PHONE (A/C No. Ext):</b> (901)881-6464	<b>FAX (A/C No):</b> (901)881-6467
<b>E-MAIL ADDRESS:</b> tqquinn@mcwins.com		
<b>INSURER(S) AFFORDING COVERAGE</b>		<b>NAIC #</b>
<b>INSURER A:</b> Hartford Accident & Indemnity		22357
<b>INSURER B:</b> Trumbull Insurance Company		27120
<b>INSURER C:</b> Hartford Casualty Insurance Company		29424
<b>INSURER D:</b> Hartford Fire Insurance Company		19682
<b>INSURER E:</b> Navigators Specialty Insurance Company		36056
<b>INSURER F:</b> Continental Casualty Company		20443

**COVERAGES**

CERTIFICATE NUMBER: 24-25 MASTER

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	<input checked="" type="checkbox"/> COMMERCIAL GENERAL LIABILITY <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC <input type="checkbox"/> OTHER:			20UUNBC5FFN	6/30/2024	6/30/2025	EACH OCCURRENCE	\$ 1,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 300,000
							MED EXP (Any one person)	\$ 10,000
							PERSONAL & ADV INJURY	\$ 1,000,000
							GENERAL AGGREGATE	\$ 2,000,000
							PRODUCTS - COMP/OP AGG	\$ 2,000,000
								\$
B	<input checked="" type="checkbox"/> AUTOMOBILE LIABILITY <input type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> HIRED AUTOS  <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS			20UUNBC5FFN	6/30/2024	6/30/2025	COMBINED SINGLE LIMIT (Ea accident)	\$ 1,000,000
							BODILY INJURY (Per person)	\$
							BODILY INJURY (Per accident)	\$
							PROPERTY DAMAGE (Per accident)	\$
							\$	
C	<input checked="" type="checkbox"/> UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$ 10,000			20XHUBE3L20	6/30/2024	6/30/2025	EACH OCCURRENCE	\$ 15,000,000
							AGGREGATE	\$ 15,000,000
								\$
C	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N	N/A	20WEAB6J11	6/30/2024	6/30/2025	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER	
							E.L. EACH ACCIDENT	\$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	\$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	\$ 1,000,000
D	Professional Liability			20TE033022418	6/30/2024	6/30/2025	LIMIT OF INSURANCE	5,000,000
F	Excess Professional Liab			652349860	6/30/2024	6/30/2025	LIMIT OF INSURANCE	5,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

E. Pollution Liability Pol# NY24ECPX01463NC  
 6/30/2024 to 6/30/2025 - \$5,000,000 Limit of Insurance

**CERTIFICATE HOLDER****CANCELLATION**

Castle Rock Water 175 Kellogg Ct Castle Rock, CO 80109	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.  AUTHORIZED REPRESENTATIVE R Whitley/QUINNT <i>Richard Whitley</i>
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# Town of Castle Rock

## Agenda Memorandum

**Agenda Date:** 8/28/2024

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**Item #:** 6. **File #:** WC 2024-082

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**To:** Members of the Castle Rock Water Commission

**From:** Mark Marlowe, P.E., Director of Castle Rock Water  
Matt Benak, P.E., Water Resources Manager

**Resolution Approving the Infrastructure Development and Purchase Option Agreement and Water Lease Agreement between the Town of Castle Rock, Acting by and through the Castle Rock Water Enterprise, and Tallgrass Colorado Municipal Water, LLC [Box Elder Property in Weld County, Colorado]**  
**Town Council Agenda Date:** September 3, 2024

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### Executive Summary

Castle Rock Water (CRW) staff request Town Council approval of a Resolution for the Infrastructure Development and Purchase Option Agreement and Water Lease agreement between the Town of Castle Rock and Tallgrass Colorado Municipal Water, LLC (Tallgrass).

CRW owns the Box Elder property in Weld County along with eleven wells and associated water rights with a decreed volume of 1,492 acre-feet (AF) in the Lost Creek Designated Basin. Furthermore, CRW owns 770 AF of water rights along the South Platte River as part of the Rothe Recharge project. Collectively, the property and water rights are the backbone of what will be the Town's Box Elder renewable water delivery project. The Box Elder project has been identified as a key piece of the Town's renewable water supply portfolio accounting for around 15% or more of our future water demands. The Town obtained the final Water Court decree for the Box Elder augmentation plan and water rights on April 18, 2024.

The overall concept is to gather raw water from the Lost Creek wells, deliver that water to the Box Elder property for augmentation of Box Elder alluvial well pumping and direct delivery to East Cherry Creek Valley's (ECCV) Water Treatment Plant. The Town plans to enter into subsequent agreements with ECCV for treatment and pumping of our water and delivery within existing pipeline infrastructure back to the Town.

The Town has identified an opportunity to work with a private entity (Tallgrass) to construct some of the key pieces of pipeline and pumping infrastructure to be able to spread out the large capital costs over time and to have the opportunity to purchase additional water rights (1,000 AF) that Tallgrass currently owns. This additional water will help the Town achieve its goal of 100% renewable water (in an average water year) by 2065. Furthermore, leasing of our Lost Creek water to Tallgrass in the near term will allow the Town to realize some additional revenue helping to offset the overall cost of

the Box Elder project with a positive benefit to our ratepayers.

### Discussion

As part of the Town's hybrid renewable water solution, the Town purchased the xx-acre Box Elder Farm and closed on the property on December 30, 2016. This farm is located approximately six miles east of Lochbuie, CO in southern Weld County as shown in **Attachment B**. The water rights associated with this property will serve as a source of supply, along with the Lost Creek Basin wells and Rothe Recharge water rights, for the increased water demands that the Town will face as population growth continues.

The Box Elder project has been envisioned as an approximately 2,500 AF yield water delivery project. The overall concept is to gather raw water from the Town's Lost Creek wells, deliver that water to the Box Elder property for augmentation of Box Elder alluvial well pumping and direct delivery to East Cherry Creek Valley's (ECCV) Water Treatment Plant. The Town plans to enter into subsequent agreements with ECCV for treatment and pumping of our water and delivery within existing pipeline infrastructure back to the Town.

Because the infrastructure is not yet in place to transport this water to ECCV, the Town has been leasing the Lost Creek water to other entities for agricultural purposes, which has helped to generate approximately \$192,000 in revenue for Castle Rock Water since 2018.

The Town now has an opportunity to lease our Lost Creek water to Tallgrass at a much higher lease rate than what the Town has been leasing for agricultural purposes. Additionally, Tallgrass is agreeable to constructing what we refer to as Phase 1A of the Box Elder infrastructure project. This will consist of approximately xx linear feet of high-density polyethylene (HDPE) pipeline gathering system that ties all eleven (11) of Castle Rock's Lost Creek Wells together to give the ability to tie that water into Tallgrass' adjacent water gathering system located just to the north of Castle Rock's wells (see **Attachment C**). Importantly, this well gathering system is infrastructure that will be needed by Castle Rock in the future when water must be delivered to the Box Elder property and subsequently to ECCV for treatment and delivery to the Town to meet its customer's demands.

The Town and Tallgrass would like to enter into an agreement where Tallgrass constructs the pipeline gathering system; improves all eleven wells; develops a telemetry system and ties the wells into Tallgrass' system for lease of the water. The agreement states that the two parties will continue to negotiate towards a larger deal where Tallgrass will construct the other necessary infrastructure in phases and the Town pays down the construction and financing costs over time. Other infrastructure that is needed includes a booster pump station out of Lost Creek, a raw water pipeline to Box Elder, new wells on the Box Elder property; a pipeline manifold system on the Box Elder property; infiltration/percolation beds on Box Elder; a pump station at Box Elder to pump water to ECCV and treatment and pumping capacity additions to ECCV's system. This entire infrastructure is anticipated to cost \$80 to \$100 million to implement over the next ten years.

If a larger deal can be struck with Tallgrass, they have an additional 1,000 AF of water they are willing to sell to Castle Rock. This water would represent approximately 5% of the Town's future water demands and would bolster our goal of being 100% renewable by 2065. This water would also tie

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**Item #: 6. File #: WC 2024-082**

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readily into the overall Box Elder project since Tallgrass' and Castle Rock's Lost Creek supplies would be tied together.

If Tallgrass and the Town cannot come to an agreement on the large project, the Town agrees to buy the newly constructed Lost Creek gathering system for \$15 million.

**Budget Impact**

If the Town and Tallgrass cannot come to agreement to continue to negotiate a deal beyond this agreement, the Town will owe \$15 million by September 1, 2025. The Town expects up to \$775,000 of revenue from water leases to Tallgrass in 2024 and up to \$2.38 million in 2025 and beyond for water leases to Tallgrass for their oil and gas development operations.

**Staff Recommendation**

Staff and Castle Rock Water Commission recommend that Town Council approve the Infrastructure Development and Purchase Option Agreement between the Town of Castle Rock and Tallgrass Colorado Water, LLC.

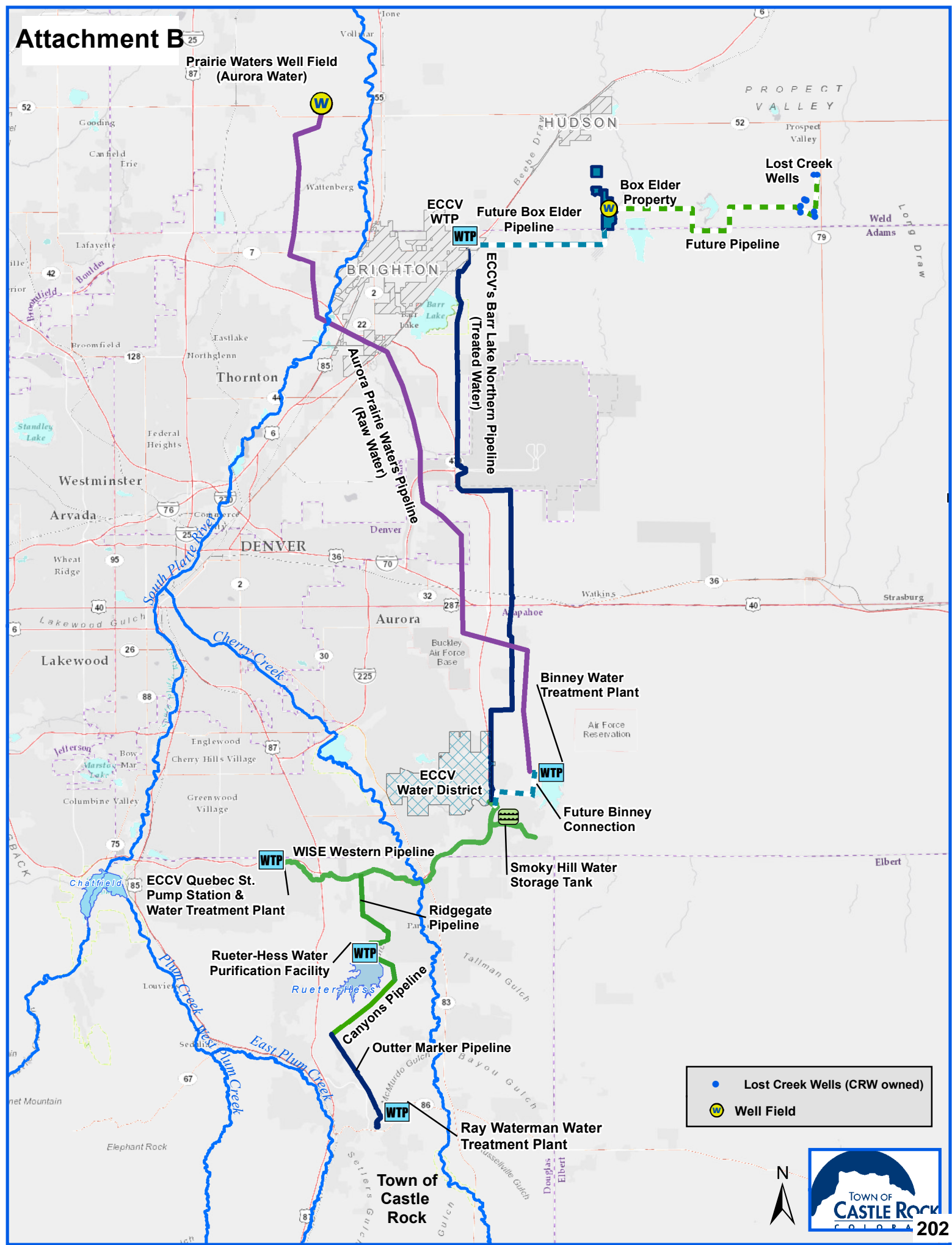
**Proposed Motion**

*"I move to recommend to Town Council approval of the Resolution as presented"*

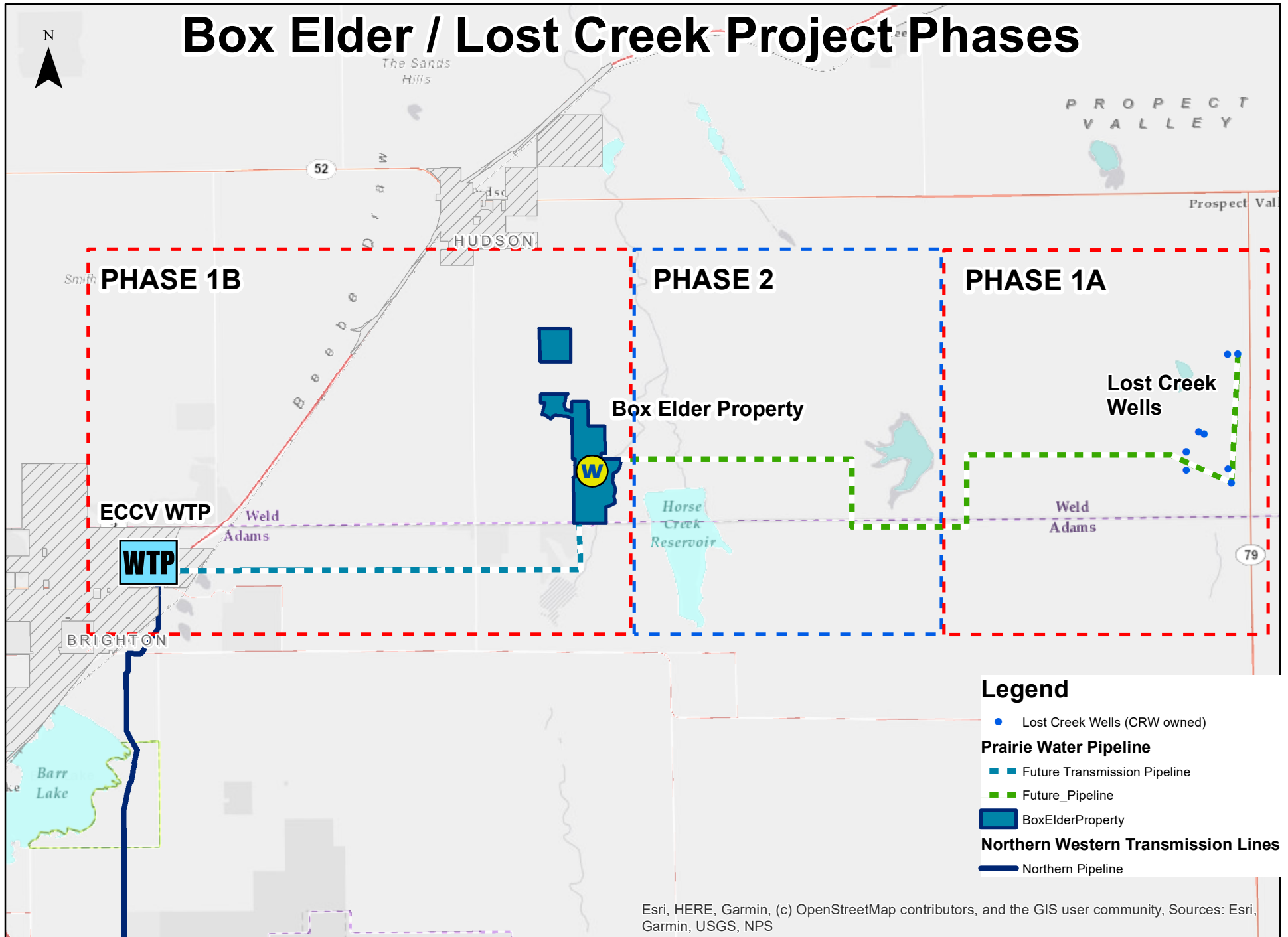
**Attachments**

- Attachment A: Resolution *(Not Attached)*
  - Exhibit 1: Agreement
- Attachment B: Location Map *(Not Attached)*

# Attachment B



# Box Elder / Lost Creek Project Phases



**Legend**

- Lost Creek Wells (CRW owned)
- ▬ Future Transmission Pipeline
- ▬ Future\_Pipeline
- BoxElderProperty
- ▬ Northern Western Transmission Lines
- ▬ Northern Pipeline

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Sources: Esri, Garmin, USGS, NPS



# Town of Castle Rock

## Agenda Memorandum

**Agenda Date:** 8/28/2024

**Item #:** 7. **File #:** WC 2024-083

**To:** Members of the Castle Rock Water Commission

**From:** Mark Marlowe, P.E., Director of Castle Rock Water  
Roy Gallea, P.E., Engineering Manager  
Erin Evans, P.E., Project Manager

**Resolution Approving a Services Agreement between the Town of Castle Rock and Consor Engineering for the Plum Creek Pipeline Central Well Field to PCWPF Project**  
*[Located parallel to East Plum Creek through Central Castle Rock, CO]*  
**Town Council Agenda Date:** September 3, 2024

### Executive Summary

Castle Rock Water (CRW) staff requests approval of a resolution (Attachment A) approving a Services Agreement (**Exhibit 1**) with Consor Engineering (Consor) for the Plum Creek Pipeline Central Well Field to Plum Creek Water Purification Facility (PCWPF) engineering and design services. The Consor Engineering proposed fee is \$390,676. This fee includes design services to upsize the existing Plum Creek Raw Water Return Pipeline from an existing 16-inch diameter to an equivalent 30-inch diameter to meet renewable water capacity needs to PCWPF. An evaluation of environmental considerations, an alignment study, and coordination for the anticipated BNSF railroad crossing are included in Consor’s scope. The full scope of services to be completed by Consor is detailed in the proposal included in *Exhibit 1*. Consor’s rate and fee schedule is also an attachment to the agreement.

Consor shall undertake the work upon execution of the agreement and shall complete the work by Summer 2025. A project location map is provided in an attachment (**Attachment B**).

### **Estimated Project Budget**

Engineering	\$ 390,676
Construction - Estimated	\$ 11,000,000
Construction Phase Engineering - Estimated	\$1,000,000
Land Acquisition* - Estimated	\$ 90,000
Estimated Project Total	\$12,480,676

\*One alignment selection goal will be to remain in Town owned property where feasible.



**Notification and Outreach Efforts**

CRW Staff will evaluate the need for public outreach based on final design location and the level of impact to the public. At this time, no public meetings are included in the scope of work. In the event land acquisition is determined necessary, staff will return to Council for consideration of Eminent Domain Authorization.

**Discussion**

The Plum Creek Raw Water Return Pipeline brings water from the Plum Creek Diversion Structure and Castle Rock Reservoir No. 1 (CRR1) in Sedalia and alluvial wells through town to PCWPF as a critical water supply to the treatment facility. This pipeline is currently 30-inches from Sedalia to the Central Well Field near North Meadows Drive, then continues as 16-inches from the Central Well Field to PCWPF.

Castle Rock Water is currently designing and implementing an expansion of PCWPF from 6 Million Gallons per Day (MGD) capacity to 12 MGD and Castle Rock Reservoir No. 1 and No. 2 (CRR2) upgrades that will increase our local raw water storage capacity from 240 Acre-Feet to 1,340 Acre-Feet. The approximately 11,000 foot stretch of existing 16-inch Plum Creek Raw Water supply line creates a bottleneck that limits the delivery of our stored renewable water from Sedalia to PCWPF if it is not upsized to an equivalent 30-inch to match current and future proposed upgrades to the Town’s water treatment and supply systems.

A Request for Qualifications (RFQ) was advertised on Bidnet to procure qualified consultants for the 2024 on-call professional services for various Castle Rock Water Capital Improvement Projects. A project specific Request for Proposal (RFP) to assist the Town with pipeline upsizing design services was then sent to six of the pre-qualified consultants for this project. The following table shows the fee proposals received from four of the consulting firms:

<b>Consulting Firm</b>	<b>Total Cost</b>
AE2S	\$395,524
Conсор Engineering	\$390,676
Forsgren	No Proposal
Dewberry Engineers	No Proposal
Providence Infrastructure	\$446,951
Burns & McDonnell	\$499,656

Conсор Engineering was chosen by the selection committee to perform the design services for this project and staff has determined the price provided is reasonable and the consultant’s proposal demonstrated the greatest value for this project. Some of the consultants that were invited to propose on this project could not fit this work into their current project loads.

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Item #: 7. File #: WC 2024-083

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**Budget Impact**

The Consor proposal fee is \$390,676. Staff requests an additional \$39,068 (Town-managed 10% contingency) be authorized for a total project authorization of \$429,744. The project will be funded from the account shown below.

Account Name	Account Number	Amount Requested	Contingency Requested	2024 Budget
PC Central Well Field	211-4375-443.76-63	\$390,676	\$39,068	\$1,700,000

**Staff Recommendation**

Staff recommends Town Council approval of the resolution awarding the Services Agreement for Plum Creek Pipeline Central Well Field to PCWPF design services to Consor Engineering in the amount of \$390,676 plus a Town-managed 10% contingency in the amount of \$39,068, for a total authorization of \$429,744.

**Proposed Motion**

*"I move to recommend to Town Council approval of the Resolution as presented"*

**Attachments**

- Attachment A: Resolution (*Not Attached*)
- Exhibit 1: Agreement
- Attachment B: Location Map



**TOWN OF CASTLE ROCK SERVICES AGREEMENT**  
**(Plum Creek Pipeline Central to PCWPF – CRW)**

---

**DATE:** \_\_\_\_\_

**PARTIES:** **TOWN OF CASTLE ROCK**, a Colorado municipal corporation, 100 N. Wilcox Street, Castle Rock, Colorado 80104 (the “Town”).

**CONSOR NORTH AMERICA, INC.**, an Oregon corporation, 1157 W. Century Drive, Suite 220, Louisville, Colorado 80027 (“Consultant”).

**RECITALS:**

- I. The Town issued a Request for Quotes/Proposals/Bids from qualified consultants with expertise in engineering and design services. Consultant timely submitted its proposal.
- II. The Town engages Consultant to provide the services more fully described in the following Agreement and Exhibits.

**TERMS:**

1. **Scope of Services.** Consultant shall provide all of the services to the Town as set forth on *Exhibit 1* (“Services”). Consultant shall complete the Services consistent with standards and practices of the profession.

2. **Payment.** Consultant shall invoice Town monthly for the Services rendered in accordance with the rate and fee schedule set forth in *Exhibit 1*. The Town may withhold payment, in whole or in part, for the Services found by the Town to be defective, untimely, unsatisfactory, or otherwise not conforming to this Agreement, or not in conformance with all applicable federal, state, and local laws, ordinances, rules and regulations. The Town shall not be required to pay for disputed Services until the dispute is resolved. The Town shall remit payment to Consultant, whether in whole or in part, within thirty (30) days receipt of such invoice. In no event shall payment to Consultant under this Agreement exceed **\$390,676.00**, unless authorized in writing by Town.

3. **Term.** The term of this Agreement shall commence upon execution of the Agreement and expire on December 31, 2025 (the “Term”). The Parties may mutually agree to extend the Term of this Agreement for one (1) additional year under the same terms and conditions by executing a written amendment to this Agreement prior to December 31, 2025. Nothing in this Section prohibits the Parties from amending the payment section and/or incorporating an updated rate and fee schedule should the Parties elect to extend the term of the Agreement. Consultant shall devote adequate resources to assure timely completion of the Services in accordance with the standards specified in this Agreement. Consultant shall perform the Services under this Agreement using a standard of care, skill and diligence ordinarily used by reputable professionals performing under circumstances similar to those required by this Agreement.

4. **Termination.** Town shall have the right to terminate this Agreement with or without cause at any time with ten (10) days’ written notice to Consultant. The Town’s only obligation in the event of termination shall be payment of fees and expenses incurred up to and including the effective date of termination. Upon termination, Consultant shall immediately turn over all work product, materials, and or deliverables created up to the point of termination.



5. **Subcontractors.** Consultant may utilize subcontractors to assist with specialized services as necessary to complete the Services. Consultant will submit any proposed subcontractor and the description of subcontractor services to the Town for its prior approval.

6. **Annual Appropriation.** The continuance of this Agreement is contingent upon the appropriation of funds to fulfill the requirements of the Agreement by the Town. If the Town fails to appropriate sufficient monies to provide for the continuance of the Agreement, the Agreement shall terminate on the final day preceding the date of the beginning of the first fiscal year for which funds are not appropriated. The Town's only obligation in the event of termination shall be payment of fees and expenses incurred up to and including the effective date of termination.

7. **Assignment.** This Agreement shall not be assigned by Consultant without the written consent of the Town.

8. **Notice.** Any notice required or permitted by this Agreement shall be in writing and shall be deemed to have been sufficiently given for all purposes if sent by certified mail or registered mail, postage and fees prepaid, addressed to the Party to whom such notice is to be given at the address set forth on the first page of this Agreement, or at such other address as has been previously furnished in writing to the other Party or Parties. Such notice shall be deemed given when deposited in the United States mail.

9. **Insurance.**

A. **General Conditions:** Consultant agrees to secure, at or before the time of execution of this Agreement, the following insurance covering all operations, goods or services provided pursuant to this Agreement. Consultant shall keep the required insurance coverage in force at all times during the term of the Agreement, including any extension thereof, and during any warranty period. The required insurance shall be underwritten by an insurer licensed or authorized to do business in Colorado and rated by A.M. Best Company as "A-VII" or better. Each policy shall require notification to the Town in the event any of the required policies be canceled or non-renewed before the expiration date thereof. Such written notice shall be sent to the Parties identified in the Notices section of this Agreement. Such notice shall reference the Town. Said notice shall be sent thirty (30) days prior to such cancellation or non-renewal unless due to non-payment of premiums for which notice shall be sent ten (10) days prior. If such written notice is unavailable from the insurer, Consultant shall provide written notice of cancellation, non-renewal and any reduction in coverage to the Town by certified mail, return receipt requested within three (3) business days of such notice by its insurer(s). Consultant shall be responsible for the payment of any deductible or self-insured retention. The insurance coverages specified in this Agreement are the minimum requirements, and these requirements do not lessen or limit the liability of the Consultant. The Consultant shall maintain, at its own expense, any additional kinds or amounts of insurance that it may deem necessary to cover its obligations and liabilities under this Agreement. All commercial and automobile liability policies shall have the following additional provisions:

- Severability of interests or separation of insureds provision;
- Provision that coverage is primary and non-contributory with other coverage maintained by the Town;
- The underlying Agreement is an "insured contract" under the policy;
- Defense costs shall be outside the policy limits for liability coverage.

B. **Proof of Insurance:** Consultant may not commence services or work relating to this Agreement prior to placement of coverages required under this Agreement. Consultant certifies that the certificate of insurance attached as *Exhibit 2*, preferably an ACORD form, complies with all insurance requirements of this Agreement. The Town's acceptance of a certificate of insurance or other proof of insurance that does not comply with all insurance requirements set forth in this Agreement shall not act as



a waiver of Consultant's breach of this Agreement or of any of the Town's rights or remedies under this Agreement. Each certificate shall identify the Project and shall provide that coverage afforded under the policies shall not be cancelled, terminated or materially changed until at least 30 days prior written notice has been given to the Town. If the words "endeavor to" appear in the portion of the certificate addressing cancellation, those words shall be stricken from the certificate by the agent(s) completing the certificate. The Town may require additional proof of insurance, including but not limited to policies and endorsements.

C. **Additional Insureds:** For Commercial General Liability and Automobile Liability, Consultant and subcontractor's insurer(s) shall include the Town, its elected and appointed officials, officers, employees, agents and authorized volunteers acting within the course and scope of their duties for the Town as additional insured.

D. **Waiver of Subrogation:** For all coverages required under this Agreement, Consultant's insurer shall waive subrogation rights against the Town, its elected and appointed officials, officers, employees, agents and volunteers acting within the course and scope of their duties for the Town.

E. **Subcontractors:** Consultant shall confirm and document that all subcontractors (including independent contractors, suppliers or other entities providing goods or services required by this Agreement) procure and maintain coverage as approved by the Consultant and appropriate to their respective primary business risks considering the nature and scope of services provided.

F. **Workers' Compensation and Employer's Liability Insurance:** Consultant shall maintain the coverage as required by statute for each work location and shall maintain Employer's Liability insurance with limits of \$100,000 per occurrence for each bodily injury claim, \$100,000 per occurrence for each bodily injury caused by disease claim, and \$500,000 aggregate for all bodily injuries caused by disease claims.

G. **Commercial General Liability:** Consultant shall maintain a Commercial General Liability insurance policy with minimum limits of \$1,000,000 for each occurrence and \$2,000,000 products and completed operations aggregate, and \$2,000,000 general aggregate (per project). The policy shall provide coverage for all claims for bodily injury, property damage (including loss of use), products and completed operations, and contractual liability.

H. **Automobile Liability:** Consultant shall maintain Automobile Liability with minimum limits of \$1,000,000 combined single limit applicable to all owned, hired and non-owned vehicles used in performing services under this Agreement.

I. **Professional Liability (Errors & Omissions):** Consultant shall maintain minimum limits of \$1,000,000 per claim and \$1,000,000 policy aggregate limit. The policy shall be kept in force, or a Tail policy placed, for three (3) years after the completion of the services.

10. **Colorado Governmental Immunity Act.** The Parties understand and agree that the Town is relying on, and does not waive or intend to waive by any provision of this contract, the monetary limitations or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, §24-10-101, *et seq.*, C.R.S., as from time to time amended, or otherwise available to Town, its officers, or its employees.

11. **Indemnification.** Consultant expressly agrees to indemnify, defend and hold harmless Town or any of its officers, agents or employees from any and all claims, damages, liability, or court awards including reasonable attorney's fees that are or may be awarded as a result of any loss, injury or damage

sustained or claimed to have been sustained by anyone, including, but not limited to, any person, firm, partnership, or corporation, to the extent caused by the negligent acts, errors or omissions of Consultant or any of their employees or agents in performing Services pursuant to this Agreement. In the event that any such suit or action is brought against Town, Town will give notice within ten (10) days thereof to Consultant. These defense and indemnification obligations shall survive the expiration or termination of this Agreement.

12. **Delays.** Any delays in or failure of performance by any Party of the obligations under this Agreement shall be excused if such delays or failure are a result of acts of God, fires, floods, strikes, labor disputes, accidents, regulations or orders of civil or military authorities, shortages of labor or materials, or other causes, similar or dissimilar, which are beyond the control of such Party.

13. **Additional Documents & Entire Agreement.** The Parties agree to execute any additional documents or take any additional action that is necessary to carry out this Agreement. Further, this Agreement represents the entire agreement between the Parties and there are no oral or collateral agreements or understandings. This Agreement may be amended only by an instrument in writing signed by the Parties. If any other provision of this Agreement is held invalid or unenforceable, no other provision shall be affected by such holding, and all of the remaining provisions of this Agreement shall continue in full force and effect.

14. **Time of the Essence.** If any payment or any other condition, obligation, or duty is not timely made, tendered or performed by either Party, then this Agreement, at the option of the Party who is not in default, may be terminated by the non-defaulting Party, in which case, the non-defaulting Party may recover such damages as may be proper.

15. **Default and Remedies.** In the event either Party should default in performance of its obligations under this agreement, and such default shall remain uncured for more than ten (10) days after notice of default is given to the defaulting Party, the non-defaulting Party shall be entitled to pursue any and all legal remedies and recover its reasonable attorney's fees and costs in such legal action. In addition, no Party will be entitled to lost profits, economic damages, or actual, direct, incidental, consequential, punitive or exemplary damages in the event of a default.

16. **Waiver.** A waiver by any Party to this Agreement of the breach of any term or provision of this Agreement shall not operate or be construed as a waiver of any subsequent breach by either Party.

17. **Venue and Choice of Law.** Venue for all legal actions shall lie in the District Court in and for the County of Douglas, State of Colorado, and shall be governed by the laws of the State of Colorado as well as the Charter and Municipal Code, rules, regulations, Executive Orders, and fiscal rules of the Town.

18. **Americans with Disabilities Act.** Consultant agrees to ensure that any deliverables, work, services, or equipment developed, designed, constructed or produced pursuant to this Agreement, to include website design services, will comply with all requirements of the Colorado Anti-Discrimination Act, Title II of the Americans with Disabilities Act and, where applicable, Section 504 of the Rehabilitation Act and the Architectural Barriers Act. To the extent any deliverables, work, services, or equipment developed, designed, constructed or produced pursuant to this Agreement fail to comply with the requirements of this Section, Consultant shall indemnify the Town in accordance with the terms of this Agreement and, at the Town's option, shall re-visit, re-construct, or similar, the non-compliant deliverable, work, service, or equipment, or reimburse the Town for the cost associated with bringing the non-compliance deliverable, work, service or equipment into compliance. These indemnification obligations shall survive the expiration or termination of this Agreement.



19. **No Discrimination in Employment.** The Town is a governmental agency and, therefore, in connection with the performance of Work or Services under this Agreement, Consultant shall not refuse to hire, discharge, promote or demote, or to discriminate in matters of compensation against any person otherwise qualified, solely because of race, color, religion, national origin, gender, age, military status, sexual orientation, gender identity or gender expression, marital status, or physical or mental disability, or any other protected class under Federal or State law; and Consultant shall insert the foregoing provision in any subcontracts hereunder.

20. **Title VI Compliance.** To the extent applicable, Consultant shall ensure its current and future compliance with Title VI of the Civil Rights Act of 1964, 42 U.S.C. § 2000d et seq., as amended, which prohibits the exclusion from participation, denial of the benefits of, or subjection to discrimination under programs and activities receiving federal financial assistance, of any person in the United States on the ground of race, color, or national origin.

21. **Advertising and Public Disclosure.** Consultant shall not include any reference to this Agreement or goods or services provided pursuant to this Agreement in any of Consultant's advertising or public relations materials without first obtaining the written approval of the Town. Nothing herein, however, shall preclude the transmittal of any information to officials of the Town, including without limitation, the Town Attorney, Town Manager, and the Town Council.

22. **Ownership of Documents, Open Records, and Copyright.** Any work product, materials, and documents produced by the Consultant pursuant to this Agreement shall become property of the Town upon delivery and shall not be made subject to any copyright or made confidential or protected in any manner unless authorized by the Town. Other materials, methodology and proprietary work used or provided by the Consultant to the Town not specifically created and delivered pursuant to the Services outlined in this Agreement may be protected by a copyright held by the Consultant and the Consultant reserves all rights granted to it by any copyright. However, Consultant acknowledges and understands that the Town is subject to the Colorado Open Records Act, C.R.S. § 24-72-201, et seq. The Town shall not reproduce, sell, or otherwise make copies of any copyrighted, confidential or protected material, subject to the following exceptions: (1) for exclusive use internally by Town staff and/or employees; or (2) pursuant to a request under the Colorado Open Records Act, C.R.S. § 24-72-201, et seq., to the extent that such statute applies; or (3) pursuant to law, regulation, or court order. The Consultant waives any right to prevent its name from being used in connection with the Services.

Consultant warrants that all Services or Work performed under this Agreement shall comply with all applicable patent, trademark and copyright laws, rules, regulations and codes of the United States. Consultant shall not utilize any protected patent, trademark or copyright in performance of the Work or Services unless Consultant has obtained proper permission and all licenses, releases and other necessary documents. Consultant releases, defends, indemnifies and holds harmless the Town, its officers, agents, and employees from any and all claims, damages, suits, costs, expenses, liabilities actions or proceedings of any kind or nature whatsoever, of or by anyone whomsoever, in any way resulting from, or arising out of, directly or indirectly, the performance of the Work or Services under this Agreement which infringes upon any patent, trademark or copyright protected by law. These defense and indemnification obligations shall survive the expiration or termination of this Agreement. Any reuse of above noted work product outside the scope of Work without Consultant review and approval shall be at Town's sole risk and without liability to Consultant.

23. **Authority.** The individuals executing this Agreement represent that they are expressly authorized to enter into this Agreement on behalf of the Town and the Consultant and bind their respective entities. This Agreement is executed and made effective as provided above.



24. **Independent Contractor.** Consultant has completed the Affidavit of Independent Contractor Status, attached as *Exhibit 3*, and submitted same at the time of execution of this Agreement. In addition to the Affidavit, Consultant and the Town hereby represent that Consultant is an independent contractor for all purposes hereunder. Consultant is not covered by any worker's compensation insurance or any other insurance maintained by Town except as would apply to members of the general public. Consultant shall not create any indebtedness on behalf of the Town.

25. **No Third-Party Beneficiaries.** It is expressly understood and agreed that enforcement of the terms and conditions of this Agreement, and all rights of action relating to such enforcement, shall be strictly reserved to Town and Consultant, and nothing contained in this Agreement shall give or allow any such claim or right of action by any other third party on such Agreement. It is the express intention of the Parties that any person other than Town or Consultant receiving services or benefits under this Agreement shall be deemed to be an incidental beneficiary only.

26. **Counterparts & Electronic Signatures.** This Agreement may be executed in counterparts, each of which shall be deemed an original, and all of which together shall be deemed to constitute one and the same instrument. Each of the Parties hereto shall be entitled to rely upon a counterpart of the instrument executed by the other Party and sent by electronic mail. Each Party agrees that this Agreement and any other documents to be delivered in connection herewith may be electronically signed, and that any electronic signatures appearing on this Agreement or such other documents are the same as handwritten signatures for the purposes of validity, enforceability, and admissibility.

27. **Licenses/Taxes.** Consultant affirms it is licensed to do business in the State of Colorado and is in good standing. Further, Consultant shall be solely responsible for paying all applicable taxes associated with or arising out of this Agreement.

28. **Confidentiality.** Consultant agrees that it shall treat as confidential all information provided by the Town regarding the Town's business and operations. All confidential information provided by the Town hereto shall be used by Consultant solely for the purposes of rendering services or work pursuant to this Agreement and, except as may be required in carrying out the terms of this Agreement, shall not be disclosed to any third party without the prior consent of the Town. The foregoing shall not be applicable to any information that is publicly available when provided or which thereafter becomes publicly available or which is required to be disclosed by any regulatory authority in the lawful and appropriate exercise of its jurisdiction over a Party, any auditor of the Parties hereto, by judicial or administrative process or otherwise by applicable law or regulation.

29. **Priority of Provisions.** In the event that any terms of this Agreement and any Exhibit, attachment, or other referenced document are inconsistent, the following order of priority shall control: (1) this Agreement; (2) Exhibit containing Certificate of Insurance; (3) Exhibit containing Scope of Services and Fee Schedule; and (4) Exhibit containing Town of Castle Rock Affidavit of Independent Contractor Status.

**ATTACHED EXHIBITS:**

EXHIBIT 1 – SCOPE OF SERVICES AND FEE SCHEDULE

EXHIBIT 2 – CONSULTANT'S CERTIFICATE OF INSURANCE

EXHIBIT 3 – TOWN OF CASTLE ROCK AFFIDAVIT OF INDEPENDENT CONTRACTOR STATUS

**[SIGNATURE BLOCK TO FOLLOW]**





**ATTEST:**

**TOWN OF CASTLE ROCK**

\_\_\_\_\_  
Lisa Anderson, Town Clerk

\_\_\_\_\_  
Jason Gray, Mayor

**Approved as to form:**

**Approved as to content:**

\_\_\_\_\_  
Kaitlin Parker, Assistant Town Attorney

\_\_\_\_\_  
Mark Marlowe, Director of Castle Rock Water

**CONSULTANT:**

**CONSOR NORTH AMERICA, INC.**

By:

  
\_\_\_\_\_  
(Signature)

Chris Manning  
\_\_\_\_\_  
(Print Name)

Its:

Principal Engineer  
\_\_\_\_\_  
(Title)



## **EXHIBIT 1**

### **SCOPE OF SERVICES AND FEE SCHEDULE**

Consultant shall provide to the Town the below indicated services, including but not necessarily limited to design services to upsize the existing Plum Creek Raw Water Return Pipeline from an existing 16-inch diameter to an equivalent 30-inch diameter to meet capacity needs to Plum Creek Water Purification Facility, an evaluation of environmental considerations, an alignment study, and coordination for the anticipated BNSF railroad crossing:

## SECTION 2 - ACTION PLAN AND SCHEDULE

A work breakdown structure (WBS) has been developed to complete the project as outlined in the RFP. The WBS is divided into tasks and subtasks to align with the sequencing of the design and permitting phase of the project, which are detailed below. This WBS also aligns with the provided fee estimate and CPM schedule.

### Task 1 - Project Management

This task includes the administration and coordination of the consultant's staff, subconsultants, and the interface with the Town's PM and other Town staff. The consultant will actively manage all project work to meet the project budget and schedule. For the purposes of this scope and budget, a 10-month project duration is anticipated. The following subtasks are included:

#### Task 1.1 - Project Administration

Perform general administration and project management throughout design and permitting phases for the successful completion of all tasks and elements of the project within the established scope, schedule, and budget. Document important project decisions as they occur.

- Process and submit monthly billings with a summary of project status by task and subtask, including a summary of invoicing from subconsultants retained for the project.
- Provide progress reporting with monthly billings, including review of work efforts completed, forecasted work for the next monthly period, percent completion, and any encountered or projected challenges or issues.
- Maintain the overall project schedule, including adding staff, subconsultants, and other resources as needed to meet scheduled milestones.

#### Task 1.2 - Client Meetings

Coordinate and attend key project design meetings by video conference. Provide an agenda and summary for all meetings held. The four meetings under this subtask include the following:

- Project Kick-off
- Routing Study
- Design Review at 30% Completion
- Design Review at 90% Completion

#### Task 1.3 - Internal Meetings

Hold internal design team meetings to manage and review design and permitting progress, deliverables, scope, budget, and schedule.

#### Task 1.4 - Subconsultant Coordination

Manage and coordinate with subconsultants including contracting, design coordination, deliverables, scope, budget, and schedule.

#### Task 1.5 - Quality Management

Perform in-house quality management reviews of all deliverables prior to submitting designs to the Town. These reviews follow Consor's prescribed quality management review process and documentation at each of the design milestones.

### Task 1 Deliverables

- Billing with task breakdown and project summary reports highlighting work progress, upcoming project activities, unresolved issues, and current budget status will be submitted to the Town on a monthly basis.
- A proposed schedule through final design and bidding.
- Client meeting agendas and minutes.
- Quality management review logs.

## Task 2 - Data Collection and Site Reconnaissance

This task will provide the background information and field data necessary to inform design decisions and permitting requirements in later tasks. The data from all fieldwork will be clearly represented on the design documents and within permitting applications, as necessary.

### Task 2.1 - Data Collection

Gather and review existing mapping, as-builts, design drawings, engineering reports, and other data related to the proposed project. Review existing water transmission piping, valving, and system operations. It is anticipated available data will include:

- Prior water system studies, analyses, and reports of the Town.
- Property parcels and ROW information (GIS map layer data).
- Town of Castle Rock Utilities base map information.
- Record drawings of all relevant water system facilities pertaining to the site and related Town projects.
- Any available geotechnical information.
- Other available utility mapping, including Town storm sewers, gas, power, and cable.
- Town street and drainage record drawings as well as pavement depth data.
- Tax lot maps.
- Other information relevant to the project.

### Task 2.2 - Site Visits

Perform site reconnaissance with design team and Town staff to review existing site conditions along proposed alignments and at water line tie-in locations. Two site visits are anticipated during this phase of the project.

### Task 2.3 - Field Survey

Work under this task includes all surveying needed to prepare a survey base map identifying existing ROW and easements along the route of the raw water line and the associated connection points. The work to be performed is as follows:

- Place a One-Call Utility Locate as needed for the project.
- Research and determine the existing property/ROW lines within the project limits. Anticipating six legal descriptions for temporary and permanent easement agreements including point of access to the new pipeline corridor.
- Conduct a site topographic survey of project area. This survey will include but not be limited to existing improvements, property pins, underground utility locations, structures, trees, wetland delineation, topography including high and low points (one-foot contours), and horizontal and vertical project control as needed to complete the design of this project.
- All fieldwork will be worked up and a basemap for the project will be developed in AutoCAD. All design drawings will be based on this basemap. The basemap will be provided to the Town.
- Survey data will be in the State Plane NAD83, Colorado Central Zone coordinate system and include coordination of known property corner on or adjacent to the site.

#### **Task 2.4 - Geotechnical Investigation**

Utilizing data collected from the 2012 project in which the 16-inch water line was installed, during this subtask, additional geotechnical investigation work will occur to validate the previous information and support the design of the new pipeline. This proposal includes 15 new test holes with the associated field visual inspection and laboratory testing of the material. The work completed and results of the field and lab work will be summarized in a Geotechnical Engineering Report.

#### **Task 2.5 - Utility Locates and QL-A Investigation**

During this subtask, a thorough utility investigation along the proposed alignment(s) will be completed. This includes identifying the necessary utilities to a Quality Level B (QLB) for utilities identified to be within the project extents. For utilities that the proposed pipeline will cross or be adjacent to, Quality Level A (QLA) locating will be completed. For the purpose of this proposal and based on a review of the existing utilities on the provided drawings for the existing 16-inch pipeline, 35 utilities located to QLA have been estimated. This investigation will be the basis for the Subsurface Utility Engineering (SUE) Report and plans.

#### **Task 2 Deliverables**

- Notes from site visits.
- Geotechnical Engineering Report.
- Utility mapping exhibits.

### **Task 3 – Routing Study**

A routing study of two optional alignments for the proposed transmission main will be conducted. Consor will work with the Town to define and refine additional alignment alternatives to be evaluated. The alternative routes will include conceptual level design, drawings, easements, and cost estimates for the Town's consideration. Our proposal anticipates the expectation for at least one railroad crossing, including permitting and trenchless installation. The advantages and disadvantages of each route will then be identified. A scoring matrix will then be developed to rank each of the alternatives and a preferred route will be identified. It is anticipated that the Town will select the preferred alignment for final design based on Consor's recommendations.

#### **Task 3.1 - Identify Alignment Alternatives**

Utilizing data collected during Task 2, Consor will work closely with the Town to identify viable alignment alternatives based on the connection points, existing ROW, permitting requirements, ease of access for construction and maintenance, and other challenges and opportunities.

#### **Task 3.2 - Evaluate Alignment Alternatives**

Consor will complete a qualitative and quantitative evaluation of the identified alignment alternatives. The evaluation will conclude with the development and implementation of a scoring matrix that will utilize a weighted KPI system to identify the highest ranked alignment.

#### **Task 3.3 - Prepare Conceptual Level Drawings**

The identified viable alignment alternatives will be visually represented by conceptual drawings. These drawings will reflect the overall alignment along with critical areas, constructability challenges, access, required ROW, and overall impacts to existing infrastructure and above grade improvements.

#### **Task 3.4 - Prepare Engineer's Estimates of Probably Construction Costs (EEOPCCs)**

Consor will prepare Class 5 EEOPCCs for the identified alternatives. These EEOPCCs will provide a budgetary level estimate of the construction costs associated with each alternative to help inform the alternative evaluation and the Town's selection of the preferred option.

### **Task 3 Deliverables:**

Deliverables for this task include a technical memorandum documenting the findings for the alignment review. Submit one draft copy and an electronic PDF of the memorandum to the Town for review. Incorporate Town comments and prepare final memorandum and submit in PDF format. The technical memorandum will cover the following elements:

- Discussion of alternatives.
- Conceptual design drawings.
- EEOCCs.
- Scoring matrix and recommendations.

## **Task 4 – Design Documents**

### **Task 4.1 – 30% Design Drawing Development**

Work under this task includes preparation of the preliminary design for the project. This includes pipe preliminary design calculations and analysis to include size and material evaluation, hydraulic analysis, constructability review, and phasing plans, if necessary. The preliminary design will include completion of the drawings to approximately the 30% level that will primarily represent the horizontal alignment along with key features and critical components of the alignment such as trenchless crossings, existing infrastructure to be removed or relocated, and connection points. The anticipated sheets at the 30% design milestone are identified in the provided draft drawing list. The 30% design drawings will be presented for Town review and comments.

### **Task 4.2 – 30% EEOCC**

Utilizing the preliminary design drawing development, an EEOCC will be prepared to support the Town's assessment of the anticipated construction costs from preliminary design with the Town's budget for the project.

### **Task 4.3 – 90% Design Drawing Development**

Work under this task includes preparation of the final design drawings. During this stage, further refinement of the horizontal and vertical alignments will be completed along with the design of valving and other appurtenances for the pipeline. Additionally, the trenchless crossings will be advanced to include the necessary information and details to accurately represent the crossing method and associated requirements. The anticipated sheets at the 90% design milestone are included in the provided draft drawing list. The 90% design drawings will be presented for Town review and comments.

### **Task 4.4 – Technical Specifications**

Utilizing the Town's standards and specifications as the basis, we will prepare technical specifications to cover the full scope of work of the project. The technical specifications will be in Construction Specification Institute (CSI) format. Specifications will be provided in Microsoft Word format along with the 90% design drawings for review and comment by the Town.

### **Task 4.5 – 100% EEOCC**

Utilizing the final design package, a detailed EEOCC will be prepared to support the Town's assessment of the project in relation to the budget. The 100% EEOCC will generally align with the developed bid tab to allow thorough review of contractor's bids during the bidding phase of the project.

### **Task 4.6 – Issued for Bid Documents**

Work under this task includes completion of the final contract documents including plans and specifications. Proceeding from the completion of the final design, contract documents, plans, and specifications will be prepared for public bidding. The plans and specifications will conform to Town design standards. Town comments from the 90% design documents will be incorporated into the design.

#### Task 4 Deliverables

- Electronic scalable set of plans (11 x 17-inch PDF format) at the 30% and 90% and issued for bid design milestones.
- Technical specifications at the 90% and issued for bid design milestones.
- Construction Bid Schedule and other contractual documents required for the bidding phase.
- EEOPCCs at the 30% and 100% design milestones.
- Design CAD files (AutoCAD format).
- Survey control for construction (AutoCAD format).

#### Task 5 – Permitting and ROW Coordination

The Consor team will assist the Town in obtaining permits and approvals required for the project as listed below. It is assumed that the Town will pay all permit fees. Copies of all completed permits to be included in the appendices of the final construction contract documents.

##### Task 5.1 – Permitting and ROW Review

Utilizing the findings from the routing study and further refinements during the design phase, Consor will complete thorough identification of the necessary permitting to allow for construction of the proposed pipeline. Anticipated permitting is outlined below with the associated permitting fees.

- Town of Castle Rock Permits - assumed waived fees
  - Right-of-Way Permit
  - Easement Crossing Permit
  - Boring in Public ROW
  - TESC Manual to support Construction Stormwater Discharge Permit with CDPHE
- Douglas County - depending on selected alignment
  - GESD Permit - \$250 + \$25/ac disturbance
  - Utility Construction Plan Review - \$450
- BNSF Railway
  - Pipeline Crossing - \$2,000 application fee

Based on the Town's goals for the new pipeline as identified in the RFP and reinforced during the site walk, we do not currently anticipate permitting requirements with the USACE or USFWS. Coordination with each agency will occur as needed to evaluate alignment alternatives. The current alignment for the segment to be upsized within this project is outside of the effective floodplain; therefore, floodplain permits are also not anticipated.

Additionally, during this task, Consor will review the existing ROW and identify locations where additional permanent and temporary easements will be needed to support initial Town negotiations.

##### Task 5.2 – TESC Manual

The Consor team will prepare a TESC Manual in accordance with the Town's criteria as well as in compliance with the Town's MS4 permit. The TESC Manual will guide erosion and sediment control measures throughout the duration of construction as well as for final restoration. The TESC Manual will also provide the framework for the selected contractor to apply for and receive their Construction Stormwater Discharge Permit from the CDPHE WQCD.

##### Task 5.3 – Utility Permitting Coordination

Consor will lead coordination with other utilities that the proposed pipeline will cross or route near. This includes identifying and procuring any necessary approvals and permits to allow for construction of the proposed pipeline. Utilities that typically require increased coordination include high and medium voltage power (both above and below grade), high and medium pressure gas mains, and fiber optic and other advanced telecommunications.

#### **Task 5.4 - Subsurface Utility Engineering (SUE) Plans and Report**

Utilizing the work completed under task 2.5, Consor will prepare a SUE Plan and Report in accordance with ASCE 38 and Senate Bill 18-167. The SUE Plan and Report will identify all utilities located within the project extents along with the quality level in which they were located - QLD through QLA. Where QLA located were completed, the horizontal and vertical locations will be noted along with the utility size and type, where appropriate.

#### **Task 5.5 - BNSF Railway Permit Coordination**

Consor will lead coordination with the BNSF Railway to submit an application for and coordinate approval and issuance of a pipeline crossing permit. This will include initial coordination with the local BNSF ROW team along with completion of their permit application. For the purposes of this proposal, we anticipate only a crossing permit will be required. If during the routing study an alignment is selected that will parallel the railway within BNSF ROW, additional permitting, design, and reviews may be required for a longitudinal permit. Additional efforts can include additional geotechnical investigation and seismic monitoring and design, along with additional construction permits. These efforts can be significant and will impact the viability of a longitudinal alignment within BNSF ROW, which is why we have elected to not include this within the base scope of work.

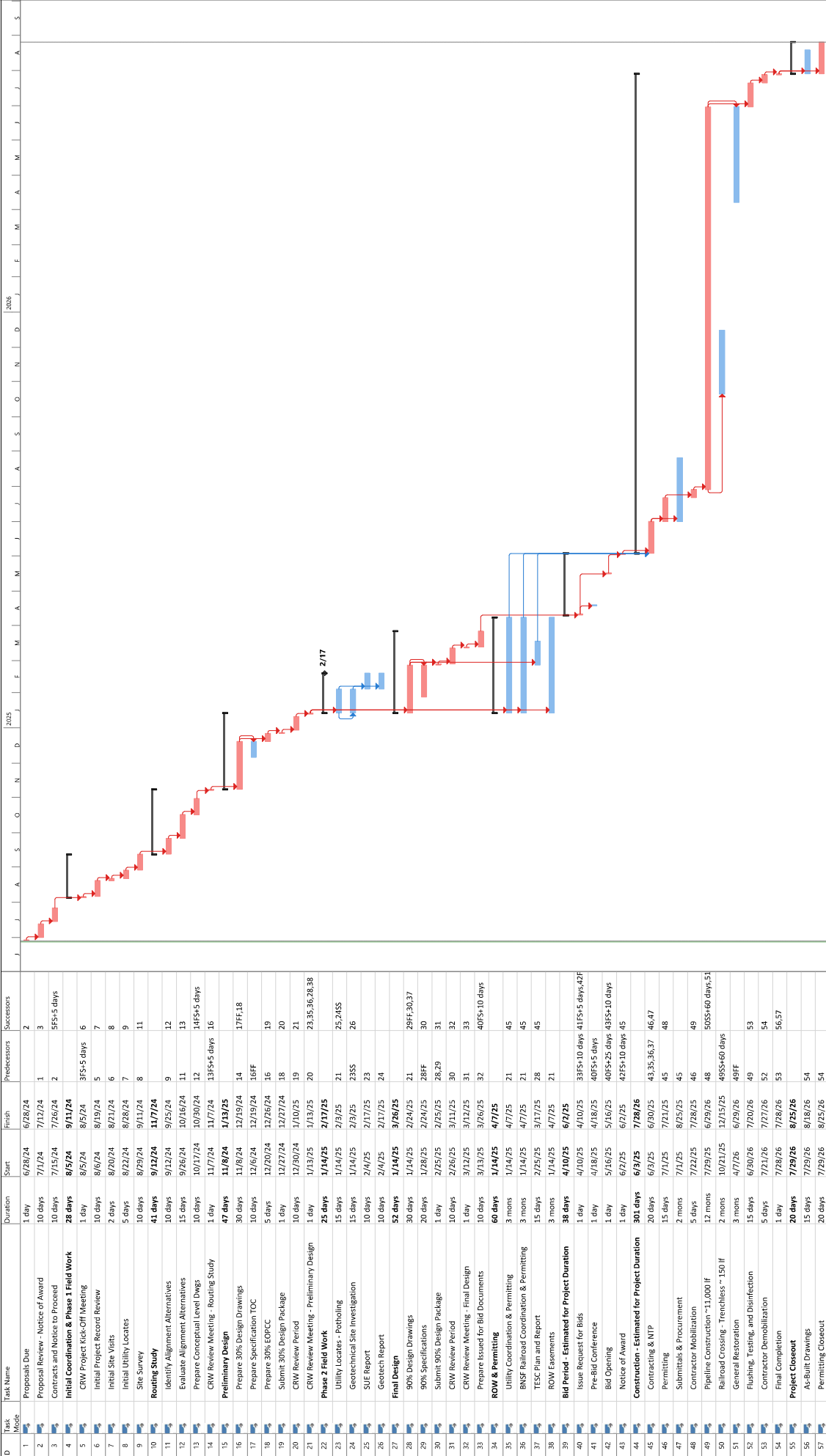
#### **Task 5.6 - Easement Legal Descriptions**

The Consor team will prepare easement legal descriptions and exhibits to support the Town acquiring the necessary additional ROW to construct and maintain the proposed pipeline. The southern approximately one-half of the current alignment (west side of BNSF RR) is within Town ROW and the proposed alignment is unlikely to vary greatly from the current due to restrictions with the railroad, floodplain, and environmentally sensitive areas. The north half of the alignment (east side of BNSF RR) is currently within a 30-foot permanent easement and additional permanent easements and temporary construction easements are likely. Most of the current alignment for the north half is within tracts owned by Castle Rock Development Company. The RFP identifies an estimated total of six easements, which we have included within this proposal.

*Our project schedule and draft drawing sheet list are included on the following pages.*



CASTLE ROCK WATER - PLUM CREEK PIPELINE CENTRAL TO PCWP



ID	Task Name	Duration	Start	Finish	Predecessors	Successors
1	Proposals Due	1 day	6/28/24	6/28/24		2
2	Proposal Review - Notice of Award	10 days	7/1/24	7/11/24	1	3
3	Contracts and Notice to Proceed	10 days	7/15/24	7/26/24	2	5FS+5 days
4	Initial Coordination & Phase 1 Field Work	28 days	8/5/24	9/11/24		
5	CRW Project Kick-Off Meeting	1 day	8/5/24	8/5/24	3FS+5 days	6
6	Initial Project Record Review	10 days	8/6/24	8/16/24	5	7
7	Initial Site Visits	2 days	8/20/24	8/22/24	8	
8	Initial Utility Locates	5 days	8/22/24	8/28/24	9	
9	Site Survey	10 days	8/29/24	9/11/24	8	11
10	Routing Study	41 days	9/12/24	11/7/24		
11	Identify Alignment Alternatives	10 days	9/12/24	9/25/24	9	12
12	Evaluate Alignment Alternatives	15 days	9/26/24	10/16/24	11	13
13	Prepare Conceptual Level Dwg's	10 days	10/17/24	10/30/24	14FS+5 days	
14	CRW Review Meeting - Routing Study	1 day	11/7/24	11/7/24	13FS+5 days	16
15	Preliminary Design	47 days	11/8/24	1/13/25		
16	Prepare 30% Design Drawings	30 days	11/8/24	12/19/24	14	17FF,18
17	Prepare Specification TOC	10 days	12/6/24	12/19/24	16FF	
18	Prepare 30% EOP/CC	5 days	12/20/24	12/26/24	16	19
19	Submit 30% Design Package	1 day	12/27/24	12/27/24	18	20
20	CRW Review Period	10 days	12/30/24	1/10/25	19	21
21	CRW Review Meeting - Preliminary Design	1 day	1/13/25	1/13/25	20	23,35,36,28,38
22	Phase 2 Field Work	25 days	1/14/25	2/17/25		
23	Utility Locates - Potholing	15 days	1/14/25	2/3/25	21	25,24,85
24	Geotechnical Site Investigation	15 days	1/14/25	2/3/25	23SS	26
25	SUE Report	10 days	2/4/25	2/17/25	23	
26	Geotech Report	10 days	2/4/25	2/17/25	24	
27	Final Design	52 days	1/14/25	3/26/25		
28	90% Design Drawings	30 days	1/14/25	2/24/25	21	29FF,30,37
29	90% Specifications	20 days	1/28/25	2/24/25	28FF	30
30	Submit 90% Design Package	1 day	2/25/25	2/25/25	28,29	31
31	CRW Review Period	10 days	2/26/25	3/11/25	30	32
32	CRW Review Meeting - Final Design	1 day	3/12/25	3/12/25	31	33
33	Prepare Issued for Bid Documents	10 days	3/13/25	3/26/25	32	40FS+10 days
34	ROW & Permitting	60 days	1/14/25	4/7/25		
35	Utility Coordination & Permitting	3 mons	1/14/25	4/7/25	21	45
36	BNSF Railroad Coordination & Permitting	3 mons	1/14/25	4/7/25	21	45
37	TESC Plan and Report	15 days	2/25/25	3/17/25	28	45
38	ROW Easements	3 mons	1/14/25	4/7/25	21	
39	Bid Period - Estimated for Project Duration	38 days	4/10/25	6/7/25		
40	Issue Request for Bids	1 day	4/10/25	4/10/25	33FS+10 days	41FS+5 days,42F
41	Pre-Bid Conference	1 day	4/18/25	4/18/25	40FS+5 days	
42	Bid Opening	1 day	5/16/25	5/16/25	40FS+25 days	43FS+10 days
43	Notice of Award	1 day	6/2/25	6/2/25	42FS+10 days	45
44	Construction - Estimated for Project Duration	301 days	6/3/25	7/28/26		
45	Contracting & NTP	20 days	6/3/25	6/30/25	43,35,36,37	46,47
46	Permitting	15 days	7/1/25	7/21/25	45	48
47	Submittals & Procurement	2 mons	7/1/25	8/25/25	45	
48	Contractor Mobilization	5 days	7/22/25	7/28/25	46	49
49	Pipeline Construction -11,000 lf	12 mons	7/29/25	6/29/26	48	50SS+60 days,51
50	Railroad Crossing - Trenchless -150 lf	2 mons	10/21/25	12/15/25	49SS+60 days	
51	General Restoration	3 mons	4/7/26	6/29/26	49FF	
52	Flushing, Testing, and Disinfection	15 days	6/30/26	7/20/26	49	53
53	Contractor Demobilization	5 days	7/21/26	7/27/26	52	54
54	Final Completion	1 day	7/28/26	7/28/26	53	56,57
55	Project Closeout	20 days	7/29/26	8/25/26		
56	As-Built Drawings	15 days	7/29/26	8/18/26	54	
57	Permitting Closeout	20 days	7/29/26	8/25/26	54	

Project: CRW Plum Creek Pipeli  
Date: 6/27/24

Task: Summary, Inactive Task, Milestone, Sift

Duration: Manual Summary Rollup, Manual Summary, External Task

Start/Finish: Start-only, Finish-only, Manual Task

Milestone: Inactive Milestone, Active Milestone

Progress: Critical Path, Progress, Manual Progress

Castle Rock Water  
 Plum Creek Pipeline Central to PCWPF  
 Preliminary Sheet List  
 6/21/2024

Disciplines		Designator	
GENERAL	G	0XX	GENERAL
EROSION CONTROL	EC	1XX	PLANS
CIVIL	C	2XX	ELEVATIONS
FLOODPLAIN DEVELOPMENT	F	3XX	SECTIONS
STRUCTURAL	S	4XX	LARGE SCALE VIEWS
ARCHITECTURAL	A	5XX	DETAILS
PROCESS	D	6XX	SCHEDULES AND DIAGRAMS
MECHANICAL	M	7XX	USER DEFINED
PLUMBING	P	8XX	USER DEFINED
ELECTRICAL	E	9XX	3D REPRESENTATION
I&C	I		

GENERAL			Notes:	Consultant:	Design Lead:	30%	90%	100%
1	G-001	Cover Sheet and Vicinity and Location Maps		Consor		X	X	X
2	G-002	Index of Drawings		Consor		X	X	X
3	G-003	Standard Abbreviations		Consor		X	X	X
4	G-004	General Symbols		Consor		X	X	X
5	G-005	General Notes		Consor		X	X	X
6	G-006	Project Control and Survey - 1 of 2		Consor		X	X	X
7	G-007	Project Control and Survey - 2 of 2		Consor		X	X	X
8	G-008	Legend - Civil		Consor		X	X	X
9	G-009	Legend - Road Replacement		Consor		X	X	X
10	G-010	Bore Log Data - 1 of 4		Consor			X	X
11	G-011	Bore Log Data - 2 of 4		Consor			X	X
12	G-012	Bore Log Data - 3 of 4		Consor			X	X
13	G-013	Bore Log Data - 4 of 4		Consor			X	X
CIVIL			Notes:	Consultant:	Design Lead:	30%	90%	100%
14	C-101	Overall Site Improvements Keymap		Consor		X	X	X
15	C-102	Civil Site Layout STA 00+00 to 10+00		Consor		X	X	X
16	C-103	Civil Site Layout STA 10+00 to 20+00		Consor		X	X	X
17	C-104	Civil Site Layout STA 20+00 to 30+00		Consor		X	X	X
18	C-105	Civil Site Layout STA 40+00 to 50+00		Consor		X	X	X
19	C-106	Civil Site Layout STA 50+00 to 60+00		Consor		X	X	X
20	C-107	Civil Site Layout STA 60+00 to 70+00		Consor		X	X	X
21	C-108	Civil Site Layout STA 70+00 to 80+00		Consor		X	X	X
22	C-109	Civil Site Layout STA 80+00 to 90+00		Consor		X	X	X
23	C-110	Civil Site Layout STA 90+00 to 100+00		Consor		X	X	X
24	C-111	Civil Site Layout STA 100+00 to 110+00		Consor		X	X	X
25	C-112	Plan and Profile Keymap		Consor		X	X	X
26	C-113	Water Line Plan and Profile - STA 00+00 to 10+00		Consor		X	X	X
27	C-114	Water Line Plan and Profile - STA 10+00 to 20+00		Consor		X	X	X
28	C-115	Water Line Plan and Profile - STA 20+00 to 30+00		Consor		X	X	X
29	C-116	Water Line Plan and Profile - STA 30+00 to 40+00		Consor		X	X	X
30	C-117	Water Line Plan and Profile - STA 40+00 to 50+00		Consor		X	X	X
31	C-118	Water Line Plan and Profile - STA 50+00 to 60+00		Consor		X	X	X
32	C-119	Water Line Plan and Profile - STA 60+00 to 70+00		Consor		X	X	X
33	C-120	Water Line Plan and Profile - STA 70+00 to 80+00		Consor		X	X	X
34	C-121	Water Line Plan and Profile - STA 80+00 to 90+00		Consor		X	X	X
35	C-122	Water Line Plan and Profile - STA 90+00 to 100+00		Consor		X	X	X
36	C-123	Water Line Plan and Profile - STA 100+00 to 110+00		Consor		X	X	X
37	C-124	Roadway Replacement Plan - 1 of 3		Consor			X	X
38	C-125	Roadway Replacement Plan - 2 of 3		Consor			X	X
39	C-126	Roadway Replacement Plan - 3 of 3		Consor			X	X
40	C-127	Site Access Plan - 1 of 2		Consor			X	X
41	C-128	Site Access Plan - 2 of 2		Consor			X	X
42	C-129	Civil Details - X of X		Consor			X	X
43	C-130	Civil Details - X of X		Consor			X	X
44	C-131	Civil Details - X of X		Consor			X	X
45	C-132	Civil Details - X of X		Consor			X	X
46	C-133	Civil Details - X of X		Consor			X	X

## FEE

Below is a fee breakdown summary followed by our detailed fee estimate and hourly billing rate for all job classifications.

### PLUM CREEK PIPELINE CENTRAL TO THE PCWPF

Task	Consor Direct Labor	Subconsultant Total	Subtotal
1 - Project Management	\$40,755.00		\$40,755.00
2 - Data Collection and Site Reconnaissance	\$18,871.00	\$122,870.00	\$141,741.00
3 - Routing Study	\$32,277.00		\$32,277.00
4 - Design Documents	\$126,246.00		\$126,246.00
5 - Permitting & ROW Coordination	\$38,656.00	\$11,000.00	\$49,656.00
<b>TOTAL</b>			<b>\$390,676.00</b>

**PLUM CREEK PIPELINE CENTRAL TO POWPE  
CASTLE ROCK WATER  
PROPOSED FEE ESTIMATE**

Staff Name	QA/QC Principal Engineer V	PIC/PM Principal Engineer IV	Cost Estimator Cost Estimator III	DPM/DL Professional Engineer VI	PE Engineering Designer III	Trenchless TSL Principal Engineer III	CAD Technician II	PA Administrative III	Hours	Labor	Subconsultants			Subconsultant Multiplier % Markup	Subconsultant Total with Markup	CADD Units \$/hr	Total
											Geotech	Survey	Utility Locates				
<b>Task 1 - Project Management</b>																	
Task 1.1 - Project Administration	\$257 Boland/Tho	\$243 Manning/Chr	\$247 Griffin/Rob	\$179 Walmsley/Sea	\$154 Campbell/Nic	\$228 O'Sullivan/Bre	\$118 Goud/Br	\$109 Mallia/Wil									
Task 1.2 - Client Meetings		16		12	4	4		12	48	\$ 8,876			1.1	\$ 8,876			
Task 1.3 - Internal Meetings		12		12	16				40	\$ 7,532			1.1	\$ 7,532			
Task 1.4 - Subconsultant Coordination	4			12	12	6	8		54	\$ 10,257			1.1	\$ 10,257			
Task 1.5 - Quality Management	24			2	8	2			30	\$ 5,683			1.1	\$ 5,683			
<b>Task 1 Subtotal</b>	<b>28</b>	<b>52</b>	<b>0</b>	<b>46</b>	<b>44</b>	<b>16</b>	<b>8</b>	<b>12</b>	<b>206</b>	<b>\$ 40,755</b>	<b>\$ -</b>	<b>\$ -</b>	<b>-</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 40,755</b>
<b>Task 2 - Data Collection and Site Reconnaissance</b>																	
Task 2.1 - Data Collection		4		8	8				20	\$ 3,638			1.1	\$ 3,638			
Task 2.2 - Site Survey		9		6	8		6		18	\$ 2,887			1.1	\$ 2,887			
Task 2.3 - Geotechnical Investigation		4		6	8				18	\$ 3,980	\$ 28,200		1.1	\$ 31,020			\$ 31,020
Task 2.3 - Utility Locates including QI-A Investigation		4		8	15				28	\$ 4,869	\$ 53,000		1.1	\$ 58,300			\$ 58,300
<b>Task 2 Subtotal</b>	<b>0</b>	<b>20</b>	<b>0</b>	<b>36</b>	<b>44</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>106</b>	<b>\$ 18,799</b>	<b>\$ 28,200</b>	<b>\$ 53,000</b>	<b>-</b>	<b>\$ 122,870</b>	<b>\$ 72</b>	<b>\$ 141,741</b>	
<b>Task 3 - Routing Study</b>																	
Task 3.1 - Identify Alignment Alternatives		8		12	15	4	8		48	\$ 8,417			1.1	\$ 8,525			
Task 3.2 - Evaluate Alignment Alternatives		8		16	20	4			48	\$ 8,804			1.1	\$ 8,804			
Task 3.3 - Prepare Conceptual Level Design		6		8	15	4	20		54	\$ 8,631			1.1	\$ 8,919			
Task 3.4 - Prepare EOP/CS - Class 5		4		6	8	4			30	\$ 6,029			1.1	\$ 6,029			
<b>Task 3 Subtotal</b>	<b>0</b>	<b>26</b>	<b>6</b>	<b>44</b>	<b>60</b>	<b>16</b>	<b>28</b>	<b>0</b>	<b>180</b>	<b>\$ 31,881</b>	<b>\$ -</b>	<b>\$ -</b>	<b>-</b>	<b>\$ 396</b>	<b>\$ 32,277</b>		
<b>Task 4 - Design Documents</b>																	
Task 4.1 - 30% Design Drawing Development		24		60	120	6	40		250	\$ 41,154			1.1	\$ 41,874			
Task 4.2 - 50% EOP/CS		4		8	12	2			32	\$ 6,188			1.1	\$ 6,188			
Task 4.3 - 50% Design Drawing Development		24		60	120	6	40		250	\$ 41,154			1.1	\$ 41,874			
Task 4.4 - Technical Specifications		12		6	12	4			32	\$ 2,784			1.1	\$ 2,784			
Task 4.5 - Issued for Bid Documents		15		20	40	4	20		100	\$ 15,907			1.1	\$ 17,257			
<b>Task 4 Subtotal</b>	<b>0</b>	<b>84</b>	<b>12</b>	<b>172</b>	<b>344</b>	<b>24</b>	<b>100</b>	<b>0</b>	<b>796</b>	<b>\$ 124,446</b>	<b>\$ -</b>	<b>\$ -</b>	<b>-</b>	<b>\$ 1,800</b>	<b>\$ 126,246</b>		
<b>Task 5 - Permitting &amp; ROW Coordination</b>																	
Task 5.1 - Permitting and ROW Review		8		12	12				32	\$ 5,944			1.1	\$ 5,944			
Task 5.2 - TESC Manual		4		8	24		8		44	\$ 7,045			1.1	\$ 7,153			
Task 5.3 - Utility Permitting Coordination		4		12	15		6		38	\$ 6,296			1.1	\$ 6,296			
Task 5.4 - SUE Plans and Report		6		8	20		8		42	\$ 6,916			1.1	\$ 7,024			
Task 5.5 - BNSF Permitting Coordination		6		12	20	6			46	\$ 8,293			1.1	\$ 8,329			
Task 5.6 - Easement Legal Descriptions		4		8	8		2		22	\$ 3,875	\$ 10,000		1.1	\$ 11,000			\$ 11,000
<b>Task 5 Subtotal</b>	<b>0</b>	<b>32</b>	<b>0</b>	<b>60</b>	<b>100</b>	<b>6</b>	<b>26</b>	<b>0</b>	<b>224</b>	<b>\$ 38,868</b>	<b>\$ -</b>	<b>\$ 10,000</b>	<b>-</b>	<b>\$ 11,000</b>	<b>\$ 288</b>	<b>\$ 49,656</b>	
<b>TOTAL - ALL TASKS</b>	<b>28</b>	<b>214</b>	<b>18</b>	<b>358</b>	<b>592</b>	<b>62</b>	<b>168</b>	<b>12</b>	<b>1452</b>	<b>\$ 254,250</b>	<b>\$ 28,200</b>	<b>\$ 53,000</b>	<b>-</b>	<b>\$ 183,870</b>	<b>\$ 2,556</b>	<b>\$ 390,676</b>	

**2024 Billing Rates**

Classification	Rate
Principal Engineer VI	\$ 274.40
Principal Engineer V	\$ 256.80
Principal Engineer IV	\$ 243.20
Principal Engineer III	\$ 228.00
Principal Engineer II	\$ 215.20
Principal Engineer I	\$ 205.60
Professional Engineer IX	\$ 208.25
Engineering Designer IX	\$ 200.60
Professional Engineer VIII	\$ 198.90
Engineering Designer VIII	\$ 190.40
Professional Engineer VII	\$ 187.85
Engineering Designer VII	\$ 181.05
Professional Engineer VI	\$ 179.35
Engineering Designer VI	\$ 172.55
Professional Engineer V	\$ 167.45
Engineering Designer V	\$ 161.50
Professional Engineer IV	\$ 158.10
Engineering Designer IV	\$ 158.10
Professional Engineer III	\$ 153.85
Engineering Designer III	\$ 153.85
Engineering Designer II	\$ 141.10
Engineering Designer I	\$ 130.05
Technician IV	\$ 153.00
Technician III	\$ 136.85
Technician II	\$ 118.15
Technician I	\$ 100.30
Administrative III	\$ 108.80
Administrative II	\$ 100.30
Administrative I	\$ 88.40
Cost Estimator III	\$ 246.50
Cost Estimator II	\$ 197.20
Cost Estimator I	\$ 147.90
Construction Manager X	\$ 253.30
Construction Manager IX	\$ 236.30
Construction Manager VIII	\$ 223.55
Construction Manager VII	\$ 215.90

Construction Manager VI	\$ 200.60
Construction Manager V	\$ 184.45
Construction Manager IV	\$ 175.10
Construction Manager III	\$ 159.80
Construction Manager II	\$ 147.05
Construction Manager I	\$ 130.90
Inspector VII	\$ 184.45
Inspector VI	\$ 170.00
Inspector V	\$ 153.85
Inspector IV	\$ 143.65
Inspector III	\$ 127.50
Inspector II	\$ 113.90
Inspector I	\$ 98.60
Principal III	\$ 303.45
Principal II	\$ 265.20
Principal I	\$ 233.75
Project Manager IV	\$ 210.80
Project Manager III	\$ 210.80
Project Manager II	\$ 187.85
Project Manager I	\$ 164.05
Project Coordinator IV	\$ 147.90
Project Coordinator III	\$ 137.70
Project Coordinator II	\$ 123.25
Project Coordinator I	\$ 108.80
Quality Control Compliance Specialist	\$ 153.85
Survey Party Chief	\$ 102.85
Survey Technician III	\$ 93.50
Survey Technician II	\$ 85.00
Survey Technician I	\$ 75.65
Planner II	\$ 120.70
Planner I	\$ 89.25
Scientist VI	\$ 134.30
Scientist V	\$ 120.70
Scientist IV	\$ 107.10
Scientist III	\$ 102.85
Scientist II	\$ 89.25
Scientist I	\$ 75.65



**EXHIBIT 2**

CONSULTANT'S CERTIFICATE OF INSURANCE



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

12/31/2024

8/16/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).**

<b>PRODUCER</b> Lockton Companies Three City Place Drive, Suite 900 St. Louis MO 63141-7081 (314) 432-0500 midwestcertificates@lockton.com		<b>CONTACT NAME:</b> <b>PHONE (A/C, No. Ext):</b> _____ <b>FAX (A/C, No):</b> _____ <b>E-MAIL ADDRESS:</b> _____	
		<b>INSURER(S) AFFORDING COVERAGE</b>	
		<b>INSURER A:</b> Continental Casualty Company	<b>NAIC #</b> 20443
		<b>INSURER B:</b> Great American Insurance Company	16691
		<b>INSURER C:</b> National Fire Insurance Co of Hartford	20478
		<b>INSURER D:</b> AXIS Surplus Insurance Company	26620
		<b>INSURER E:</b> Travelers Property Casualty Company of America	25674
		<b>INSURER F:</b>	

**COVERAGES**                                      **CERTIFICATE NUMBER:** 20831118                                      **REVISION NUMBER:** XXXXXXX

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
A	<input checked="" type="checkbox"/> <b>COMMERCIAL GENERAL LIABILITY</b>  <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR  GEN'L AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:	Y	Y	7036360752	12/31/2023	12/31/2024	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ 1,000,000 MED EXP (Any one person) \$ 15,000 PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COMP/OP AGG \$ 2,000,000 \$
A	<input checked="" type="checkbox"/> <b>AUTOMOBILE LIABILITY</b> <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> NON-OWNED AUTOS ONLY	Y	Y	7036360766	12/31/2023	12/31/2024	COMBINED SINGLE LIMIT (Ea accident) \$ 2,000,000 BODILY INJURY (Per person) \$ XXXXXXX BODILY INJURY (Per accident) \$ XXXXXXX PROPERTY DAMAGE (Per accident) \$ XXXXXXX \$ XXXXXXX
B	<input checked="" type="checkbox"/> <b>UMBRELLA LIAB</b> <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$	N	N	TUE 3274463 04	12/31/2023	12/31/2024	EACH OCCURRENCE \$ 5,000,000 AGGREGATE \$ 5,000,000 \$ XXXXXXX
C	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N <input checked="" type="checkbox"/> N	Y N/A	7036465081 (AOS) 7036441749 (CA)	12/31/2023 12/31/2023	12/31/2024 12/31/2024	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 1,000,000 E.L. DISEASE - EA EMPLOYEE \$ 1,000,000 E.L. DISEASE - POLICY LIMIT \$ 1,000,000
D	Professional & Environmental Liab.	N	Y	EBZ634816/01/2023	12/31/2023	12/31/2024	\$10,000,000 per Claim \$10,000,000 Aggregate Deductible: \$500,000
E	Excess Liab.			EX-6X767086-23-NF	12/31/2023	12/31/2024	\$5M occ / aggr

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)  
 THIS CERTIFICATE SUPERSEDES ALL PREVIOUSLY ISSUED CERTIFICATES FOR THIS HOLDER, APPLICABLE TO THE CARRIERS LISTED AND THE POLICY TERM(S) REFERENCED.  
 RE: Plum Creek Pipeline Central to PCWPF W242202CO.00. \*See page 2\*

**CERTIFICATE HOLDER**

**CANCELLATION** See Attachment

**20831118**  
 Town of Castle Rock  
 Attention: Erin Evans  
 175 Kellogg Ct.  
 Castle Rock CO 80109

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE



Town of Castle Rock, its elected and appointed officials, officers, employees, agents and authorized volunteers acting within the course and scope of their duties for the Town of Castle Rock are included as additional insureds on a Primary and Non-contributory basis if required by written contract with respect to General Liability and Automobile Liability per the terms and conditions of the policy. A waiver of subrogation applies in favor of Town of Castle Rock, its elected and appointed officials, officers, employees, agents and authorized volunteers acting within the course and scope of their duties for the Town of Castle Rock if required by written contract with respect to General Liability, Automobile Liability, Professional Liability, and Workers' Compensation per the terms and conditions of the policy where permitted by state law. A 30-day notice of cancellation is included if required by written contract with respect to General Liability and Automobile Liability per the terms and conditions of the policy.



## EXHIBIT 3

**TOWN OF CASTLE ROCK  
AFFIDAVIT OF INDEPENDENT CONTRACTOR STATUS**

I, Chris Manning, an authorized representative of **CONSOR NORTH AMERICA, INC.**, holding legal authority to sign this Affidavit, declare under oath that I am 18 years or older and have the capacity to sign this Affidavit. In accordance with Section 8-70-115, C.R.S., I, the undersigned, hereby certify the following:

- With respect to the Agreement, **CONSOR NORTH AMERICA, INC.** (“Entity”) represents and warrants that it is the Entity’s express intention to be employed as an independent contractor of the Town of Castle Rock (the “Town”) for purposes of performing the work or services which are the subject of the Agreement, to include all employees and agents of the above-named Entity. Entity understands and confirm that the Town reasonably relied on this intention in entering into the Agreement.
- The Town does not require Entity work exclusively for the Town, except that Entity may choose to work exclusively for the Town for a finite period of time specified in the document.
- The Town does not establish a quality standard for the work or services performed pursuant to the Agreement, except that the Town may provide plans and specifications regarding the work but cannot oversee the actual work or provide instruction as to how the work is performed.
- The Town does not pay a salary or hourly rate but rather a fixed or contract rate, as noted in the terms and conditions of the Agreement, and any Exhibits made part of the Agreement.
- The Town cannot terminate the work or services performed during the contract period unless otherwise agreed to in the terms and conditions of the Agreement.
- Entity is not provided with anything, if at all, more than minimal training from the Town.
- The Town does not provide Entity with tools or benefits for the performance of the work or services which are the subject of the Agreement, except materials and equipment may be supplied.
- The Town does not dictate the time of performance, except that a completion schedule and a range of mutually agreeable work hours may be established in the Agreement.
- The Town does not pay Entity personally but rather makes checks payable to the trade or business name of the Entity, who is a Party to the Agreement; and the Town does not combine their business operations in any way with the Entity’s business, but instead maintains such operations as separate and distinct.
- Entity understands that if a professional license to practice a particular occupation under the laws of the State of Colorado requires the exercise of a supervisory function with regard to the work of services performed under this Agreement, such supervisory role shall not affect the independent contractor relationship with the Town.



- ENTITY UNDERSTANDS THAT NEITHER ENTITY NOR ITS EMPLOYEES ARE ENTITLED TO UNEMPLOYMENT INSURANCE BENEFITS OF THE TOWN. THE ONLY AVAILABLE UNEMPLOYMENT COMPENSATION COVERAGE IS THAT PROVIDED BY THE ENTITY.
- ENTITY UNDERSTANDS THAT IT IS OBLIGATED TO PAY FEDERAL AND STATE INCOME TAX ON MONEYS PAID PURSUANT TO THE AGREEMENT.

**INDEPENDENT CONTRACTOR:**

~~CONSOR NORTH AMERICA, INC.~~

By: \_\_\_\_\_

Name Chris Manning

STATE OF COLORADO )

) ss.

COUNTY OF Boulder )

The foregoing instrument as acknowledged before me this 13 day of August, 2024 by Christopher Michael Manning as Principal of the above-mentioned Independent Contractor.

Witness my official hand and seal.

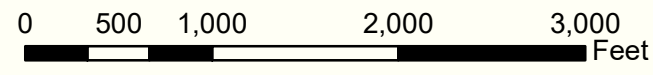
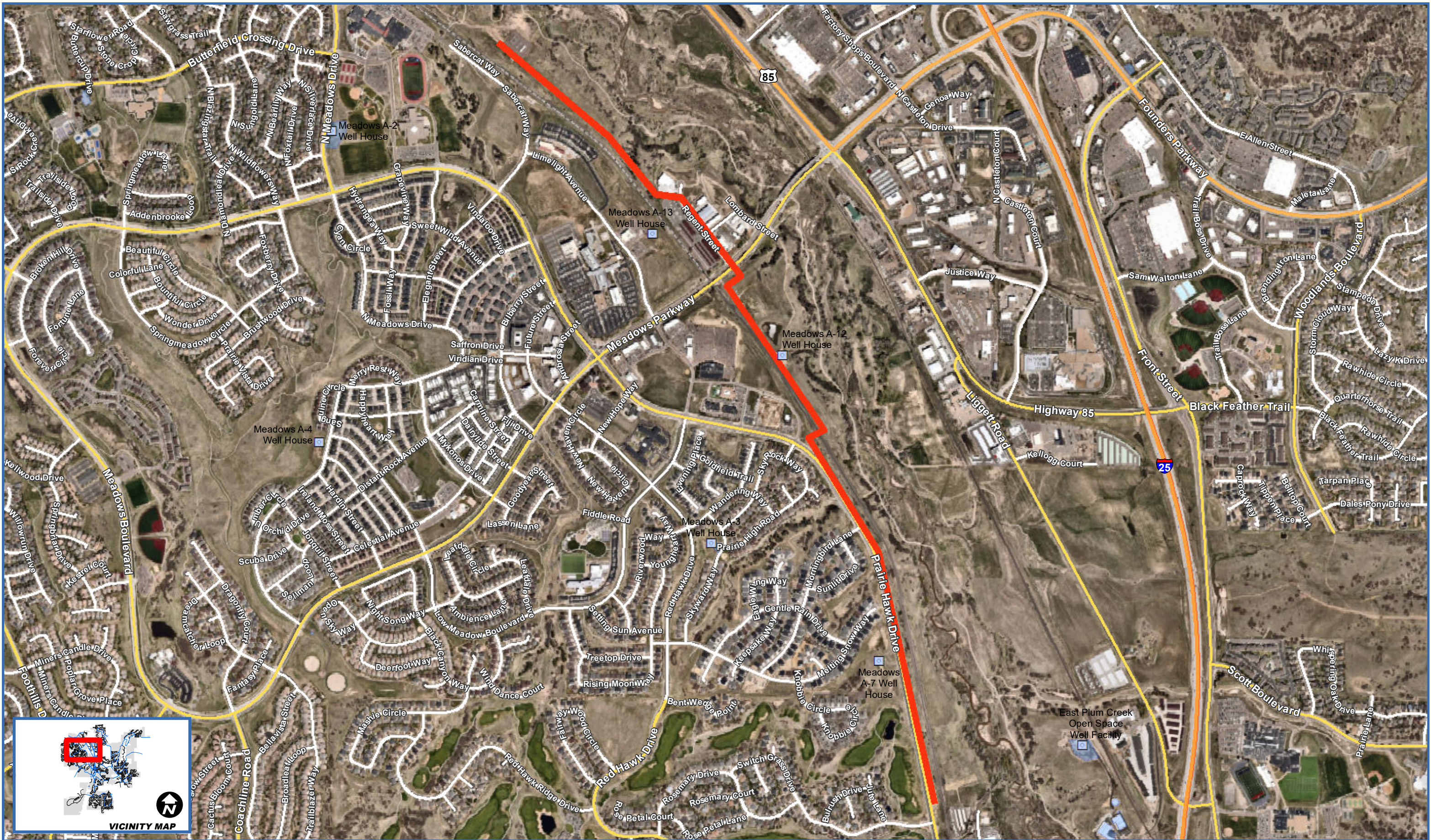
My commission expires: July 24, 2027

Dhruva

Notary Public

<p><b>DAWA YANJI SHERPA</b>          NOTARY PUBLIC          STATE OF COLORADO          NOTARY ID 20234027950          MY COMMISSION EXPIRES JULY 24, 2027</p>
---





1 inch = 1,028 feet



Date: 6/7/2024

Disclaimer: The data presented has been compiled from various sources, each of which introduces varying degrees of inaccuracies or inconsistencies. Such discrepancies in data are inherent in supplying this product. The Town of Castle Rock assumes no liability for its use or accuracy. Questions or comments regarding the cartographic composition of this map including, but not limited to, errors, omissions, corrections, and/or updates, should be directed to the Utilities Department, Town of Castle Rock, (720) 733-6000. Copyright 2024, Town of Castle Rock Utilities Mapping.

**PLUM CREEK  
RAW WATER RETURN  
PIPELINE**





# Town of Castle Rock

## Agenda Memorandum

**Agenda Date:** 8/28/2024

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**Item #:** 8. **File #:** WC 2024-085

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**To:** Members of the Castle Rock Water Commission

**From:** Mark Marlowe, P.E., Director of Castle Rock Water  
Roy Gallea, P.E., Engineering Manager  
Matthew Hayes, Technical Engineering Manager

**An Ordinance Amending Castle Rock Municipal Code Section 15.10.030 to Permit the use of the IAPMO Water Demand Calculator Approach [Castle Rock Service Area]**  
**Town Council Agenda Date:** September 3, 2024

---

### Executive Summary

The purpose of this memorandum is to request Town Council's approval of an Ordinance (**Attachment A**) revising the Town Code to use the IAPMO Water Demand Calculator for service line sizing. The Town is working to require 0.8 gallons per flush (gpf) toilets, but the Plumbing Manufacturers International had concerns about the impact on water quality and solids removal due to the reduced water use of these toilets. The Town contracted Dewberry Engineers to evaluate the use of the Water Demand Calculator to reduce the internal plumbing sizes to reduce the possible water age within the internal plumbing. They also evaluated the potential for water quality and solids removal with the 0.8 gpf toilets. Based on typical residential water demands, water quality, and solids removal are not a concern. CR Water would like to revise the Town Code to reference the IAPMO Water Demand Calculator.

### Notification and Outreach Efforts

CR Water has presented the plumbing code analysis and proposed code changes at the June, July, and August EDC Water Subcommittee meetings to members of the development community.

### Discussion

CR Water has been promoting the use of 0.8 Gallon Per Flush (gpf) toilets for conservation. CR Water planning on requiring the use of the 0.8 gpf toilets in new residential construction. The Plumbing Manufacturers International (PMI) organization contracted the Town with concerns about the use of the 0.8 gpf toilets. Their concerns include potential impacts on water quality and impacts on sanitary lateral lines.

PMI's water quality concerns are related to the potential development of Legionella within the customer's supply-side plumbing. Legionella is a bacteria that causes Legionnaires' disease and

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**Item #: 8. File #: WC 2024-085**

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Pontiac fever. It occurs naturally in freshwater environments. If conditions are ideal, it can grow in water distribution systems. It is transmitted by breathing in mist or swallowing water into the lungs. Older people and those with specific health issues are at higher risk of getting sick. Most healthy people exposed to Legionella do not get sick.

Water age is the main concern about Legionella growth in the distribution system. It can grow to dangerous levels in weeks under ideal conditions. The ideal temperature range for development is 85 to 110 degrees Fahrenheit. The Town contracted with Dewberry Engineers to perform an analysis on the impact of the use of the 0.8 gpf toilet and possible plumbing code changes that can reduce the risks. They compared the use of the IAPMO Water Demand Calculator to the Town's current approach under the International Plumbing Code with ten typical residential homes. Their analysis determined that the risk for Legionella development within the home's internal plumbing is low. A typical single person uses enough water each day to turn over the water within their plumbing twice a day. The water heater has the highest potential risk for Legionella development. If a typical home was installed with a 75 gallon water heater, that volume would be turned over every seven days. The typical water heater is set between 110 and 130 degrees Fahrenheit, which is high enough to inhibit its growth.

PMI also indicated that there may be concerns with solids transport in sewer laterals. The plumbing code recommends a minimum velocity of 2 Feet Per Second (fps) to maintain a clean pipe. For a 0.8 gpf toilet, the minimum required slope would be 2% to maintain the 2 fps velocity for solids transport. Additionally, higher-use fixtures within the home like shower and clothes washers will help flush solids through the internal plumbing.

The Town Code will be amended to reference the use of the IAPMO Water Demand Calculator for sizing water service lines.

**Budget Impact**

There are no costs associated with this code revision.

**Staff Recommendation**

Staff recommends approval of the Municipal Code revision for the use of the IAPMO Water Demand Calculator for residential service line sizing.

**Proposed Motion**

*"I move to recommend to Town Council approval of the Resolution as presented"*

**Attachments**

Attachment A: Ordinance

**ORDINANCE NO. 2024-\_\_**

**AN ORDINANCE AMENDING CASTLE ROCK MUNICIPAL CODE  
SECTION 15.10.030 TO PERMIT THE USE OF THE IAPMO WATER  
DEMAND CALCULATOR APPROACH**

**WHEREAS**, the Town has adopted the 2018 International Plumbing Code, subject to certain amendments, additions and deletions to the 2018 International Plumbing Code set forth in Section 15.10.030 of the Castle Rock Municipal Code; and

**WHEREAS**, the Town wishes to add Section 15.10.030(E) to the Castle Rock Municipal Code to allow for the use of the IAPMO water demand calculator approach in lieu of the current residential water fixture unit calculator approach required by the 2018 International Plumbing Code; and

**WHEREAS**, Town Council finds and determines that it is desirable to adopt this Ordinance to provide for this change to the 2018 International Plumbing Code as previously adopted by the Town.

**NOW, THEREFORE, IT IS ORDAINED BY THE TOWN COUNCIL OF THE TOWN OF CASTLE ROCK, COLORADO AS FOLLOWS:**

**Section 1. Amendment.** Section 15.10.030 of the Castle Rock Municipal Code is hereby amended to add subsection (E), to read as follows:

**15.10.030 – Amendments.**

The following amendments, additions and deletions are made to the International Plumbing Code:

A. Section 101.1, Title, is amended to read in its entirety as:

**101.1 Title.** These regulations shall be known as the International Plumbing Code of the Town of Castle Rock, hereinafter referred to as “this code.”

B. Section 305.4.1, Sewer depth, amend to read in its entirety as follows:

**305.4.1 Sewer depth.** Building sewers that connect to private sewage disposal systems shall be permitted, inspected and approved by the Tri-County Health Department.

C. Table 403.1, Minimum number of Required Plumbing Fixtures, is amended as:

**Table 403.1 Minimum Number of Required Plumbing Fixtures.** Add footnote “e” to both Drinking Fountain and Other columns (service sinks) and amend it to read as follows:

e. See modifications per Section 104.10, International Building Code.

D. Section 904.1, Roof extension, is amended to read in its entirety as:

**904.1 Roof extension.** All open vent pipes that extend through a roof shall be terminated at least 12 inches above the roof, except that where a roof is to be used for any purpose other than weather protection, the vent extensions shall be run at least seven (7) feet above the roof.

E. \_\_\_\_\_, is amended to read in its entirety as follows:

\_\_\_\_\_

**Section 2. Severability.** If any part or provision of this Ordinance or the application thereof to any person or circumstances is held invalid, such invalidity shall not affect other provisions or applications of this Ordinance which can be given effect without the invalid provisions or application, and to this end the provisions of this Ordinance are declared to be severable.

**Section 3. Safety Clause.** The Town Council finds and declares that this Ordinance is promulgated and adopted for the public health, safety and welfare and this Ordinance bears a rational relation to the legislative object sought to be obtained.

**APPROVED ON FIRST READING** this \_\_\_\_ day of \_\_\_\_\_, 2024, by a vote of \_\_\_\_ for and \_\_\_\_ against, after publication in compliance with Section 2.02.100.C of the Castle Rock Municipal Code; and

**PASSED, APPROVED AND ADOPTED ON SECOND AND FINAL READING** this \_\_\_\_ day of \_\_\_\_\_, 2024, by the Town Council of the Town of Castle Rock by a vote of \_\_ for and \_\_ against.

**ATTEST:**

**TOWN OF CASTLE ROCK**

\_\_\_\_\_  
Lisa Anderson, Town Clerk

\_\_\_\_\_  
Jason Gray, Mayor

**Approved as to form:**

**Approved as to content:**

\_\_\_\_\_  
Michael J. Hyman, Town Attorney

\_\_\_\_\_  
Mark Marlowe, Director of Castle Rock Water





# Town of Castle Rock

## Agenda Memorandum

**Agenda Date:** 8/28/2024

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**Item #:** 9. **File #:** WC 2024-086

---

**To:** Members of the Castle Rock Water Commission

**From:** Mark Marlowe, P.E., Director of Castle Rock Water

**Update on Pine Canyon Development**  
**Town Council Agenda Date:** NA

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### Executive Summary

This will be an informational update only.



# Town of Castle Rock

## Agenda Memorandum

**Agenda Date:** 8/28/2024

---

**Item #:** 10. **File #:** WC 2024-087

---

**To:** Members of the Castle Rock Water Commission

**From:** Mark Marlowe, P.E., Director of Castle Rock Water

**Resolution Approving the Second Amendment to the Services Agreement between the Town of Castle Rock and Burns & McDonnell Engineering Company, Inc. for the Chatfield Pump Back Project Infrastructure Preliminary Engineering and Design Services [Northwestern Douglas County and Southeastern Jefferson County]**

**Town Council Agenda Date:** September 3, 2024

---

### Executive Summary

Castle Rock Water (CRW) is seeking Town Council approval of a Second Amendment to the Services Agreement (**Attachment A**) with Burns & McDonnell Engineering Company, Inc. (BMcD) to extend the professional services agreement for the Chatfield Pump Back Project to September 30, 2025. The total authorization for the project was \$384,063.90 and was approved on September 20, 2022 which included a 10% contingency of \$35,914.90. At this time, no contingency dollars have been spent and \$245,076.67 of the \$384,063.90 agreement dollars have been spent. The remaining amount of the agreement is \$138,987.23. A First Amending Services Agreement for a one-year extension was approved by Town Council in September 2022. This Second Amending Services Agreement is needed due to the lengthy collaboration with stakeholders over the location of the intake within Chatfield Reservoir needed for the pump back pipeline to Castle Rock Reservoir #1 and #2.

### Budget

There is no budget impact with this request. Town Council authorized P.O. Number 2484 through Resolution No. 2022-103 on September 20, 2022 which has a remainder balance of \$138,987.23.

### Staff Recommendation

Staff recommends Town Council approval of a 2<sup>nd</sup> Amendment to the Services Agreement with Burns & McDonnell Engineering Company, Inc. for the Chatfield Reservoir Pump Back Project.



# Town of Castle Rock

## Agenda Memorandum

**Agenda Date:** 8/28/2024

---

**Item #:** 11. **File #:** WC 2024-088

---

**To:** Members of the Castle Rock Water Commission

**From:** Mark Marlowe, P.E., Director of Castle Rock Water  
Matt Benak, P.E., Water Resources Manager  
Rick Schultz, Water Efficiency Supervisor

**Changes to the ColoradoScape Criteria**  
**Town Council Agenda Date:** September 17, 2024

---

### Executive Summary

Castle Rock Water staff are currently looking at making changes to the ColoradoScape Criteria. Attached (**Attachment A**) is a summary of the proposed changes.

### Attachments

Attachment A: Summary of ColoradoScape Criteria Changes

**ColoradoScape:** A natural landscape that uses low to very low water plant material that blends in with the native Castle Rock landscapes. Plant material must be maintained in its natural form, utilizing a combination of hardscape and landscape materials which provide a variety of colors, textures, sizes, shapes, and seasonal interest.

Updates to “No Turf” policy

- **Functionality**
  - Accessible as a walk-way, and to bring equipment through such as a lawn mower, fertilizer spreader, or aerator.
  - Walking surfaces must be constructed using pavers, flagstone, crusher fines, etc. to provide a safe surface.
  - Gates must open and close freely
- **Visual Interest** (monotone vs seasonal color, differing sizes, shapes, color, and texture for hardscape)
- **Water savings** (hydro-zone 1 and 2 plant material)

Comments by from last EDC meeting

- Enhance landscapes without driving costs
  - Use cobble and rock material of varying size, color and texture. While large boulders provide great variety and accent, they can add cost.
  - Use plant material that provides a variety of color pallet
  - Allow for growth of landscape vegetation
  - Challenges of slopes
    - Something with physical integrity vs crusher fines

[Here are some ideas for possible addition to Section 6 of the Criteria Manual.](#)

**Non-Living Groundcover**

- 1) Each front yard shall utilize a variety of materials (different sizes, colors, and textures) appropriate for the slope and drainage of individual site. Table 6.1 below provides examples.
- 2) Landscape must provide a variety of colors, textures, sizes, shapes and seasonal interest as outlined in the ColoradoScape definition.

Table 6.1 Non-Living Ground Cover Requirements

Rock Mulch	Organic Mulch	Large Rock Mulch   Boulders
Rock Mulch 1/8”-1 1/2” River Rock Squeegee Granite	Tree Bark Wood Chips Shredded wood mulch (must extend to the dripline of the tree – see planting detail)	Rock Mulch 2” or Larger Cobble River Rock Boulders

## Paths and Walkways

- 1) A designated walkway or path from the front yard to the backyard is required. The walkway should provide a functional access between spaces while blending with the ColoradoScape design.
  - A) Paths and walkways shall be comprised of materials that blend with the landscape and provide a stable walking surface.
  - B) Acceptable materials include; pavers, flagstone, poured concrete, stamped concrete, crusher fines, or other materials as approved by the Town of Castle Rock.
  - C) Refer to the Town of Castle Rock Temporary Erosion and Sediment Control Manual Section 8 for minimum drainage requirements within the backfill zone of the house.

## Living plant material

- 1) Living plant material needs to be selected to achieve the following goals
  - a. Water savings (select hydro-zone 1 or 2 plant material)
  - b. Seasonal interest
    - i. Plant material must include diversity of color, size, and varying time of year for blooms (spring, summer, and fall color)
  - c. Groundcover. Current guidelines require a minimum of 75% plant material coverage at maturity
    - i. Need further discussion. Consider irrigable area, fire mitigation zones, and remaining area that has the potential to be landscaped and irrigated.
    - ii. Adjust minimum plant requirements to reflect a larger range of lot sizes.
  - d. The landscape plan should take into account the 3 zones of defensible space as outlined by the Castle Rock Fire Department

We will need to update the ColoradoScape Design Guide. While the design guide is meant to provide examples, the examples should also be consistent with both the Landscape and Irrigation Criteria Manual and fire mitigation recommendations.



# Town of Castle Rock

## Agenda Memorandum

**Agenda Date:** 8/28/2024

---

**Item #:** 12. **File #:** WC 2024-089

---

**To:** Members of the Castle Rock Water Commission

**From:** Mark Marlowe, P.E., Director of Castle Rock Water  
Matt Benak, P.E., Water Resources Manager

**Drought Management Plan Update**  
**Town Council Agenda Date:** December 3, 2024

---

### Executive Summary

Castle Rock Water staff are currently working with a stakeholder group to update the Drought Management Plan. The draft plan is attached (**Attachment A**). The Stakeholder group will meet again on September 11, 2024 to finalize the plan and talk through any remaining questions.

### Attachments

Attachment A: Drought Plan

# Castle Rock Water's Drought Management Plan

May 2024



Prepared for:

Castle Rock Water  
175 Kellogg Court  
Castle Rock, Colorado 80109



Prepared by:

Amec Foster Wheeler  
Environment & Infrastructure  
1942 Broadway, Suite 314  
Boulder, Colorado 80302

## ACKNOWLEDGEMENTS

The Town of Castle Rock would like to thank the following stakeholders for their time and input on this document:

<b>Name</b>	<b>Organization</b>	<b>Title</b>
Allen, Jill		
Benak, Matt	Castle Rock Water	Water Resources Program Manager
Brown, Angie	Castle Rock Water Commission	Member
Carter, Kati		
Chambers, Bart	Town of Castle Rock, Fire & Rescue Department	Division Chief/Fire Marshall
Convy, Courtney	Castle Rock Water	Water Conservation Specialist
Datwyler, Steve	The Club at Ravenna	Golf Course Superintendent
Egly, Kati		
Hallmark, Tim	Douglas County	Director of Facilities, Fleet, and Emergency Support Services
Holland, John	Town of Castle Rock	Golf Superintendent
Hood, Jeff	Town of Castle Rock, Fire & Rescue Department	Captain, Assistant Chief of Accreditation & Emergency Management
Kasch, Karl	Villages at Castle Rock Metro District	
Kucewesky, TJ	Town of Castle Rock, Development Services	Assistant Director of Development Services
Mahan Groce, Carrie	Town of Castle Rock, Communications	Sr. Communications Specialist
Maloney, Bob	Town of Castle Rock, Parks and Recreation	Manager of Park Operations & Maintenance



Marlowe, Mark	Castle Rock Water	Director
Peck, Michelle	TMMC Property Management	Owner and Community Manager
Rathburn, Tony	Castle Rock Water Commission	Vice Chair
Ray- Brewthower, Michele	The Meadows Neighborhood Company	
Sandman, Sandra	Castle Rock Water	Customer Relations Program Manager
Schroeder, Jake	Westside Investment Partners	
Schultz, Rick	Castle Rock Water	Water Efficiency Supervisor
Weaks, Stacey	Norris Design	Principal

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## 1 INTRODUCTION

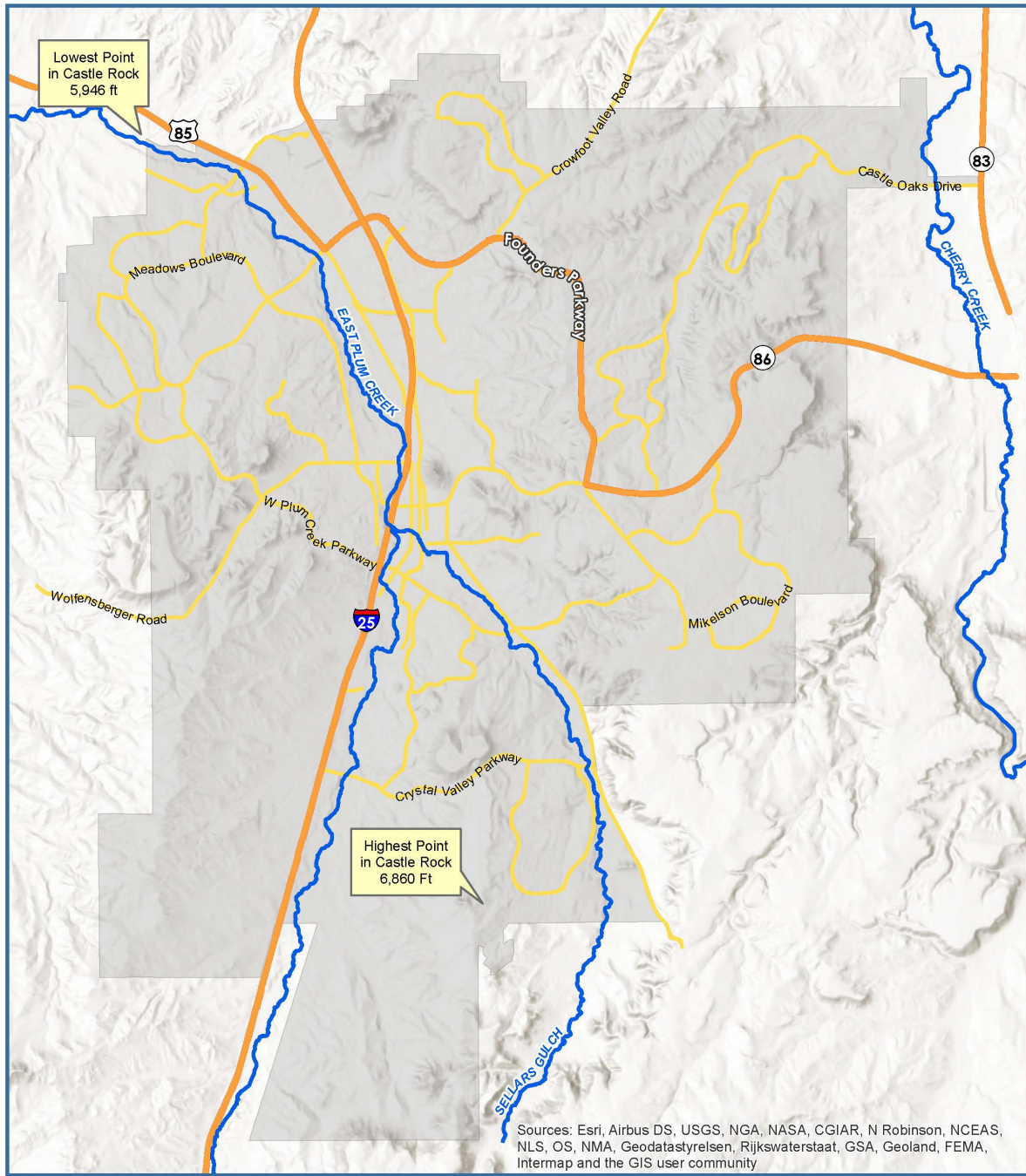
### 1.1 Profile of Existing System

The Town of Castle Rock (Castle Rock) is located south of Denver in Douglas County, midway between Denver and Colorado Springs. Incorporated in 1881, Castle Rock currently provides water and wastewater services to a population of roughly 85,000 people (2023 estimate). Castle Rock Water services 27,000 connections, of which 25,295 are single family homes.

Castle Rock provides treated water and wastewater collection services to a 34-square mile service area within the Town's municipal boundaries as well as a number of extraterritorial service areas within unincorporated Douglas County. The current population is expected to grow due to Castle Rock's quality of living, growing job opportunities, recreation activities, and location between the Denver and Colorado Springs metropolitan areas.

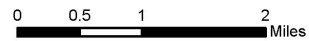
Castle Rock currently obtains around 65% of its water supply from the Town's 63 deep Denver Basin groundwater wells, while the other 35% comes from renewable sources such as wells within the East Plum Creek alluvium, a surface water diversion (CR-1) on East Plum Creek, a surface water diversion on Plum Creek, and Water Infrastructure and Supply Efficiency (WISE) water from Aurora and Denver. Castle Rock started up Advanced Treatment at the Plum Creek Water Purification Facility (PCWPF) in 2021 and now indirectly reuses most of the water supplies available to the Town. Although active aquifer storage and recovery (ASR) projects are ongoing within the Denver Basin, it is still considered to be a non-renewable water source, and the Town will ultimately not be able to meet water supply demands without transitioning to more renewable sources such as surface water, reuse water, and cooperative agreements with other municipal entities. The Town has set a master planning goal of expanding sustainable sources to make up 75% of the Town's supply by 2050 and 100% of the Town's supply by 2065. While these changes will provide a more diverse and reliable long-term water supply, it also subjects the Town to potentially larger effects from drought, making the updating and continued implementation of a Drought Management Plan even more important.

Figure 1: Castle Rock Water Service Area



**Legend**

- Highway
- Major Road
- Stream
- Water Service Area



Castle Rock’s average annual water deliveries for 2017-2023 were approximately 9,437 acre feet (AF), or about 3,075 million gallons. As shown in Table 1, single-family residential housing comprise 92% of Castle Rock’s customer base and multi-family housing comprise 2% of Castle Rock’s customer base. Commercial/industrial is the largest non-residential use followed by irrigation and bulk. Table 1 summarizes the last seven years’ water usages, in millions of gallons, per sector:

**Table 1: Water use by Sector (Million Gallons)**

Year	Residential	Multifamily	Commercial	Irrigation	Bulk	Total
2017	1,640	191	275	317	52	2,475
2018	1,755	193	285	358	99	2,690
2019	1,702	195	283	341	115	2,636
2020	2,041	218	266	423	64	3,012
2021	1,961	222	287	366	68	2,904
2022	2,115	231	314	410	99	3,169
2023	1,830	235	303	295	68	2,731

Source: Town of Castle Rock

The Town has been proactive in its planning efforts to ensure the community’s water future and obtain a continuous, sustainable water supply. Castle Rock updated the Water Resources Strategic Master Plan in 2021 , and its Water Efficiency Master Plan in 2023. Much of the information presented in this plan was obtained from those documents. The Water Resources Strategic Master Plan includes strategies for ensuring and diversifying a long-term water supply and optimizing infrastructure performance, both of which relate to long-term drought mitigation. The Town’s Comprehensive Master Plan (Dated 2017) also has goals and policies for water supply that include the recovery and reuse of treated wastewater as a key part of the long-term renewable water supply strategy.

The four largest customers in the Town of Castle Rock in terms of annual water use are:

1. Meadows Homeowners Association (HOA)
2. Hospital
3. Villages at CRMD # 4 HOA
4. Douglas County Government

## 1.2 Population

Population data from the past four decennial censuses are presented in Table 2, and projections out to the year 2050 are presented in Table 3.

**Table 2: Past Population per U.S. Decennial Census**

Census	Population
1990	8,708
2000	20,224
2010	48,231
2020	73,158



**Table 3: Projected Population**

Year	Projected Population
2030	90,000
2040	122,500
2050	155,000

The current (2023) population estimate is approximately 85,090, based on Douglas County’s Population and Development report from July 2024. Castle Rock’s population specifically changed 31.8% from 2017 to 2023.

Projected future growth is based on a 75% to 100% Town buildout and service of additional extraterritorial service areas which corresponds to a 2050 projected service population of up to 155,000.

### 1.3 Drought Mitigation and Response Planning

Drought may be defined as “a period of abnormally dry weather sufficiently long enough to cause a serious hydrological imbalance.”<sup>1</sup> This occurs when precipitation is below average based on historical weather records and there are not sufficient supplies to satisfy a water provider’s typical customer water demands, which results in a water shortage. A drought’s impacts on society and the surrounding environment can be tempered through drought preparedness. Castle Rock’s water supply consists largely of Denver Basin groundwater. The Denver Basin aquifers are a deep, non-renewable water source. The Town has added and is planning additional new water supplies that will largely originate from alluvial and surface water (renewable) sources. A reduction of winter snowfall resulting in droughts will make these new water sources potentially less reliable. This includes more severe water shortages that may occur as a result of multi-year droughts. This can result in greater reliance on storage, which can also be significantly reduced during droughts due to below-average snowpack and runoff coupled with above-average evaporation. Storage reserves may be stressed to a greater extent during multi-year droughts, which emphasizes the benefit of having sufficient storage to meet demands over multiple years. On the demand side, outdoor water uses can increase if the summer irrigation season is exceptionally dry. Effective drought management planning is necessary to ensure adequate water supplies for the community and reduce drought related impacts.

The main purpose of drought mitigation and response planning is to preserve essential public services and minimize the adverse effects of drought on public health and safety, economic activity, environmental resources, and individual lifestyles during a drought event. Effective drought management plans remove the “crisis” from drought response efforts, reduce the hardship caused by water shortages, and raise public confidence in the actions taken to address the water supply shortage. Drought mitigation refers to actions taken in advance of a drought that reduce potential drought-related impacts when the event occurs. Conversely, drought response planning refers to the conditions under which a drought-induced water supply shortage occurs and specifies the actions that should be taken in response. This Drought Management Plan (Plan) includes both drought mitigation and response planning; however, it does not address emergency water shortage events as a result of acute catastrophes such as an unexpected failure of a major raw water conveyance facility. It is also important to note this Plan is effective in drought and non-drought

<sup>1</sup> Source: Glossary of Meteorology, 2nd edition. 2000. American Meteorological Society



years. Drought mitigation, monitoring of drought indicators, and drought public education are implemented on an annual basis regardless of whether it is a dry or wet year.

This Plan was developed in close coordination with Douglas County's multi-hazard mitigation and emergency operations plans in order to reduce redundancy and capitalize on joint efforts. Douglas County's multi-hazard mitigation plans address drought aspects on a county-wide level, and Castle Rock Water's Water Efficiency Master Plan, Water Resources Strategic Master Plan, and Emergency Operations Plan expand on those aspects in areas where Castle Rock Water operates. This Plan incorporates some of the county-level drought impact information presented in the multi-hazard mitigation plans, and coordinates with the County's drought-related response actions as well. This Plan also is coordinated with State responses to drought as led by the Colorado State Drought Task Force of which Castle Rock Water is a member and also utilizes best practices developed by the Colorado Water Conservation Board including the Drought Management Planning: A Guide for Water Providers published in June of 2020.

#### **1.4 Historical Drought Planning Efforts**

Castle Rock implemented its first Drought Management Plan in 2018. Conservation measures have been in place since the 1980s. In April 1992 the Town produced a Water Resources Management Plan which outlined conservation as a viable method for extending water supply. In June 1996 the Town adopted a Water Conservation Plan that set water conservation goals. In December 2006 the Town adopted a Water Conservation Master Plan. While not a specific response to the 2012-2013 drought period, Castle Rock commissioned the Plum Creek Water Purification Facility in 2013 and brought on several alluvial wells that same year. Castle Rock Water has made outdoor irrigation restriction periods for its customers part of the scope of normal business operations. These are some of the strictest irrigation schedules in Colorado.

The Town has a significant wildfire hazard, and wildfires are exacerbated by drought. Wildfires can stress the water supply system in three ways: one, the water resources required to fight a wildfire are significant, two, the ash and debris left behind by the fire can pollute water supplies (particularly sedimentation in reservoirs) for years to come, and three, damage can be done to above ground and underground water infrastructure especially by fires which cross over the interface between wildlands and urban areas. In June 2002 the Hayman fire in unincorporated Douglas and Jefferson counties west of Castle Rock grew to be the largest documented forest fire in Colorado on record (217 square miles) at that time. This resulted in smoke and ash to be present in the Town and along the Front Range for several weeks. While wildfires do not necessarily cause a reduction in water quantity, the ash and debris can have a major impact on water quality. The Douglas County multi-hazard mitigation plan acknowledges this risk. The Town has also developed a Community Wildfire Protection Plan, see here <https://crgov.com/DocumentCenter/View/35296>.

Based on the Douglas County Hazard Mitigation Plan (HMP) (2021) there have been seven significant droughts in the last 121 years (1893-2014) in the planning area. Based on national annual data from 1895 to 1995, Douglas County underwent severe or extreme drought conditions approximately 15 to 19.9% of the time, which are among some of the highest frequencies across the entire country. Based on the 15 recorded drought events over 20 years, Douglas County typically experiences some kind of drought conditions (D1-D4) in any given year. Some drought

events have lasted multiple years. Information from NOAA-NCEI storm events database, the 2018 State of Colorado HMP, the 2015 Douglas County HMP, and the Drought Monitor were used to identify the number of drought events that occurred between 2000 and 2020. Based on 15 recorded events during this period of time in Douglas County, a drought event has a 71% chance of occurring in any given year in Douglas County. From the historic data, it is apparent there has been a shift in trend with regards to occurrences of drought in the last few decades, where dry periods are becoming more common/frequent.

## **1.5 Drought Planning and Water Conservation**

Water conservation and drought planning both involve a combination of strategies for reducing water demand. However, the main objective of a water conservation plan is to achieve continuing, long-term improvement in water use efficiency while reducing overall water demands. A drought management plan focuses on long-term drought mitigation in addition to response strategies that provide short-term responses to temporary drought-related water supply shortages. Nevertheless, conservation measures that result in an ongoing reduction in water demand can provide long-term drought mitigation benefits and can be considered as both conservation and drought mitigation measures. Strategies proposed and implemented also include incentive-based programs that encourage existing properties to be water efficient and aesthetically pleasing. Water efficiency activities put in place by the Town are listed in Table 12 under Section 8.1. These activities are outlined in the 2023 Water Efficiency Master Plan.

Castle Rock's five-year average water consumption rate for 2018 to 2023 was 112.6 gallons per capita per day (gpcd). The Town has set a master planning goal of reducing this rate further to 100 gpcd. Maintaining this up to date Drought Management Plan is part of Castle Rock's overall strategy to achieve that goal.

The planned and proposed conservation measures also provide drought mitigation benefits by providing water savings that can extend into subsequent years. For example, savings achieved through the installation of smart irrigation controllers provide water savings for the service life of the irrigation controller. These savings may reduce stress on Castle Rock's system during drought years. A portion of the water saved through these conservation measures is planned to be stored as drought reserves in Castle Rock reservoirs, Rueter-Hess Reservoir, Chatfield Reservoir, Castle Rock Reservoirs No. 1 and No. 2, Walker Reservoir and the Denver Basin aquifer storage and recovery wells.

## **2 STAKEHOLDERS, OBJECTIVES AND PRINCIPLES**

### **2.1 Drought Planning Committee**

Drought management plans that are developed by one or just a few individuals risk the potential of unforeseen community conflict and/or complications with the water supply system during times of drought. An interactive, collaborative process consisting of stakeholders throughout the Town provides valuable insight and perspectives necessary for a more robust and comprehensive drought management plan.

During the update of this Plan, a Drought Committee (see Table 4) was reconvened to review proposed updates and changes to the Plan and provide feedback. Committee members were selected by Castle Rock Water based on their expertise, customer type, and professional position. The following members include senior staff of various departments impacted in the Town, members of the Castle Rock Water Commission and representatives from local water users.

**Table 4: Drought Committee Members**

Name	Position	Agency
Mark Marlowe	Director of Castle Rock Water	Castle Rock Water
David Van Dellen	Assistant Director of Castle Rock Water	Castle Rock Water
Matt Benak	Water Resources Manager	Castle Rock Water
Lauren Moore	Water Resources Project Manager	Castle Rock Water
Zuzana Howard	Water Resources Program Analyst	Castle Rock Water
Adriana Alfaro	Water Resources Program Analyst	Castle Rock Water
Sandra Sandman	Customer Relations Program Manager	Castle Rock Water
Rick Schultz	Water Conservation Supervisor	Castle Rock Water
TJ Kucewesky	Assistant Director	Town of Castle Rock Development Services
Bob Maloney	Parks Superintendent	Town of Castle Rock Parks and Recreation
Bart Chambers	Division Chief/Fire Marshall	Castle Rock Fire & Rescue Department
Jeff Hood	Town of Castle Rock, Fire & Rescue Department	Captain, Assistant Chief of Accreditation & Emergency Management
Tim Gorman	Commander	Town of Castle Rock Police
Karl Kasch	Representative	Villages at Castle Rock Metro District
Michele Ray-Brethower	Representative	The Meadows Neighborhood Company
Angie Brown	Representative	Castle Rock Water Commission
Tony Rathburn	Representative	Castle Rock Water Commission
John Holland	Golf Maintenance Superintendent	Town of Castle Rock Parks and Recreation
Steve Datweyler	Golf Course Superintendent	Ravenna Golf Club
Jill Allen		
Angie Brown	Member	Castle Rock Water Commission
Kati Carter		
Courtney Convy	Water Conservation Specialist	Castle Rock Water
Kati Egly		
Tim Hallmark	Director of Facilities, Fleet, and Emergency Support Services	Douglas County
Carrie Mahan Groce	Sr. Communications Specialist	Town of Castle Rock, Communications
Michelle Peck	Owner and Community Manager	TMMC Property Management

Name	Position	Agency
Jake Schroeder		Westside Investment Partners
Stacey Weaks	Principal	Norris Design

Two meetings were held with the Drought Committee as the Plan was being updated. These meetings focused on the proposed changes to the Plan and facilitated a means to collect and review data and receive feedback on specific aspects of the proposed changes to the Plan. The Drought Committee also had the opportunity to review and comment on the draft Plan update in its entirety prior to finalization. The meetings focused on the following material:

- Meeting No. 1 – Introductions, review of the 2018 Plan, updates to local drought definition, water use priorities, plan objectives, and operating principles.
- Meeting No. 2 – Historical drought information, lessons learned from past droughts, identification of historical and potential future drought impacts, and updates to mitigation and response strategies. as well as drought stages, trigger points, and response targets.

## 2.2 Drought Definition

The Castle Rock Drought Committee members decided to expand the definition of drought beyond the traditional hydrologic definition. For the purposes of this plan, Drought is defined as:

“A period of below normal precipitation or extended warm temperatures at times and locations that could result in water supply shortages. This could also include the inability to maintain or deliver adequate supplies of water.”

For the purposes of this plan this includes other circumstances beyond the traditional hydrologic shortage, such as unanticipated increases in water demand or damage to water supply infrastructure that could trigger a drought response.

## 2.3 Objectives of the Drought Management Plan

The Plan objectives and operating principles are reflective of Castle Rock’s water use priorities and played an important role in guiding the updates to the Plan. The Drought Committee reconfirmed the allocation and prioritization of Castle Rock’s water usage into the four categories shown in Table 5.

**Table 5: Water Use Priorities**

Priority	End Use	Description
1	Health and Safety	Indoor residential, water treatment plants, hydrants (for emergency use), wastewater treatment plants, schools, hospitals, and other emergency services.
2	Business Indoor Use	Indoor use by the commercial and public sector, stores, offices, hotels, restaurants, etc.
3	Outdoor irrigation – Public spaces	Parks, sports fields, landscapes, swimming pools, HOA parks, and open/recreational spaces. Trees prioritized over turf. Outdoor commercial business or business enterprise (including golf courses), as well as construction purposes.

Priority	End Use	Description
4	Outdoor irrigation – Residential and Commercial	Outdoor irrigation in the single- and multi-family residences, and public and commercial sectors (including car wash facilities). HOA streetscapes/greenbelts. Reasonable environmental protection.

Essential uses for the health and safety of the community continued to be given the highest priority. Water uses for existing businesses (in the form of indoor use) were assigned a second priority, and outdoor irrigation, water use for public spaces, and residential and commercial water supplies were assigned lower priorities.

The objectives of the Plan are as follows:

- Plan for droughts before they occur.
- Protect the public health and safety, and minimize the adverse effects of a water supply shortage.
- Provide comprehensive and flexible guidance for drought response, allowing for an appropriate range of actions to respond
- Identify and determine the severity of droughts through a clear definition of triggers.
- Provide effective communication to customers, the public and governmental departments/agencies, so they clearly understand the situation and the actions taken.

The operating principles provide a set of guidance criteria that continue to govern the Plan. These criteria also provide guidance during implementation of the drought response during periods of drought. These operating principles are as follows:

- Any drought-related actions will be carried out in a way that respects the priorities established by the plan, with the highest priority being health and safety.
- Any drought-related actions need coordination and communication for success. This includes coordination and communication with staff across the Town’s various departments. The Town’s water customers and the public need to have a clear understanding of any actions taken.
- When possible, any drought-related actions will preserve the Town’s large capital improvements, such as trees in parks and streetscapes.

This plan is intended to be a guide to facilitate decision making. Decision makers should remain flexible, and respond as needed to each drought event on a case-by-case basis.

### 3 HISTORIC DROUGHT AND IMPACT ASSESSMENT

#### 3.1 Historical Assessment of Drought, Available Supplies and Demands

Based on the history of events and input from the Core Planning Team for the Douglas County HMP (2021), the probability for drought occurring in the County is considered frequent (hazard

event is likely to occur within 25 years). The 2002 drought was by far the worst drought year on record statewide in terms of streamflow. As Castle Rock's water supply has primarily been Denver Basin groundwater, the 2002 drought had less impact on the Town than other municipalities that relied more on surface water. Castle Rock plans to develop extensive shallow alluvial and surface water sources, so that these renewable resources will account for 75% of the Town's water by 2050 and 100% by 2065. Although a positive aspect of using renewable water resources means ensuring the water lasts long-term, a downside of moving towards surface water means that future droughts can potentially have a much larger impact on the Town than in the past.

Many of the personnel currently at Castle Rock Water were not at the Town during the 2002 drought, and there is limited information about specific policies put in place during that time. However, there is evidence that the drought did have a significant impact on the Town as well as on nearby regions, including Aurora and the Denver south metro area. The 2021 Water Resources Strategic Master Plan shows that Town demand was 165 gpcd, prior to 2006, and decreased to 122 gpcd as of the 2011-2016 average, and 118 per the most recent five-year period 2018-2023. The plan notes that the reduction in water usage per account since 2002 is most likely attributable to the public's response to the drought and the Town's focus on conservation efforts. In addition, both the 2023 Water Efficiency Master Plan and the 2021 Water Resources Strategic Master Plan state that the Town intends to reduce consumption further to reach the 100 gpcd goal (and save the community about \$70 million in long term capital investment and infrastructure).

The 2012-2013 drought years also affected the Town. While not a specific response to the 2012-2013 drought period, Castle Rock commissioned the Plum Creek Water Purification Facility in 2013 and brought on several alluvial wells that same year. Castle Rock Water has made outdoor irrigation restriction periods permanent regardless of drought conditions.

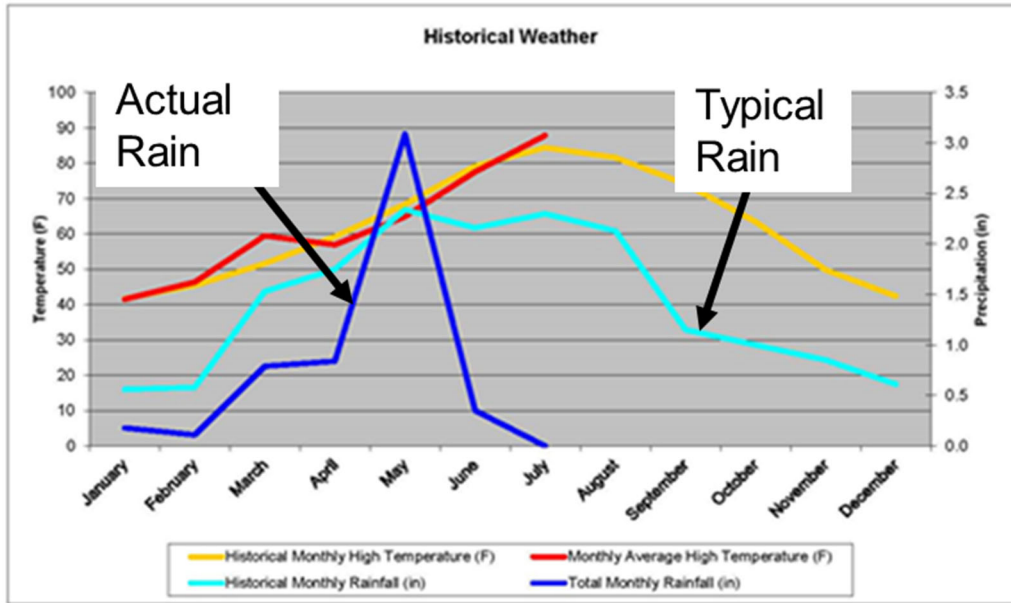
### **3.1.1 2017 "Flash" Drought**

Hot, dry weather and lack of rain in May and June 2017 led to record low levels of renewable water sources (e.g., East Plum Creek) and excessive demand on the Town's water system. As a result, residents, homeowner's associations (HOAs), and commercial/industrial customers used 25% more water than usual. Infrastructure could not keep up with the peak demand of 16.5 million gallons per day, compared to typical summer usage of 12.4 million gallons per day. Figure 2 displays the temperature and precipitation patterns observed during the 2017 year, broken up by month, and compared to traditional rainfall expectations. In the transition between May and June we begin to see a significant decline in the total monthly rain, followed by rising temperatures. Due to the high temperatures and lack of precipitation, East Plum Creek began to suffer accordingly, with shortages in expected flow to support available water resources for the Town. Stream flow decline began in June, lasting through July (portrayed in Figure 3).

In response to these conditions, Castle Rock Water enacted additional water restrictions for residents, HOAs, and commercial/industrial customers. HOAs and commercial/industrial customers were put on a three-day-a-week schedule, and residents (who were already on an every-third-day watering schedule) were encouraged to reduce irrigation by 20%. Enacting these supporting measures helped keep tank levels in line with the summer operations plan.

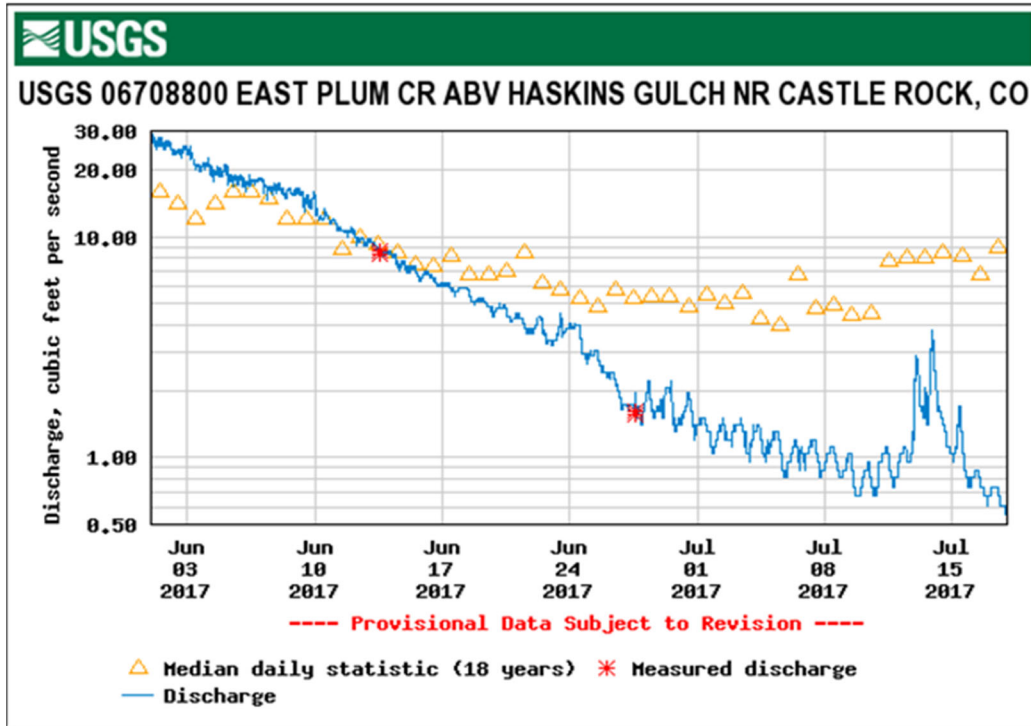


Figure 2: 2017 Observed Temperatures and Precipitation as of July.



Source: Castle Rock Water

Figure 3: East Plum Creek Stream Flow June-July 2017



Source: Castle Rock Water

## 4 DROUGHT VULNERABILITY ASSESSMENT

### 4.1 Water Supply Reliability and Drought Management Planning

Castle Rock's water supply reliability planning efforts have recently focused on the long-term sustainability and renewability of their water supply. The Denver Basin Aquifer, which currently supplies up to 65% of the Town's water, does not recharge quickly and is hence not considered to be a renewable resource. For that reason, the Town has set a goal of having 75% of its water supply come from renewable alluvial and surface water supplies by 2050 and 100% by 2065. This change in water sources potentially exposes the Town to more impacts from future drought, however.

The reliability of these water supplies depends on a multitude of factors including the Town's seniority of water rights, storage capacities, infrastructure conditions, and rate of customer demand growth. Water supply reliability planning is an important component of ensuring sufficient supplies during times of drought and, to some extent, overlaps with this drought management planning process. However, this Plan focuses on drought within the context of drought monitoring, mitigation actions, and drought response to lessen drought impacts. Consequently, this Plan does not take the place of water supply reliability planning but rather is closely coordinated with Castle Rock's water supply reliability planning efforts.

### 4.2 Drought Impact Assessment and Climate Change

Castle Rock Water could experience a variety of drought-related impacts in the future, which may be similar to those experienced in the past. These possible impacts and level of severity are outlined in Table 6. The potential severity of many of these impacts could be significant depending on the magnitude and duration of the drought, climate variability trends, and how effectively the drought mitigation and response efforts reduce the impact.

Predictions for future precipitation change are divergent in Colorado. Using two different emission scenarios, Representative Concentration Pathways (RCP) 4.5 and 8.5, which model moderate and high emissions scenarios, annual precipitation changes are projected. An RCP emission scenario is a way to predict future climate changes by estimating how much greenhouse gas emissions might increase or decrease over time and are commonly used by organizations like the Intergovernmental Panel on Climate Change, NOAA, and other research institutions. Under RCP 4.5 annual changes are between -5% and +6% and under RCP 8.5 annual changes are between -3% and +8% by 2050. These projections also anticipate increased winter precipitation and decreased precipitation during the growing season (May – September) by 2050. Winter precipitation will likely include more rain than snowfall due to warmer temperatures. Additionally, projections indicate that average annual streamflow for most Colorado river basins will decrease by up to 30% due to the impacts of warmer temperatures on streamflow. However, it is possible the increased winter precipitation will compensate for this warming by increasing runoff.

With a warmer climate, droughts can become more frequent, more severe, and longer-lasting. According to the National Climate Assessment, variable precipitation and rising temperatures are intensifying droughts, increasing heavy downpours, reducing snowpack, and causing declines in



water survey quality. Future warming will add to the stress on water supplies and impact the availability of water supply (U.S. Global Change Research Program 2018).

Nevertheless, Colorado's general hydrology and water resources are extremely sensitive to climate. For Castle Rock, multifaceted stress on water supply such as stemming from irrigation and municipal demands, combined with overall climate variability and change, are increasing the importance of supply forecasting to water managers and business markets. While the scientific understanding of climate change is ever evolving and entails many complexities when linking it with specific future trends in drought, in general, climate change is projected to increase the frequency and probability of drought events across Colorado. As a result of increasing temperatures, water yields will generally decrease. Warmer temperatures will likely result in precipitation occurring as rain rather than snow, decreased high-elevation snow packs, an earlier spring melt of the decreased snowpack, more intense and damaging precipitation events (e.g., flash floods), and increased evapotranspiration (CWCB 2015). The following list presents a breakdown of these projected drought-related changes in terms of the hazard's location, extent/intensity, frequency, and duration, based on climate change impacts to Colorado and Castle Rock:

**Location:** Mountains and plains both experience drought. Drought changes geographically from year to year and decade to decade. Location is not projected to change but could vary across the Town based on local resources and water infrastructure (e.g. if pumps were to fail).

**Extent/Intensity:** Drought can lead to property damage that does not threaten structural integrity. Little to no impact to critical services or facilities is expected in the Town. Economic and water resource impacts are often foreseen. Overall extent of drought due to changing climate not projected to significantly change.

**Frequency and Probability:** Droughts across Colorado are projected to increase in frequency due to shifts in seasonal precipitation patterns, including drier summers and less precipitation falling as snow in early spring/late fall. Specifically, Castle Rock would be more affected by this category as we continue to rely more heavily on renewable water resources.

**Duration:** Future droughts are projected to have longer durations due to a changing climate (e.g. shifts in seasonal precipitation patterns due to higher temperatures and less precipitation in the form of snow). This will increase the impact to Castle Rock and highlights the importance of protecting non-renewable Denver Basin supplies for these events as these supplies are not directly impacted by the drought.

**Table 6: Historical and Potential Future Drought Impacts of the Utility**

Historical, Existing, and Potential Drought impacts	Historical Impact	Ranking of Drought Impact Severity*	Potential Impact Priority	Mitigation Action	Response Strategies
<b>Water Provider</b>					
Loss of revenue from reduction in water sales	x	M	M	Utilize reserves.	Budget for reserves. Drought rates
Increase in municipal water demand	x	M	L	Implement watering restrictions and drought rates to reduce demand.	Decrease reliance on ground water. Diversify supplies.
Reduction in storage reserves	x	M	L	Implement watering restrictions to reduce demand.	Minimize reduction. Maintain levels in reservoirs during non-drought periods
Disruption of water supplies	x	M to H	L	Restore services and lift restrictions as soon as possible.	Minimize disruptions. Diversification of Supplies
Degraded raw water quality	x	M	L	Curtail direct diversions off creek.	Pump Denver Basin Wells. Use alluvial wells, and reservoir supplies.
Higher water pumping costs	x	L	L	Return to normal operations as soon as possible. Budget for additional staff time. Budget for reserves.	Budget for additional costs.
Increased costs and staff time to implement drought plan	x	M	M	Return to normal operations as soon as possible. Budget for additional staff time. Budget for reserves.	Budget for increased costs.
Increased data/information needs to monitor and implement drought management plan	x	M	M	Return to normal operations as soon as possible. Budget for additional staff time. Budget for reserves.	Utilize staff to address data/information needs.
Costs to acquire/develop new water supplies/water rights transfers	x	H	L	Proactively acquire and develop additional supplies.	Budget for and take advantage of sensible opportunities.
Costs to increase water use efficiency	x	L	L	Increase public awareness of the need. Budget for water conservation measures.	Implement over a long period of time. Focus on non-functional turf reductions
Public favorable/unfavorable perception of provider regarding drought response	x	M	L	Increase public education.	Maintain transparency and education efforts.

Historical, Existing, and Potential Drought impacts	Historical Impact	Ranking of Drought Impact Severity*	Potential Impact Priority	Mitigation Action	Response Strategies
Scarcity of equipment and other water related services (e.g., contractors to repair wells)	x	L	L	Emergency services contract.	Utilize multiple contractors.

Historical, Existing, and Potential Drought impacts	Historical Impact	Ranking of Drought Impact Severity*	Potential Impact Priority	Mitigation Action	Response Strategies
<b>Community and Societal</b>					
Domestic landscaping stressed or killed	x	M	L	Drought tolerant landscaping.	Continue to implement drought tolerant landscaping.
Public landscaping stressed or killed	x	M	L	Drought tolerant landscaping.	Continue to implement drought tolerant landscaping.
Reduced firefighting capability	x	L	L	Minimize restrictions.	Maintain storage for firefighting at all times.
Cross-connection contamination as a result of lower pressures			L	Increased sampling.	Maintain positive pressure in system at all times.
Increased pollutant concentrations			L	Increased sampling and monitoring.	Meet primary drinking water standards at all times.
Reduced quality of life	x	L	L	Minimize restrictions.	Drought planning.
Loss of human life (e.g., heat stress)			L	Minimize restrictions. Restore services as soon as possible.	Minimize restrictions. Restore services as soon as possible.
Increased Risk to Public safety from wildfires			L	Maintain firefighting capabilities.	Maintain firefighting capabilities.
Increased disease caused by wildlife concentrations			L	Minimize restrictions.	Minimize restrictions.
Mental and physical stress	x	L	L	Minimize restrictions. Increase education.	Minimize restrictions. Increase education.
Increased political conflict	x	L	L	Minimize restrictions. Transparency.	Minimize restrictions. Transparency.
Reduction or modification of recreational activities	x	L	L	Minimize restrictions.	Minimize restrictions.
Unequal distribution of drought response measure implementation	x	L	L	Minimize restrictions. Increase education. Drought planning.	Minimize restrictions. Increase education. Drought planning.
Heightened awareness about water conservation	x	L	L	Increase education.	Increase education.
Change in water use behavior to conserve water	x	L	L	Increase education.	Increase education.
Re-evaluation of social values (priorities, needs, rights)	x	L	L	Drought planning.	Drought planning.

Historical, Existing, and Potential Drought impacts	Historical Impact	Ranking of Drought Impact Severity*	Potential Impact Priority	Mitigation Action	Response Strategies
<b>Economic</b>					
Decreased land prices			L	Minimize restrictions. Transparency. Drought planning. Public education.	Minimize restrictions. Transparency. Drought planning. Public education.
Income loss to farmers that indirectly affects municipal businesses	x	L	L	Minimize restrictions. Transparency. Drought planning. Public education.	Minimize restrictions. Transparency. Drought planning. Public education.
Loss to recreation and tourist industry	x	L	L	Minimize restrictions. Transparency. Drought planning. Public education.	Minimize restrictions. Transparency. Drought planning. Public education.
Reduction of economic development		L	L	Minimize restrictions. Transparency. Drought planning. Public education.	Minimize restrictions. Transparency. Drought planning. Public education.
Increase in food prices	x		L	Minimize restrictions. Restore services as soon as possible.	Minimize restrictions. Restore services as soon as possible.
Restrictions/limitations on landscaping when it harms landscaping companies	x	L	L	Minimize restrictions. Transparency. Drought planning. Public education.	Minimize restrictions. Transparency. Drought planning. Public education.
Impacts to large scale commercial water users (e.g., golf courses)	x	M	L	Minimize restrictions. Transparency. Drought planning. Public education.	Minimize restrictions. Transparency. Drought planning. Public education.
<b>Environmental and Recreational</b>					
Increased risk of frequency and severity of wildfires	x	L	L	Maintain firefighting capacity	Maintain firefighting capacity
Stress to surrounding natural environment	x	L	L	Minimize restrictions.	Minimize restrictions.
Loss of wetlands	x	L	L	Minimize restrictions.	Minimize restrictions.
Lower streamflows	x	L	L	Drought planning.	Drought planning.
Lower lake/reservoir levels	x	L	L	Drought planning.	Drought planning.
Increased susceptibility to plant disease	x	L	L	Drought resistant landscaping.	Drought resistant landscaping.
Increased wind and water erosion	x	L	L	Drought resistant landscaping.	Drought resistant landscaping.
Reduced flow from springs			L	Restore full water service as soon as possible.	Restore full water service as soon as possible.

Historical, Existing, and Potential Drought impacts	Historical Impact	Ranking of Drought Impact Severity*	Potential Impact Priority	Mitigation Action	Response Strategies
Air quality effects (e.g. dust and pollutants)	x	L	L	Minimize restrictions. Transparency. Drought planning. Public education.	Minimize restrictions. Transparency. Drought planning. Public education.
Visual and landscape quality (e.g., dust, vegetative cover)	x	L	L	Drought tolerant landscaping.	Drought tolerant landscaping.
Stress to fish and other wildlife			L	Drought planning.	Drought planning.
Lower water quality in streams and/or lakes/reservoirs			L	Drought planning.	Drought planning.
Campfire bans			H	Follow Municipal Code.	Follow Municipal Code.

\*Drought Severity Definitions:

- (L) – Low: very little impact, did not require much staff time
- (M) – Medium: some impact, required more staff time to address
- (H) – High: key impact, occupied significant staff time
- x – indicates historical impact

The Castle Rock community could also experience a variety of future drought-related impacts. Some of the more significant impacts include:

- Damage to public and private landscaping.
- Unequal impacts of water restrictions and other drought response measures upon certain businesses/individuals. For example, large irrigators that depend on irrigation may be more vulnerable.
- Increased risk of wildfire that threatens the safety, air quality and overall environment of the surrounding area.
- Increased public awareness on drought response efforts, importance of water conservation and positive reduction in water usage.

While some of these impacts are beyond the immediate control of Castle Rock Water, drought mitigation activities and daily operational adjustments during future droughts may be made to alleviate some of these impacts. This is discussed in further detail in Section 5.

## 5 DROUGHT MITIGATION AND RESPONSE STRATEGIES

As previously mentioned, drought mitigation refers to actions taken in advance of a drought that reduce potential drought-related impacts when the event occurs. In contrast, drought response planning refers to the conditions under which a drought-induced water supply shortage occurs and specifies the actions that should be taken in response.

Mitigation and response strategies that focus on the management of the water supply system are generally referred to as supply-side actions; whereas demand-side mitigation and response strategies focus on actions that Castle Rock Water can take to promote or enforce reductions in customer water demands. This section presents the mitigation and response strategies selected following a screening process. The response strategies are further refined into a staged drought response program discussed in Section 7.

### 5.1 Drought Mitigation Measures

The drought mitigation measures were selected by developing a preliminary list of potential mitigation measures and conducting a screening process to select the measures most conducive for Castle Rock. The preliminary list was developed using the Colorado Water Conservation Board's (CWCB) Drought Management Guidance Document and accompanying worksheets, as well as incorporating Castle Rock's water supply reliability and conservation planning efforts. Potential impacts identified in Section 4.2 were also used to generate new ideas for mitigation options. The preliminary mitigation list was screened and further refined using the following criteria:

- *Technical feasibility* – Is the selected mitigation or response strategy technically feasible and will it work as intended? Can implementation occur in a timely manner? Is there staff to implement the action?

- *Perceived benefits* – Will the selected mitigation or response strategy provide an adequate amount of water supplies and/or water savings?
- *Cost effectiveness* – How does the implementation cost compare with the benefits? This may simply be a qualitative assessment or quantitative comparison of ratios of implementation costs to the water savings cost benefit.
- *Public acceptance* – How favorably will the public react to the selected mitigation/response strategy? A review process of alternative means to engage the public would be beneficial to assess general public acceptance.
- *Environmental sensitivity and other impacts* – What are the environmental benefits/costs to implementing the mitigation and/or response strategy? Is there an environmental issue or other impacts that should be further considered?

The final step of the screening process assessed the selected group of mitigation actions to ensure that the final combination collectively met the following criteria:

- Compatible with Castle Rock’s water supply system and is feasible from an implementation standpoint;
- Consistent with the operating principles and objectives of the drought management plan;
- Fairly represents the needs of affected individuals and groups; and
- Sufficiently addresses potential water shortages and future impacts.

The final mitigation measures (which include conservation efforts) are provided below.

### 5.1.1 Mitigation Measures

- *Drought mitigation and management planning* – The major components of this Plan provide an effective means for Castle Rock to prepare for and manage water during drought. When done in advance of a drought, planning is considered drought mitigation. These components include the objectives and operating principles; assessment of historical and potential drought impacts; drought-related monitoring; drought stages, trigger points and response targets; declaration of a drought; development of drought-related ordinances; and the public drought education campaign. This planning effort in advance of a drought is considered mitigation.
- *Ongoing monitoring of drought indicators* – Castle Rock’s monitoring plan is outlined in Section 6.2.
- *Development of new water supplies* – Castle Rock is planning to develop additional water supplies for drought protection and to meet the growing water demands of the community. New water supply options focus on the inclusion of additional renewable water sources, including additional Lawn Irrigation Return Flows (LIRF), Cherry Creek supplies from the Cherry Creek Project Water Authority and the converse wells, water supplies from the Box



Elder project, South Platte water rights collected in Chatfield Reservoir and pumped back to Castle Rock, and additional water rights along Plum Creek and its tributaries.

- *Develop cooperative sharing agreement opportunities with neighboring communities during periods of drought* – Castle Rock’s water supply yields may be increased by making some adjustments to how water rights are traditionally managed and through other synergies developed via cooperative agreements with other local water users. Where possible, these agreements will be established in advance of a drought as part of the mitigation effort and activated during drought periods.<sup>2</sup> The Town has been a member of the Water Infrastructure Supply Efficiency (WISE) project since 2009, a regional water supply effort between Aurora Water, Denver Water, and the South Metro Water Supply Authority (SMWSA). SMWSA was an earlier partnership that formed in 2004, and in turn is composed of 13 water provider members, including a majority of Douglas County<sup>3</sup>. In addition, importing water from the South Platte River can provide a source of renewable surface water for the Town, as specified in the Box Elder Well Field project located in Weld County. Castle Rock is also a key member in the Chatfield Reservoir Mitigation Company, which has implemented the Chatfield Reallocation Project. The Town has also formed partnerships with Dominion Water and Sanitation District (DWSD); Parker Water and Sanitation District (PWSD); Castle Pines Metropolitan District; the Pinery; Douglas County; and others to develop key pieces of infrastructure and to cost-share in projects. Appropriate Substitute Water Supply Plans and/or water court filings may occur to ensure that the agreement(s) are viable under Colorado Water Law.
- *Existing operation and maintenance activities that improve water efficiency* – Castle Rock Water currently conducts annual audits on their water distribution system, routinely repairs leaks on an as-needed basis, monitors and replaces inaccurate meters, and strategically operates its water supply system to avoid reservoir spills (releasing reservoir water when not necessary for water supply purposes). One key strategy would be to manage the Town’s reservoir storage program to optimize the placement of supplies during periods when they are not needed. Current storage space includes Rueter-Hess Reservoir (8,000 AF), Chatfield Reservoir (848 AF, expandable to 2,000 AF under an option agreement with the State), Castle Rock Reservoir No. 1 (240 AF), Walker Reservoir (150 AF), and 4 aquifer storage and recovery (ASR) wells within the Denver Basin. Additionally, the Town is implementing raw water collection and line flushing to reduce plugging and periodic alluvial well cleaning.
- *New operation and maintenance activities that improve water efficiency* – The addition of new water supplies to Castle Rock’s system will require modifications to current daily operations. Such operational changes are evaluated through the 2023 Water Master Plan, with the objective of optimizing operations to improve the efficiency and overall distribution of water supplies, when the new water supplies are developed. The water supply strategy, however, is predicted

<sup>2</sup> Activation of these agreements and identification of additional temporary arrangements during drought periods would be a component of the drought response which is addressed in Sections 5.2 and 7.

<sup>3</sup> SMWSA’s 13 current members include Arapahoe County Water and Wastewater Authority, Castle Pines North Metropolitan District, Centennial Water and Sanitation District (serving Highlands Ranch), Cottonwood Water and Sanitation District, Dominion Water and Sanitation District, East Cherry Creek Valley Water and Sanitation District, Inverness Water and Sanitation District, Meridian Metropolitan Districts, Parker Water and Sanitation District, Pinery Water and Wastewater District, Rangeview Metropolitan District, Stonegate Village Metropolitan District, and the Town of Castle Rock.

to require a steady increase in customer rates and fees, as the current long-term Water Master Plan expects the Town to spend over \$475 million through 2065, to meet the desired goals. Further, the Town’s 2030 Comprehensive Master Plan approved guidelines to define long-term water conservation and resource performance goals based on existing and future growth, development, and planning efforts. One new reservoir is under construction, Castle Rock Reservoir No. 2 (790 AF), and Castle Rock Reservoir No. 1 is being expanded to 560 AF.

- *Conservation measures specified in both the Water Efficiency and Conservation Plans* – The conservation measures shown in Table 7 serve the dual purpose of conserving water while also providing drought protection. These conservation and mitigation measures are enforced by the Town staff. A portion of the water saved through these conservation measures can be stored as drought reserves in each of Castle Rock’s raw water storage facilities (e.g., ASRs, Chatfield Reservoir, Rueter-Hess Reservoir, Walker Reservoir, and Castle Rock Reservoir No. 1).
- *Standard practices of Castle Rock Water and Castle Rock Town Staff* – Castle Rock’s management and operations reflect the Town’s values of sustainability and environmental stewardship. Many of Castle Rock Water’s standard operations focus on water conservation and efficient water use guidelines, providing multi-year water savings and drought mitigation during dry periods. These include irrigation audits on Town-owned parks, routine education of Town staff on how to save water, use of low volume irrigation (e.g., drip irrigation) instead of sprinklers and misters where appropriate, and training all Town staff on enforcing related water regulations. In addition, the 2024 Water Use Management Plan (WUMP) outlines components related to the Town’s irrigation procedures, enforcement rules, special water related circumstances, and more. The WUMP is updated and adopted by Council Resolution every year. As such, WUMP guidelines may be in addition to those explained in Table 7.

**Table 7: Castle Rock’s Conservation and Water Efficiency Guidelines**

Guideline	Type of Restriction	Restriction Periods	Description
Watering related	General watering schedule * (subject to change)	May 1 through September 30	Watering is limited to every-third-day for residential users, and three times a week for nonresidential users, during designated months (i.e. typical irrigation seasons)
	Applies to outdoor irrigation	Between 8pm to 8am	During the restriction period, outdoor irrigation is permitted before 8 a.m. and / or after 8 pm
	Hand watering	Any time and on any day	Allowed only as long as no water waste is occurring. Hand watering does not include irrigation with a hose and sprinkler or manual operation of an automated irrigation system
	Car washing	n/a	Using a commercial car wash is suggested, but homeowner car washing is allowed with automatic shut off nozzles, recommended use of wash bucket and sponge, and no water waste
	Pressure washing	n/a	Only with high-efficiency and low-water-use equipment with no excessive water runoff
Decorative fountains (i.e. water features)	Use and water circulation	n/a	Single-family and two-family residential: when present, swimming pools and water features will

Guideline	Type of Restriction	Restriction Periods	Description
			reduce the total amount of turf allowed by an equal area Non-residential properties: water features are not allowed Streetscapes, rights-of-way, and tracts along rights-of-way: Water features are not allowed
Playing in the sprinklers	Waste related	n/a	Water used for entertainment is allowed as long as a person is present and water waste is not occurring (such as water running down the street.)
Preferred ColoradoScape plants	Plant types	n/a	The Landscape and Irrigation Performance Standards and Criteria Manual identifies plants that perform well in Colorado's semi-arid, high desert climate. These guidelines should be of assistance with landscape design
New lawn installations	Irrigation exemptions	Up to 21 consecutive days for new turf, and up to 30 consecutive days for seed or other plant material	Irrigation exemptions allow residents to conduct daily watering through the specified exemption period. This exemption does not affect the volume of water allocated, only the days in which to apply it. Watering time restrictions, if in place, still apply. Irrigation exemptions will not be issued or applicable between July 1 and July 31
Nonresidential and public areas	Permissible hours or irrigation	Between 10pm and 6am	This restriction applies during irrigation season for regular nonresidential, common, and public areas, and is based on the East and West of I-25 division (where the West may irrigate Monday, Wednesday, and Friday, and the East on Tuesday, Thursday, and Saturday)

\*High priority parks may be on different schedules

## 5.2 Supply-Side Response Strategies

The same process and screening criteria used to develop the mitigation measures described in Section 5.1 were used to identify and select the final supply-side response strategies. The final supply-side response strategies in Table 8 consist of technical and financial assistance opportunities, water rights management and cooperative agreements, and improvements to water distribution efficiency. Some of these strategies are already in place and some would be new strategies employed during drought. It was noted that some of the measures listed below would require approval of a substitute water supply plan by the Division Engineer and/or approval of a change decree by the Water Court. Each of these strategies reflects the operating principles disclosed in Section 2.2 and is refined into a staged drought management program in Section 7.

**Table 8: Supply-Side Response Strategies**

Supply-Side Mitigation and Response Strategies	Long-term Mitigation Actions	Short-term Response Strategy	Preliminary Selection of Mitigation and Response Strategies	Relative Effectiveness Value [1]
<b>Elements of a Drought Management Plan</b>				
Establish drought response principles, objectives, and priorities	X		existing	H
Establish authority and process for declaring a drought emergency	X		existing	H
Develop drought stages, trigger points, and response targets	X		existing	H
Prepare ordinances on drought measures	X		Existing	H
Evaluate historical drought impacts	X		Existing	H
Monitor drought indicators (groundwater well levels, streamflow, etc.)	X	X	Existing	H
Monitor water quality	X	X	Existing	H
Track public perception and effectiveness of drought measures	X	X	New	H
Improve accuracy of runoff and water supply forecasts	X		New	H
<b>Emergency Response</b>				
Declare a drought emergency		X	new	M
Identify state and federal assistance	X	X	new	H
<b>Public Education and Relations</b>				
Utilize Castle Rock Water Commission as a public advisory committee	X	X	existing	H
Develop Drought Public Education Campaign with long- and short-term strategies. (See Worksheet D)	X	X	new	H
<b>Water Supply Augmentation</b>				
Establish drought reserves	X		Existing	H
Draw from drought reserves		X	Existing	L
Increase groundwater pumping		X	Existing	L
Replace or drill new wells	X	X	Existing	L
Develop supplemental groundwater/conjunctive use	X		Existing	M

Supply-Side Mitigation and Response Strategies	Long-term Mitigation Actions	Short-term Response Strategy	Preliminary Selection of Mitigation and Response Strategies	Relative Effectiveness Value [1]
Blend primary supply with water of lesser quality to increase supply		X	new	H
Rehabilitate operating wells	X	X	existing	H
Increase use of recycled water	X	X	Existing	M
Maximize use of recycled water through direct potable reuse	X	X	New	M
Build new facilities to enhance diversion or divert new supplies	X		Existing	M
Acquire additional storage	X		existing	M
<b>Water Rights Management and Cooperative Agreements</b>				
Call back water rights that others are allowed to use		X	new	L
Pay senior water user to not place a "call" on the river		X	new	L
Pay upstream water user to allow diversion of more water		X	new	L
Purchase water from other entities (e.g., neighboring cities, federal projects)		X	new	M
Arrange for exchanges	X	X	Existing	M
Develop Collaborative Water Sharing Agreements	X		new	M
Invoke drought reservations that allow reduction in bypass requirements		X	new	L
Negotiate purchases or 'options'	X	X	existing	M
Renegotiate contractually controlled supplies	X	X	existing	M
Develop water transfers with other entities	X	X	existing	M
Develop water bank to facilitate water transfers in times of drought	X		existing	M
Develop interconnects with other entities	X	X	existing	H
Trade water supplies with other entities to increase yield		X	new	M
<b>Improve Water Distribution Efficiency</b>				
Conduct distribution system water audit	X	X	existing	H
Repair leaks in distribution system	X	X	existing	H
Replace inaccurate meters	X		existing	H

Supply-Side Mitigation and Response Strategies	Long-term Mitigation Actions	Short-term Response Strategy	Preliminary Selection of Mitigation and Response Strategies	Relative Effectiveness Value [1]
Calibrate all production, commercial/industrial, and zone meters	X		existing	H
Minimize reservoir spills	X	X	existing	M
Change operations to optimize efficiency and distribution of supplies	X	X	existing	M
Change pattern of water storage and release operations to optimize efficiency	X	X	existing	M
Reduce reservoir evaporation (i.e., reduce storage in reservoirs with high evaporation rates or cover storage facilities with solar panels or other items to reduce evaporation)	X	X	new	M
Reduce reservoir seepage (i.e., reduce storage in reservoirs with high seepage rates)	X	X	new	M
Recirculate wash water	X		existing	M
Enhance efficiency of water treatment facilities	X		existing	H

[1] Relative Effectiveness values:

- L = Low, where the mitigation response strategy only meets one of the five screening criteria (explained below)
- M = Medium, where the mitigation response strategy meets two or three of the five screening criteria (explained below)
- H = High, where the mitigation response strategy meets all five screening criteria (explained below)
- X = Indicates either a long-term mitigation action or a short-term response strategy (based on the respective marked column)

Screening Criteria:

- Technical feasibility – Refers to whether the mitigation or response strategy will work as intended and in a timely manner. Can also refer to staff availability to implement the action
- Perceived benefits – How the selected mitigation or response strategy provides an adequate amount of water savings
- Cost effectiveness – An assessment of cost versus water savings
- Public acceptance – How the public will accept and embrace the selected mitigation or response strategy

### 5.3 Demand-Side Response Strategies

The same process and screening criteria used to develop the mitigation measures described in Section 5.1 were used to identify and select the final demand-side response strategies. The final demand-side response strategies shown in Table 9 consist of actions taken by Town staff to conserve water and place water use limitations on residential and commercial/industrial customers. These strategies are refined into specific drought response measures in Section 7. Some of these strategies are already in place and some would be new strategies employed during drought. Each of these strategies reflects the operating principles disclosed in Section 2.2 and is refined into a staged drought management program in Section 7.

**Table 9: Demand-Side Response Strategies**

Mitigation and Demand-Side Response Strategies	Type of Strategy		Selection of Mitigation and Response Strategies				Relative Effectiveness Value [1]
	Long-term Mitigation Actions	Short-term Response Strategy	Promote/Voluntary	Incentive Based	Mandatory	Coordinate with Other Entities	
<b>Provider/Municipality</b>							
Develop drought public education campaign with long-term and short-term demand management strategies	X	X	Existing strategy				H
Identify high water use customers and develop water saving targets	X	X			Existing strategy		H
Implement conservation measures that also provide water saving benefits during drought periods (e.g., water fixture rebates)	X			Existing strategy	Existing strategy		H
Conduct irrigation audits on Provider/Municipal parks and open spaces	X	X			Existing strategy		H
Educate provider/municipal staff on how to save water	X	X	Existing strategy				H
Provide instructional resources to business on developing an office/business specific drought mitigation and response plan	X	X	New strategy				M
Eliminate/reduce irrigation on provider/municipal owned parks and landscaping	X	X	New strategy			Existing strategy	M
Limit outdoor watering to specific times of the day	X	X			Existing strategy		H
Limit number of watering days per week	X	X			Existing strategy		H
Set time limit for watering	X	X			Existing strategy		H
Prohibit watering during fall, winter, and early spring		X	New strategy				M
Convert sprinklers to low volume irrigation where appropriate	X			Existing strategy			H
Restrict outdoor misting devices		X			Existing strategy		H
Reduce street cleaning, sidewalk, and driveway washing		X			Existing strategy		H
Install water saving fixtures, toilets, and/or appliances in provider/municipal-owned buildings	X				Existing strategy		H
Conduct indoor water audits	X	X		New strategy			H



Mitigation and Demand-Side Response Strategies	Type of Strategy		Selection of Mitigation and Response Strategies				Relative Effectiveness Value [1]
	Long-term Mitigation Actions	Short-term Response Strategy	Promote/Voluntary	Incentive Based	Mandatory	Coordinate with Other Entities	
<b>Residential</b>							
Enforce landscape watering restrictions	X	X			Existing strategy		H
Reduce available water budget for outdoor use (results in higher rates for water purchased over reduced water budget), reduce surcharge threshold and increase Tier 3 and surcharge rates by 10%		X		New Strategy			H
Limit outdoor watering to specific times of the day	X	X			Existing strategy		H
Limit number of watering days per week	X	X			Existing strategy		H
Set time limit for watering	X	X			Existing strategy		H
Limit watering to hand-held hose or no-volume non-spray device		X			Existing strategy		H
Promote outdoor water audits	X	X	New strategy				M
Convert sprinklers to low volume irrigation where appropriate	X	X		Existing strategy			H
Limit/restrict outdoor misting devices	X	X			Existing strategy		H
Limit/prohibit installation of new sod, seeding, and/or other landscaping		X			New strategy		H
Enforce policy guidelines/limitations for installation of new sod and/or other landscaping	X	X			Existing strategy		H
Enforce restrictions on spraying of impervious surfaces		X			Existing strategy		H
Promote indoor water audits	X	X		New strategy			M
Promote/require installation of water efficient appliances (e.g., dishwashers, clothes washer)	X	X			Existing strategy		H
Promote/require graywater use	X	X	New strategy				M
Provide acoustical meters to assist customers in identifying leaks	X	X	Existing strategy				H
Require water efficient fixtures and/or appliances on house resale or remodeling	X				Existing strategy		H

Provide historical monthly water usage on water bills	X	X			Existing strategy		H
Provide real-time water metering information	X		New strategy	New strategy			M
Mitigation and Demand-Side Response Strategies	Type of Strategy		Selection of Mitigation and Response Strategies				Relative Effectiveness Value [1]
	Long-term Mitigation Actions	Short-term Response Strategy	Promote/Voluntary	Incentive Based	Mandatory	Coordinate with Other Entities	
<b>Commercial/Industrial</b>							
Prohibit/limit use of construction water		X				New strategy	M
Reduce available water budget for outdoor use (results in higher rates for water purchased over reduced water budget), reduce surcharge threshold and increase Tier 3 and surcharge rates by 10%		X		New Strategy			H
Enforce policy guidelines/limitations for installation of new sod and/or other landscaping	X	X				New strategy	H
Enforce outdoor landscape watering restrictions	X	X			Existing strategy		H
Promote/require indoor and outdoor water audits where applicable	X	X	Existing strategy				H
Turn off indoor and outdoor ornamental fountains		X				Existing strategy	H
Promote/enforce installation of water efficient fixtures and appliances (e.g. toilets, faucets)	X	X			Existing strategy		H
Promote commercial car washes to install water recycling technology and/or other BMPs	X	X			Existing strategy		H
Promote/enforce service of water in restaurants only upon request	X	X	New strategy				M
Promote/enforce reduction in frequency of linen and towel washing in hotels	X	X	New strategy				M
Provide instructional resources on developing a business/office specific conservation plan	X	X	New strategy				H

[1] Relative Effectiveness values:

- L = Low, where the mitigation response strategy only meets one of the five screening criteria (explained below)
- M = Medium, where the mitigation response strategy meets two or three of the five screening criteria (explained below)
- H = High, where the mitigation response strategy meets all five screening criteria (explained below)
- X = Indicates either a long-term mitigation action or a short-term response strategy (based on the respective marked column)

Screening Criteria:

Technical feasibility – Refers to whether the mitigation or response strategy will work as intended and in a timely manner. This section also takes into account staff availability to implement the action

Perceived benefits – How the selected mitigation or response strategy provides an adequate amount of water savings

Cost effectiveness – An assessment of cost versus water savings

Public acceptance – How the public will accept and embrace the selected mitigation or response strategy

## 5.4 Drought Public Information and Educational Campaign

Castle Rock's water demands were significantly reduced during the 2002 drought as a result of the public's awareness and responsiveness to reduce water consumption. The public drought information and educational campaign (public drought campaign) will be one of Castle Rock's largest drought management efforts. Currently, the Water Wiser program is the Town's campaign related to educating customers on water conservation, mitigation, and general watering guidelines. Water Wiser includes an interactive, hands-on workshop aimed at residential populations. The workshop introduces the seven principles of Coloradoscape and focuses on irrigation efficiency and water management to provide customers with easy to implement conservation techniques. Additionally, Castle Rock has a conservation website (<http://crconserve.com/>, which also advertises the Water Wiser program and related benefits) dedicated to pushing forth conservation efforts and educating local water users. Information such as data collected from weather stations, preferred plant lists to utilize in the Town, and irrigation recommendations are all available at the website.

The public drought campaign will be closely coordinated with Castle Rock's current conservation education programs and other related programs providing information on sustainability, weather, climate change, etc. When reasonable, these programs may be integrated into a single program by the Communications Department and Castle Rock Water to integrate efforts and enhance efficiencies. These program(s) will promote the importance of conserving water and achieving water savings in both normal and drought years. During non-drought years the drought campaign component will simply provide a general overview on drought and the importance of drought preparedness. During a drought, the drought messages will increase in frequency and intensity and will be expanded to include information on the staged drought response program and the necessity to conserve supplies.

The objectives of the public drought campaign are:

- Provide concise effective drought information to Castle Rock customers (individuals as well as the commercial/industrial sector) and the media.
- Adjust the intensity of the public outreach effort in accordance to the severity of the drought (drought stage).
- Coordinate campaign efforts with nearby municipal entities and other conservation oriented entities to capitalize on synergistic opportunities and convey, where appropriate, a consistent drought message.

The public drought campaign will provide the basic foundational drought information during non-drought periods outlined in Table 10. Castle Rock Water will monitor the drought messages and information conveyed by other local providers to ensure that differences in drought-related messages may be explained, if necessary. Information from other providers may also serve as a means to generate new ideas of how Castle Rock's public drought campaign and overall drought response could be improved.

**Table 10: Public Drought Campaign Messages (Pre-Drought and Continuing During Drought Periods)**

Drought Information	Coordination with Other Entities
Status of current drought conditions and corresponding drought stage, available live every day on CRW’s website as the water supply index, <a href="http://www.crgov.com">Drought Management   Castle Rock, CO - Official Website (crgov.com)</a>	Be aware of messages conveyed by neighboring providers in order to explain, if necessary, why there are differences in the messages as well as in the overall drought response.
Colorado State Drought Task Force (group of State Departments and Agencies and over 700 water providers that coordinate on drought response, Castle Rock Water is a member)	Ensure that Castle Rock Water is coordinating and consistent with the messaging and responses that are taken through the Colorado State Drought Task Force with modifications for local needs
Long-term sustainability of water supply system	Coordination with water partners
Location of where customers may access the Drought Management Plan	n/a
Factors that could influence water supply services and cost of services	Neighboring communities and providers
Water provider’s actions to save water and/or acquire new water	Be aware of other local providers’ drought mitigation efforts. This may be helpful to generate new ideas to improve the Town’s public drought campaign and overall mitigation efforts.
Drought policies, requirements, and penalties	n/a
Historical consumption information on water bills	n/a

During drought periods, the intensity of both the conservation public education program and public drought campaign will increase. Particular messages as well as the means in which the information is conveyed to the public will be customized to the severity of the drought and public informational needs at that time. Information Castle Rock intends to convey to the public during drought periods, as shown in Table 11, consists of educating customers of drought policies (water restrictions), enforcement, landscaping tips, and an expansion of the Water Wiser Program established via the Conservation Plan. The Water Wiser Program advertises and promotes businesses that practice a strong water conservation ethic. This may encompass installing water efficient appliances/fixtures, Coloroscape landscaping, water conservation education to staff, etc. During droughts, this program will be expanded to advertise and promote businesses that are going the extra mile to conserve water and adhere to voluntary drought response measures.

Coordination with other entities will be an important component of the public drought campaign during periods of drought. Efforts will be made to take advantage of synergies associated with consistent drought-related messages shared among neighboring providers and collectively contributing to a regional drought outreach effort. During this period, it will also be important to be aware of drought conditions in neighboring counties. This information along with information regarding drought trends by county is available on the US Drought Monitor website for Colorado ([Colorado | U.S. Drought Monitor \(unl.edu\)](http://www.unl.edu)). This will enable Castle Rock to explain any differences among their drought response efforts and maintain integrity with the public. Additionally, other entities may be able to provide assistance with the advertisement of drought related information. For example, several landscaping companies in Castle Rock may be able to provide landscaping tips during a drought and what to do to revive landscape following droughts.

**Table 11: Public Drought Campaign Response Information to Convey During a Drought**

Drought Information	Coordination with other Entities
Measures and/or impacts that customers can expect if drought continues or intensifies	Be aware of the drought response measures implemented by other local providers. This will assist in addressing public concerns and questions.
Increase advertisement of water conservation promotion and incentives specified in the conservation and drought plans	Identify synergies/benefits of working with other entities on this advertisement campaign.
Landscaping tips during a drought (e.g. which plants to convert to drip, which to save, which to let die)	Research information that is currently available and identify whether there are other entities that can assist with this effort.
Post-drought landscape revival information	Research information that is currently available and identify whether there are other entities that can assist with this effort.
Encourage intense public discussion and media involvement concerning ways to reduce water use while minimizing impacts (e.g. landscaping impacts)	The Town's Communications Department
Explain rate increases/drought surcharges if applicable (this can concern both drought and post-drought years)	Be aware of other provider's rates and drought surcharges, if applicable
Publicize efforts of individuals and businesses as examples of how to reduce water use.	The Town's Communications Department

Castle Rock Water will coordinate efforts with the Communications Department to ensure that accurate information is being conveyed to the media and to customers, and that educational and outreach opportunities are maximized. The Communications Department will be responsible for developing regular action plans detailing the specific drought-related messages delivered to the targeted audiences both prior to and during a drought. This will be an evolving process that could change on a seasonal basis depending on weather and public concerns. The basic targeted audiences and communication tools intended to be used by the Communications Department are shown in Table 12. Outreach will mainly consist of website communications, social networking media, and emailing lists with informational emails during non-drought periods. Communication tools will likely be expanded to newspaper articles, television ads, water bill inserts, emails targeted to specific water users, the introduction of a drought or water-related hotline, booths at special events, public meetings or special events, and school programs during a drought.

**Table 12: Public Drought Campaign Audiences and Communication Tools**

Targeted Audience	Communication Tools	
	Long-term Mitigation	Short-term Response Strategy
Decision/policy makers, Town departments (Parks and Recreation, Finance, etc.)	<ul style="list-style-type: none"> <li>Email</li> </ul>	<ul style="list-style-type: none"> <li>Email</li> <li>Meetings</li> </ul>
Media	<ul style="list-style-type: none"> <li>Website</li> <li>Social networking media</li> <li>Interviews</li> </ul>	<ul style="list-style-type: none"> <li>Websites</li> <li>Newspaper articles</li> <li>Social networking media</li> <li>Interviews</li> <li>Television ads</li> </ul>
Water Customers (Single and multi-family, HOAs, commercial)	<ul style="list-style-type: none"> <li>Website</li> <li>Broadly distributed emails</li> <li>Social networking media</li> <li>Water Wiser program</li> <li>Contests</li> </ul>	<ul style="list-style-type: none"> <li>Websites</li> <li>Broadly distributed emails</li> <li>Social networking media</li> <li>Public meetings</li> <li>Bill inserts</li> <li>Newspaper articles</li> <li>Billboards</li> <li>Booths at special events</li> </ul>
Targeted business owner customers (recreation facilities, nurseries, health facilities, schools)	<ul style="list-style-type: none"> <li>Website</li> <li>Social networking media</li> <li>Water Wiser program</li> </ul>	<ul style="list-style-type: none"> <li>Websites</li> <li>Emails targeted for business owners</li> <li>Social networking media</li> <li>Phone calls</li> <li>Meetings</li> <li>Direct mailings for targeted audiences</li> </ul>
Large water users (golf courses, water-intensive industrial/commercial customers)	<ul style="list-style-type: none"> <li>Website</li> <li>Social networking media</li> <li>Water Wiser program</li> </ul>	<ul style="list-style-type: none"> <li>Websites</li> <li>Emails targeted for large water users</li> <li>Social networking media</li> <li>Meetings</li> <li>Phone calls</li> <li>Direct mailings for targeted audiences</li> </ul>
Commercial business employees	<ul style="list-style-type: none"> <li>Website</li> <li>Broadly distributed emails</li> <li>Social networking media</li> </ul>	<ul style="list-style-type: none"> <li>Websites</li> <li>Broadly distributed emails</li> <li>Social networking media</li> </ul>
School children	<ul style="list-style-type: none"> <li>Water educational curricula for teachers</li> <li>Water educational programs for students</li> <li>Water festivals</li> </ul>	<ul style="list-style-type: none"> <li>School programs</li> <li>Booths at special events for children</li> </ul>

## 6 DROUGHT STAGES, TRIGGER POINTS AND RESPONSE TARGETS

### 6.1 Drought Stages, Trigger Points and Response Targets

Droughts can vary significantly in spatial extent, severity, and duration. The drought stages in Table 14 were developed to capture this variability and identify an appropriate level of response, according to drought severity. The five stages increase in intensity from advisory, to watch, to warning, to emergency, to critical/crisis. The response target (targeted water savings) also increases with each stage, with a 10% water savings target under the advisory drought stage and a 60%+ water savings target under the critical/crisis drought stage.

The drought trigger points are based on a water supply index that compares supply to demand. Supply includes Denver Basin groundwater, alluvial water from East Plum Creek, surface water direct flow (such as Castle Rock East Plum Creek diversion [CR-1] or the Plum Creek diversion near Sedalia), reusable water supplies captured at the Plum Creek diversion, water stored in Castle Rock Reservoir No. 1, water from the WISE project, and water delivered from supplies stored in Rueter Hess Reservoir from Parker’s Rueter Hess Reservoir Water Purification Facility. Table 13 shows the supply sources and their approximate yields. (Note: MGD = Millions of Gallons per Day, AF = Acre Feet, and gpcd = gallons per capita per day.)

**Table 13: Current Sources of Supply (as of 2023)**

Supply Source	Firm or Reliable Yield
Denver Basin well system (deep groundwater wells) (1)	20.3 MGD, or ~22,738 AF per year
Alluvial well system along East Plum Creek	0.821 MGD, or ~919 AF per year
Surface water from East Plum Creek and Plum Creek including reusable water captured at the Plum Creek Diversion	2.3 MGD, or ~2,576 AF per year
WISE	0.65 MGD, or ~728 AF per year
Castle Rock’s Rueter Hess Reservoir water treated by Parker Water	0.65 MGD, or ~728 AF per year
<b>Total</b>	<b>24.72 MGD, or ~27,691 AF per year</b>

(1) Per the 2021 Water Resources Strategic Master Plan (2016 Water Plan), the Town’s access to this water is limited by infrastructure and aquifer water levels.

As shown in Table 13, the current (as of 2024) total daily available supply for the Town ranges from around 19.27 to 24.09 MGD.

Current and future demand is projected in the 2021 Water Resources Strategic Master Plan. In 2023, the population was 84,792 and the peak daily water demand was 18.3 MGD and in 2022 it was 19.2 MGD. The total future population is projected to be as high as 155,000 people in 2050. Water demand is estimated to range from a low of 100 gpcd to 135 gpcd, resulting in a range of future (2050) demand of 15,600 to 24,750 AF/year, or 15.5 to 20.9 MGD, on average.

A Water Supply Index (WSI) based on the Town’s supply versus demand was developed for this drought management plan, as a running index to define thresholds for the five drought stages. The WSI calculation for Castle Rock can be written as follows:



$$WSI = \frac{Supply}{Demand} = \frac{Deep\ groundwater + Alluvial\ wells + Surface\ water + Imported}{Maximum\ daily\ demand}$$

Maximum daily demand was used as the demand metric because it accounts for the highest possible water use required to meet the Town’s needs on a regular basis. From 2021 to 2023, the Town’s daily maximum demand averaged 18.6 MGD. Projected demands for maximum daily use are expected to be in the range of 20 to 23 MGD over the next five years. This drought plan assumes that maximum daily demands will be met via flexibility in day-to-day operations, though demands always vary seasonally and according to population changes/growth. The Town will monitor the WSI in real time. The Town will use the ten-day rolling average of the continuously-calculated WSI as the basis for a drought declaration. The rolling average is used to smooth the variations in the WSI calculation, so that day-to-day fluctuations in the WSI do not unnecessarily trigger a drought declaration.

The WSI is useful for evaluating the Castle Rock Water’s capability to meet demands, given direct (e.g. groundwater) and indirect (e.g. from the WISE partnership) water resources available. For example, in 2017 the WSI hovered around four in January and February and three in the early spring before dipping below two during the flash drought in May and June. Because daily supply and demand fluctuates, the Town will use both quantitative (WSI) and qualitative (professional judgement) guideposts to determine when to trigger a drought stage. In general, as long as the WSI is above 1.1, Castle Rock Water may not need to enact water savings or other such measures. Once the WSI drops below the trigger point guidelines shown in Table 14, and Castle Rock Water staff observe the WSI trend to be stagnant and hence not improving (i.e. the trajectory of the line is either flat or going down), an appropriate drought stage shall be called.

**Table 14: Drought Stages, Trigger Point Guidelines and Response Targets**

Drought Trigger Point Guidelines			
Drought Stage	WSI	Response Targets <sup>1</sup>	Key Restrictions
Advisory	1.09 to 1.05	10% water savings	Voluntary water use reductions.
Watch	1.04 to 1.00	25% water savings	Outdoor watering limited to 2 times per week. This includes a 2x/wk limit on hand watering and no exemptions for “Water Wise” customers.
Warning	0.99 to 0.95	40% water savings	Outdoor watering limited to 1 time per week. This includes a 1x/wk limit on hand watering and no exemptions for “Water Wise” customers.
Emergency	0.94 to 0.90	50% water savings	All outdoor watering/irrigation banned.
Critical/Crisis	<0.90	60+% water savings	All outdoor watering/irrigation banned, plus some indoor water use restrictions.

<sup>1</sup> Percentage water savings is measured as the most recent month or months of total retail water sales divided by the retail water sales used in the original WSI calculation.

As shown above, a WSI of 1.09 to 1.05 is the quantitative trigger to the Advisory Drought Stage. In “Advisory”, supply still exceeds demand, and the Town would begin to take measures (outlined in Section 7) to reduce demand by 10%.

A WSI of 1.04 to 1.00 is the quantitative trigger to the Watch Drought Stage and means that supply is nearly equal to demand. In this stage, the Town would continue measures started in the Advisory stage and begin additional measures with the goal of reducing demand by 25%.

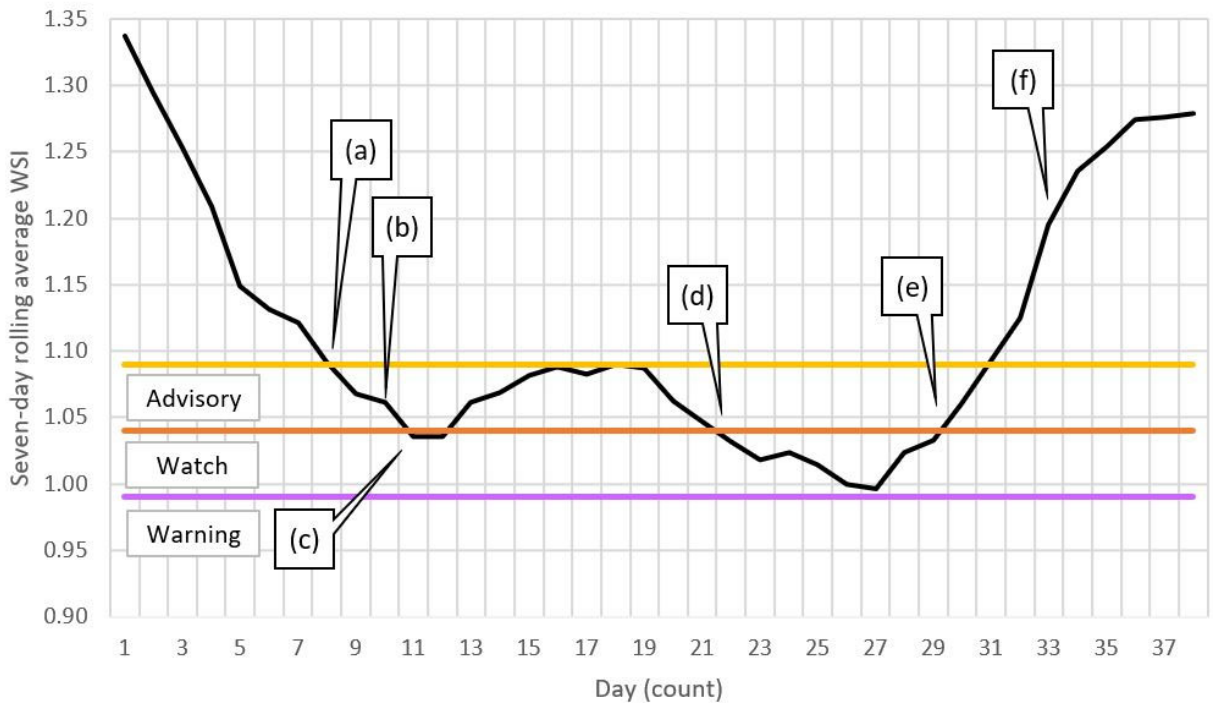
A WSI of 0.99 to 0.95 is the quantitative trigger to the Warning Drought Stage and means that supply is now less than demand, by 1% to 5%. In this stage, the Town would continue measures started in the Advisory and Watch stages and begin additional measures with the goal of reducing demand by about 40%. At the Town’s discretion, measures to increase supply may also be considered.

A WSI of 0.90 to 0.94 is the quantitative trigger to the Emergency Drought Stage and means that supply is up to 10% less than demand. In this stage, the Town would continue measures started in the Advisory, Watch, and Warning stages and begin additional measures with the goal of reducing demand by about 50%. Measures to increase supply will also be considered.

A WSI of less than 0.90 triggers the Critical/Crisis Drought Stage, and means that supply is less than 90% of demand. In this stage, the Town would take all available measures to minimize demand while actively seeking to obtain supplemental supplies, with the goal of bringing the WSI above 1.0. Once supply equals demand, water conservation measures can remain in place until the WSI is back above 1.1 and the drought stage can be lifted.

In all drought stages, the Town will have the ability to take measures to both increase supply and decrease demand, with the goal of reaching and maintaining a WSI of 1.1 or greater. Section 7 presents specific measures to be taken in each stage. Figure 4 shows a hypothetical WSI scenario, and illustrates how the Town could respond at each stage.

**Figure 4: Hypothetical WSI Scenario**



## Notes:

- (a) WSI first dips below 1.1. Town staff monitor the situation for a few days to see which direction supply and demand will follow.
- (b) On the third day of WSI below 1.1, Town triggers the Advisory drought stage. Castle Rock Water communicates water restrictions to customers.
- (c) WSI dips below 1.05 for two days. Town staff monitor the situation. The WSI recovers above 1.05 after two days, and the drought stage is not switched to Watch.
- (d) WSI again dips below 1.05. Town staff monitor the situation and trigger the Watch drought stage after the WSI fails to improve. Castle Rock Water communicates additional water restrictions to customers.
- (e) Although the WSI has climbed above 1.05, Town staff do not immediately transition from “Watch” to “Advisory”, opting instead to wait and see what happens.
- (f) After observing the WSI above 1.1 for three days, and noting the upward trajectory of the graph, the “Watch” drought stage is lifted. Castle Rock Water notifies customers that the water restrictions specific to the drought have been lifted.

In all cases, after a drought stage has been triggered, the Town would recalculate the WSI frequently with updated supply and demand information to evaluate if the drought stage is still appropriate. The Town may also choose to slightly modify the WSI calculation to account for monthly or even yearly water supply and demand variations, and put together appropriate drought prediction reports.

In evaluating the Town’s supply, several direct and indirect indicators should be considered. While the WSI metric provides the direct indicators and hence the points at which to trigger drought stages, additional (indirect/qualitative) indicators are useful to determine conditions in more detail. These are discussed in Section 6.3, and include the reservoir and storage tank levels (e.g. Rueter-Hess Reservoir, Chatfield Reservoir, Castle Rock Reservoir No. 1, Castle Rock Reservoir No. 2 and Walker Reservoir), temperature and precipitation records, higher than anticipated water demands, streamflows (e.g., from East Plum Creek, Plum Creek and Cherry Creek), infrastructure-based or water supply service interruptions, or other additional resources provided by the CWCB’s website or the National Integrated Drought Information System (NIDIS) drought portal. Monitoring is discussed further in Section 6.3. Although the WSI is a snapshot in time using current supply and demand values, once it is incorporated in the Town’s planning repertoire, it can be used to project future conditions.

As the Town continues to shift from deep groundwater for a significant portion of its supply, the supply side of the WSI will be more static. As Castle Rock Water continues to bring on less reliable but renewable surface water, reuse water, and imported sources, the Town’s WSI may not always be comfortably above 1.1. As supplies continue to shift, the key indicators mentioned above and detailed in Section 6.3 will take on greater significance. Another advantage of the WSI

approach is that it can reflect equipment failures such as a well pump failure, independent of weather conditions which may necessitate water restrictions similar to a drought response.

The drought trigger levels in Table 14 are general guidelines. Sustained, multi-year droughts could require a significant modification to the drought triggers based on the duration and severity of the drought as well as Castle Rock Water staff's historical experience managing the Town's water supply systems. In addition, future weather change events could additionally affect water restoration levels, or have an impact on water demands, water infrastructure, or service interruptions. The declaration of a drought, timing of the declaration, and corresponding drought stage will ultimately be a decision based on a combination of factors and informed judgement. The decision will be based on a combination of the drought trigger guidelines in Table 14 historical staff experience, and other drought indicator data described in Section 6.3. Drought declaration is also discussed in Section 8.2.

## **6.2 Monitoring of Direct and Indirect Drought Indicators**

Castle Rock Water is responsible for recording and evaluating drought indicator data. Monitoring data are collected throughout the year. These data are critical in characterizing Castle Rock's water supplies under various hydrologic conditions, and aid in predicting drought in a timely manner. Table 15 summarizes the main drought indicators used to monitor drought. Typically, these data are recorded and assessed at the end of each month; however, the frequency may increase during dry periods and in the spring and summer when runoff and river administration conditions are accounted for in the overall availability of Castle Rock's supplies. These data are processed frequently and stored electronically on the Town's server according to the Town's standard electronic filing protocol. Downloaded raw data are saved independently of other processed files to maintain the integrity of the original monitoring data.

Starting in early May and continuing through October, Castle Rock Water specifically monitors trends in temperature, precipitation, storage tanks and reservoirs, and streamflows, among others, and makes projections of expected future storage. Castle Rock Water recognizes that drought responses should be formulated and announced as early as possible in order to maximize their effectiveness.

Castle Rock Water may also rely on other data sources, in addition to the primary drought monitoring data used to calculate the Water Supply Index described in section 6.1, to predict and declare a drought. This may include regional weather/hydrologic data (e.g., from NIDIS Drought Portal, Colorado Water Availability Task Force reports), drought indices such as the Modified Palmer Drought Severity Index when appropriate, information from other nearby water users, long-term weather forecasts, etc.

**Table 15: Monitoring of Drought Indicators (Direct and Indirect Sources)**

Drought Indicators	Type of Data
Water Supply Index (WSI)	Indicator of the total (maximum) available water supply and demand in the Town – this is the primary metric used to predict drought (and trigger drought stages)
Storage tank levels and reservoirs	Levels in storage tanks and reservoirs such as Rueter-Hess, Chatfield, Castle Rock No. 1, Castle Rock No. 2, and Walker Reservoirs.
Precipitation and temperature records	Inches of rainfall from weather gages as well as other temperature and weather records from sources such as the National Integrated Drought Information System (NIDIS) and local weather stations*
Higher than anticipated water demands	Castle Rock’s demand forecasting includes a several month (May through October) forecasting procedure based on precipitation, short- and long-term temperature outlooks, and a close monitoring phase during the summer months. The Summer Operations Plan helps predict what the summer demands will look like based on new water supplies, weather projections and other changes in the community.
Streamflows	Average daily flow rate at the Plum Creek stream gage stations (Haskins Gulch, West Plum Creek Bridge, Titan Road)
Major infrastructure or water supply service interruptions	Information on major interruptions to water services or infrastructure that may prevent water from being pumped, processed (e.g. sanitized), or delivered to users
US Drought Monitor	Aggregate of a variety of indices, data, and expert opinion, updated on a weekly basis.

\*The Town of Castle Rock has four primary weather stations identifying data for each micro climate. Castle Rock tends to be higher in altitude and cooler in climate than surrounding areas. Having this specific data provides better calculations to determine evapotranspiration and irrigation needs. The data for temperature, wind, humidity and solar radiation is updated continuously.

### 6.3 Drought Declaration and Predictability

Drought can appear quickly or slowly, last for a season or many years, and can occur locally, regionally, or statewide. Furthermore, a drought does not usually have a clearly defined beginning or end and is difficult to predict. Following the 2002 drought, snowpack accumulation in early 2003 was again abnormally low and, if not for a large single snow storm event in late March 2003, many providers throughout Colorado, including Aurora (who are in partnership with the Town regarding water supply) and Denver Water, would have been seriously stressed and under significant water restrictions for the summer of 2003 and beyond. As such it is crucial that droughts, whether presently occurring or predicted to occur, are declared in a timely and effective manner.

It is important to ensure that the official drought declaration and corresponding drought stage designation occurs in a timely manner. If a drought is declared too late or actions are not taken early enough to reduce water use, supplies can be severely depleted and strict water restrictions and economic impacts may be required that could have been avoided. Conversely, premature drought declarations can result in unnecessary mandatory water restrictions and associated impacts, while customers can lose confidence in the declaration.

As discussed in Section 6.1, drought declarations are further complicated by the unpredictability of drought and storm events. Droughts may extend over multiple years which could result in response targets greater than what are provided in Table 14. The declaration of a drought and

corresponding drought stage will be a real-time decision using the drought trigger guidelines in Table 14, historical experience, and other drought indicators described in more detail in Section 6.1.

The drought stage may also be de-escalated (e.g. changed from the critical to the warning stage) and/or the drought declaration may be terminated if storm events or other hydrologic conditions sufficiently reduce stress to Castle Rock’s water supplies. This decision will be based on drought monitoring data, the WSI, and Castle Rock Water staff’s historical experience and professional judgment in managing Castle Rock’s supplies.

## 7 STAGED DROUGHT RESPONSE PROGRAM

The staged drought response program defines the specific response measures to be taken according to drought stage. This section outlines the supply and demand-side measures and associated enforcement levels by drought stage. It is important to note that crucial components of this program include the declaration, implementation, enforcement, and monitoring, which are discussed in Sections 8.2, 8.3, 8.4, and 8.5, respectively.

In addition, it is important to note that there are several mandatory outdoor water restrictions which are implemented annually regardless of drought stage during the summer months (May 1 through September 30), but which can be superseded by stricter measures or be made to last beyond (as well as begin taking effect before) the currently stated periods, as necessary. The Town enforces the watering and irrigation schedule to enable water conservation, and Castle Rock Water reserves the right to make changes to the schedule and/or response measures as the staff deems appropriate. Table 16 summarizes the watering schedules by address, which apply to residential customers. Figure 5 portrays the watering guidelines and irrigation schedules for non-residential customers (including commercial/industrial users).

**Table 16: Annual Summer Water Restrictions for Residential Customers - Watering Guidelines by Address**

Designation	Applies If
Square	Address ends in 0, 1, 2, or 3
Circle	Address ends in 4, 5, or 6
Diamond	Address ends in 7, 8, or 9

Watering is permitted every-third day for residential customers, and only between the hours of 8p.m. and 8a.m. Non-residential and commercial/industrial customers (to include common and public areas) may irrigate between the hours of 10p.m. and 6a.m., three days a week. The above schedule applies only to residential customers based on the ending address numbers. (Note that certain streets in Founders Village have special schedules.)



Figure 5: Watering and Irrigation Schedule for Non-Residential Customers

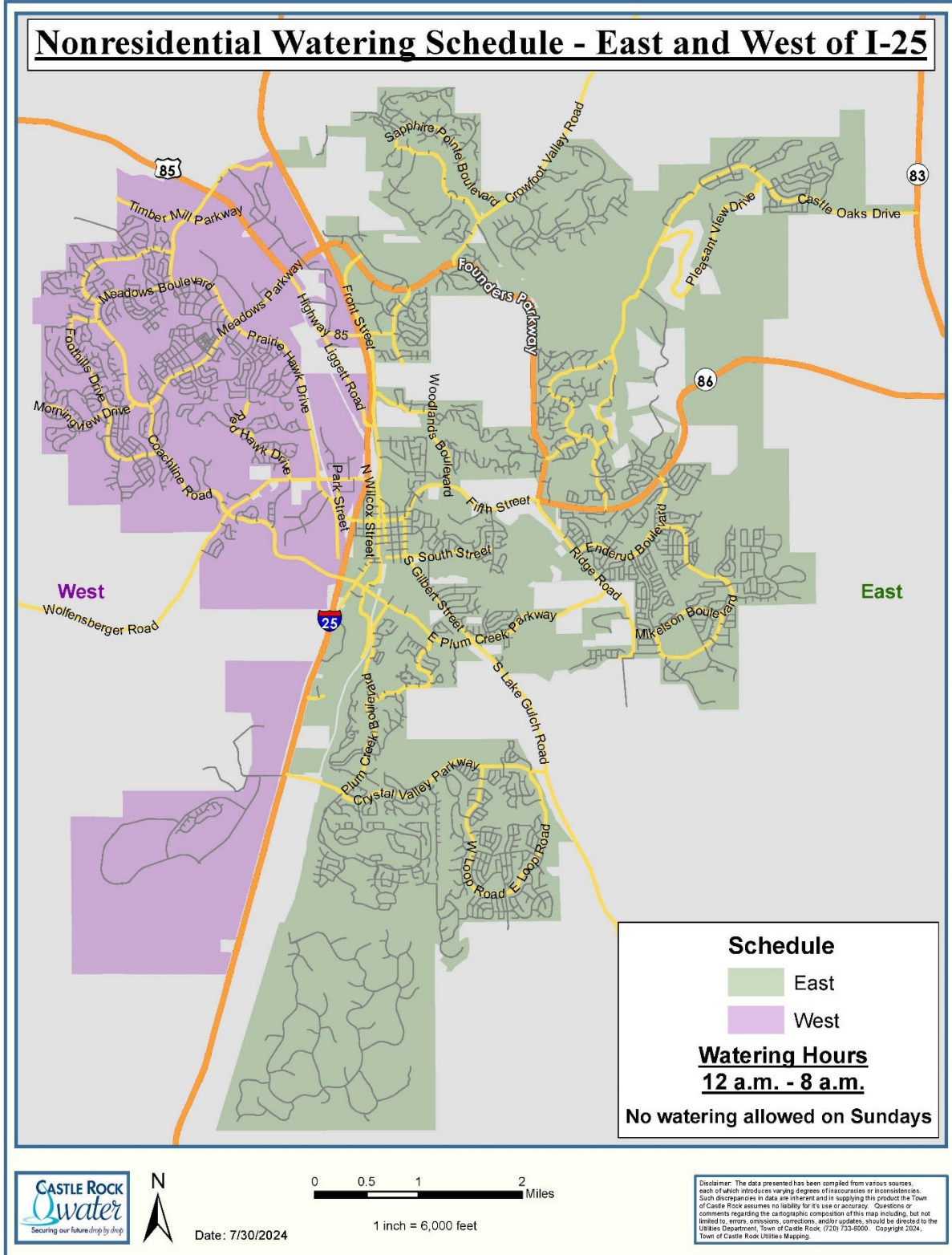


Table 17 contains a summary of the five drought stages with their related response strategies.

**Table 17: Summary of the Staged Drought Response Program**

	Advisory	Watch	Warning	Emergency	Critical/Crisis
<b>Supply-Side Measures</b>					
Technical and financial assistance	Seek technical and financial assistance opportunities.	Seek technical and financial assistance opportunities.	Seek technical and financial assistance opportunities.	Seek technical and financial assistance opportunities.	Seek technical and financial assistance opportunities.
Water rights and cooperative agreements	Assess new water rights management, consider use of emergency connections (e.g. Pinery), and cooperative agreement opportunities.	Assess new water rights management, consider use of emergency connections (e.g. Pinery), and cooperative agreement opportunities.	Assess new water rights management, consider use of emergency connections (e.g. Pinery), and cooperative agreement opportunities.	Assess new water rights management, consider use of emergency connections (e.g. Pinery), and cooperative agreement opportunities.	Assess new water rights management, consider use of emergency connections (e.g. Pinery), and cooperative agreement opportunities at a regional and national level.
<b>Demand-Side Measures Castle Rock Water Department and General Use</b>					
Drought surcharge	n/a	Implement a drought surcharge design as follows: Reduce ET Factors from 80% to 40% which will reduce the outdoor water budget for all customers putting them into Tier 3 rates for water usage over half their normal outdoor budget.	Implement a drought surcharge design as follows: Reduce ET Factors from 80% to 40% which will reduce the outdoor water budget for all customers putting them into Tier 3 rates for water usage over half their normal outdoor budget. Reduce conservation threshold to 30,000 gallons and increase Tier 3 rate by 10%.	Implement a drought surcharge design as follows: Reduce ET Factors from 40% to 0% which will eliminate outdoor water budgets for all customers putting them into Tier 3 rates for water usage for any outdoor water use. Reduce conservation threshold to 15,000 gallons, increase Tier 3 rate by 10%, and increase surcharge by 10%.	Implement a drought surcharge as follows: Reduce ET Factors from 40% to 0% which will eliminate outdoor water budgets for all customers putting them into Tier 3 rates for water usage for any outdoor water use. Reduce conservation threshold to 15,000 gallons, increase Tier 3 rate by 10%, and increase surcharge by 10%. Implement periodic water shutoffs as needed.



	Advisory	Watch	Warning	Emergency	Critical/Crisis
Outdoor irrigation	Standard irrigation practices on Town-owned properties that promote efficient water use.	Standard irrigation practices on Town-owned properties that promote efficient water use.  Turf irrigation on Town-owned property from September 30 to May 1 is prohibited.  Residents are encouraged to forego the installation of new sod, seeding, and landscaping.	Restrict turf irrigation on Town parks and open spaces. Sports fields, trees and shrubs, and preferred "green areas" specified via community outreach efforts may be irrigated on a pre-determined limited basis.  Turf irrigation on Town-owned property from September 30 to May 1 is prohibited. New sod, seeding, and landscaping is prohibited.	All outdoor water use and irrigation is prohibited, unless necessary for emergency response operations.	All outdoor water use and irrigation is prohibited, unless necessary for emergency response operations.
Washing of Town-owned vehicles	Washing of Town-owned field vehicles is limited to once every two weeks and washing of all other vehicles is limited to once per month.	Washing of Town-owned field vehicles is limited to once every two weeks and washing of all other vehicles is limited to once per a month.	Washing of Town-owned vehicles is prohibited.	Washing of Town-owned vehicles is prohibited.	All outdoor water use is prohibited, unless necessary for emergency response operations.
Washing (personal vehicles and impervious surfaces)	Power washing and spraying on impervious surfaces (driveways and sidewalks) should be minimized.  Personal vehicles may only be washed using bucket and hand-held hose with shut-off nozzle.	Power washing and spraying on impervious surfaces (driveways and sidewalks) is prohibited.  Personal vehicles may only be washed using bucket and hand-held hose with shut-off nozzle.	Power washing and spraying on impervious surfaces (driveways and sidewalks) is prohibited.  All washing of personal vehicles is prohibited except at commercial car washes.	Power washing and spraying on impervious surfaces (driveways and sidewalks) is prohibited.  All washing of personal vehicles is prohibited except at commercial car washes (which are limited to using up to 20 gallons per vehicle)	All outdoor water use is prohibited, unless necessary for emergency response operations.
Hydrants	n/a	Reduce frequency of hydrant washing and flushing.	Reduce frequency of hydrant flushing.	Hydrant washing and flushing is prohibited unless necessary for public safety reasons.	Use of all water for fire training and of water

	Advisory	Watch	Warning	Emergency	Critical/Crisis
	n/a	n/a	Use of all water for fire training and of water from the hydrant is prohibited unless essential for public safety.	Use of all water for fire training and of water from the hydrant is prohibited unless essential for public safety.	from the hydrant is prohibited unless essential for public safety.
Fountains	Ornamental fountains and drinking fountains in Town-owned parks are turned off from 10:00 am to 4:00 pm.	Ornamental fountains and drinking fountains in Town-owned parks are turned off.  All non-recirculating outdoor fountains must be turned off.	All ornamental fountains and drinking fountains on Town-owned property and Town-owned buildings are to be turned off.  Residential fountains must be turned off.	All ornamental fountains, drinking fountains on Town-owned property and Town-owned buildings, and residential fountains are to be turned off.	All outdoor and indoor fountains must be turned off.
Swimming pools and hot tubs	All private swimming pools and hot tubs should be covered when not in use and maintained to prevent leaks.	All private swimming pools and hot tubs should be covered when not in use and maintained to prevent leaks.	The filling of private swimming pools and hot tubs is discouraged.	The filling of private swimming pools and hot tubs is prohibited.	The filling of all swimming pools and hot tubs is prohibited (residential and commercial/industrial).
Air conditioning	Adjust room temperatures to reduce use of water-cooled air conditioning.	Adjust room temperatures to reduce use of water-cooled air conditioning.	Adjust room temperatures to reduce use of water-cooled air conditioning.	Adjust room temperatures to reduce use of water-cooled air conditioning.	No outdoor or indoor water use not strictly necessary is prohibited.
Indoor restrictions	n/a	n/a	n/a	Residents are limited to 30 gallons per person per day.	Indoor water use is heavily restricted to critical uses only (e.g. drinking, cooking, bathing), and may be periodically shutoff as necessary.

	Advisory	Watch	Warning	Emergency	Critical/Crisis
<b>Demand-Side Measures Commercial and Institutional</b>					
Bulk Water Station Use	Conserve and prevent wasting of bulk water.	Conserve and prevent wasting of bulk water.	Bulk Water Station use limited to usage in Town of Castle Rock town limits or for private residential use in Douglas County for drinking, cooking and bathing.	Bulk Water Station use limited to usage in Town of Castle Rock town limits or for private residential use in Douglas County for drinking, cooking and bathing..	Bulk Water Station use restricted to public health and emergency protection only.
Construction water	Conserve and prevent wasting of construction water.	Conserve and prevent wasting of construction water.	Use of all construction water is prohibited unless necessary for air quality and construction reasons. This must be negotiated beforehand with Caste Rock Water.	Use of all construction water is prohibited unless necessary for air quality and construction reasons. This must be negotiated beforehand with Caste Rock Water.	All non-critical water use, including construction water, is prohibited until further notice.
Fountains	n/a	All non-recirculating outdoor fountains must be turned off.	All outdoor and indoor fountains must be turned off.	All outdoor and indoor fountains must be turned off.	All outdoor and indoor fountains must be turned off.
Swimming pools and hot tubs	All commercial swimming pools and hot tubs should be covered when not in use and maintained to prevent leaks.	All commercial swimming pools and hot tubs should be covered when not in use and maintained to prevent leaks.	All commercial swimming pools and hot tubs should be covered when not in use and maintained to prevent leaks.	The filling of commercial swimming pools and hot tubs is prohibited.	All swimming pool filling is prohibited.
Vehicle washing	Commercial car washes encouraged to reduce water use by 10% where technically feasible.  Vehicles at car dealerships should be washed using bucket and hand-held hose with shut-off nozzle.	Commercial car washes required to reduce water use by 10% where technically feasible.  Vehicles at car dealerships should be washed using bucket and hand-held hose with shut-off nozzle.	All commercial car washes are required to implement best management practices and limit water use to 20 gallons per vehicle.  All washing of vehicles on car dealership property is prohibited.	All car washing is prohibited, unless necessary for emergency response operations	All outdoor water use including vehicle washing is prohibited, unless necessary for emergency response operations.

	<b>Advisory</b>	<b>Watch</b>	<b>Warning</b>	<b>Emergency</b>	<b>Critical/Crisis</b>
Restaurants	Restaurants encouraged to only serve water when requested by customer.	Restaurants encouraged to only serve water when requested by customer.	All restaurants are not to serve water unless customers specifically ask for it.	All restaurants are not to serve water unless customers specifically ask for it.	All restaurants are not to serve water unless customers specifically ask for it and there is availability.
Lodging services	Lodging establishments are encouraged to promote conservation and limit frequency of linen washings.	Lodging establishments are encouraged to promote conservation and limit frequency of linen washings.	All lodging establishments must place water conservation cards in every room promoting water conservation (e.g. short showers) as well as not changing linens and towels unless a customer specifically requests the service.	All lodging establishments must place water conservation cards in every room promoting water conservation (e.g. short showers) as well as not changing linens and towels unless a customer specifically requests the service.	All lodging establishments must place water restriction cards in every room, warn about possible periodic water shutoffs, and avoid changing linens and towels.
Indoor	n/a	n/a	Encourage indoor water use limitations to achieve 20% water savings	Encourage indoor water use limitations to achieve 30% water savings	Indoor water use is heavily restricted to critical uses only (e.g. drinking, cooking, bathing), and may be periodically shutoff as necessary.

## 7.1 Advisory Drought Stage

**Drought Trigger Points:** Water Supply Index score ranging from 1.09 to 1.05, with all available supplies producing at their maximum capacity.

**Drought Stage and Trigger Summary:** The Advisory drought stage is the first in a series of five stages. The drought response is to primarily focus on voluntary water savings measures with the objective of reaching a water use reduction target of 10%.

### 7.1.1 Supply-Side Response Measures

The following supply-side measures will be implemented in the Advisory drought stage:

- Identify technical and financial assistance opportunities – This may include assistance from the public sector at the federal, state, or county level, or from private entities such as non-profit organizations promoting water conservation and drought awareness. Assistance may include grants, loans, technical assistance (e.g. improve the efficiency of capturing indirect reuse water), education, etc. Castle Rock plans to be aware of the technical and financial opportunities before a drought, enabling the Town to take advantage of the opportunities quickly and efficiently when a drought occurs.
- Utilize Castle Rock Water Commission as a public advisory committee – this will allow the Town to track public perception of drought and the effectiveness of drought-related communications.
- Water rights management and cooperative agreements – Castle Rock’s water supply yields may be increased by making some adjustments to how water rights are traditionally managed and through other synergies developed via cooperative agreements with other local water users. Castle Rock is already fostering numerous regional partnerships, such as the WISE project, membership in South Metro Water Supply Authority, membership in the Cherry Creek Project Water Authority, membership in the Chatfield Reservoir Mitigation Company, and intergovernmental agreements (IGAs) related to water infrastructure with Parker Water and Sanitation District, Dominion Water and Sanitation District, Castle Pines Metropolitan District, the Pinery, and others. Where possible, these agreements will be established in advance of a drought as part of the mitigation effort and activated during drought periods. However, the activation of these agreements and identification of new arrangements during drought periods will be a component of the drought response. Appropriate Substitute Water Supply Plans will be filed to ensure that the agreement/arrangement(s) are viable under Colorado Water Law. These agreement/arrangement(s) may include the following:
  - Transfers and exchanges – one of the objectives of the WISE project is to use multiple entities’ water infrastructure in a way that maximizes yield to all participants. Strategies include developing water transfers with other entities, sharing interconnects and water conveyance systems, and exchanging to minimize loss in the system.
  - Acquire water from other entities – Castle Rock’s water supply system is situated in such a manner that it could divert and utilize water from other entities via exchange or transfer.

Purchase, lease, trade, temporary fallowing, and water transfer arrangements with downstream agricultural users and nearby water providers will be explored as an option during drought periods.

- Pay downstream water users to not place a call on the river – Currently, this refers to entities with East Plum Creek water rights, Plum Creek water rights, or South Platte water rights senior to the Town’s, and potentially could include entities with storage rights in Chatfield Reservoir. In the future, this would expand to include senior water rights entities on all of Castle Rock’s (future) surface water supplies including Box Elder Creek and Cherry Creek. Establishing a relationship with these senior water rights holders in advance of a drought would allow for smoother communication during a drought.
- Arrange for water exchanges – Castle Rock’s participation in the cooperative agreements listed above will facilitate this response strategy.
- Lease irrigation rights from farmers.
- Cancel municipal leases of water to farmers – communication in advance of the planting season is critical to implement this response strategy.
- Negotiations – some options for the Town to increase their supply include negotiating purchases or “options” of water and renegotiating contractually controlled supplies.

## 7.1.2 Demand-Side Response Measures

### Castle Rock Water

- Public education – As a mitigation strategy, Castle Rock will develop a drought public education campaign, and this campaign will be activated in the Advisory drought stage.
- Identify high water use customers and internally develop water savings targets, in preparation of drought stage worsening.
- Circulate information to customers regarding voluntary outdoor and indoor water audits to encourage signing up for an audit through Castle Rock Water, and potentially qualify for water savings and efficiency rebates/credits.
- Educate municipal staff on how to save water.
- Irrigation of Town-owned property (parks and open spaces) – limit outdoor watering to specific times of day and limit the number of watering days per week.

### Residential Voluntary and Mandatory Restrictions for General Use

- Outdoor voluntary restrictions apply during non-summer months – residents are encouraged to voluntarily conserve water, both indoors and outdoors, with the suggested goal of achieving a 10% savings.
- Outdoor mandatory watering restrictions during summer months – residents must follow the mandatory restrictions set to last from May 1 to September 30, where they may only irrigate every-third-day, between the hours of 8 p.m. and 8 a.m.
- Impervious surfaces (driveways, sidewalks, patios, etc.) – recommend minimizing power washing and spraying on impervious surfaces. A broom or mop may be used as a replacement.
- Residents are encouraged not to install new sod, seeding, or other landscaping.
- Residents are encouraged to limit the use of outdoor misting devices.
- Do not allow water to pool in gutters, streets and alleys.
- Do not waste water by letting it spray on concrete and asphalt.
- Repair leaking sprinkler systems immediately.
- Do not irrigate while it is raining or during high winds.
- Use a hose nozzle with a shut-off valve.
- In addition, there are specific outdoor water use guidelines which apply at any time of the year, and are designed to encourage efficient use of water and help meet the Town’s conservation goals. These are outlined in Table 7.

### Commercial and Institutional (Voluntary and Mandatory Restrictions)

- Construction water – appropriate best management practices should be employed to conserve and prevent wasting of construction water.
- Voluntarily limit the installation of new sod and/or other landscaping.
- Outdoor mandatory watering restrictions – during the entire irrigation season which includes the drier summer months (May 1 through September 30), the Town enforces a watering and irrigation schedule to enable water conservation. Watering is permitted every-third day, and only between the hours of 10 p.m. and 5 a.m. for commercial/industrial customers.
- Outdoor water audits – Castle Rock will encourage commercial and institutional entities to take advantage of their irrigation audit/sprinkler inspection program to provide technical assistance to reduce outdoor water use.

- All commercial swimming pools and hot tubs should be covered when not being used to reduce evaporation. Regular maintenance should minimize leaks and the Town encourages reuse of the water for irrigation when emptying the pool/hot tub.
- Commercial car washes must install water recycling technology and/or other best management practices to reduce water use and/or increase water reuse.
- All restaurants are encouraged to not serve water unless customers specifically ask for it.
- Hotels are encouraged to promote the reduction in frequency of linen and towel washing to their guests.
- Water users must not allow water to pool in gutters, streets and alleys.
- Water users must not waste water by letting it spray on concrete and asphalt.
- Water users must repair leaking sprinkler systems immediately.
- Water users must not irrigate while it is raining or during high winds.
- Water users must use a hose nozzle with a shut-off valve.
- The additional water use guidelines are outlined in Table 7, Section 5.1.1.

### 7.1.3 Public Campaign

Details of the public drought campaign (outlined in Section 5.4) will be similar to previously developed water conservation campaign material, and will be tailored to specific circumstances at the onset of a drought.

## 7.2 Watch Drought Stage

**Drought Trigger Points:** Water Supply Index score ranging from 1.04 to 1.00, with all available supplies producing at their maximum capacity.

**Drought Stage and Trigger Summary:** The Watch drought stage is the second in a series of five stages. The drought response is to primarily focus on outdoor restriction measures with the objective of reaching a water use reduction target of 25%. Some preparatory supply-side measures are also important in this stage.

### 7.2.1 Supply-Side Response Measures

The supply-side measures that were triggered under the Advisory drought stage will continue to be active into the Watch drought stage. In addition, Castle Rock will add the following measures:

- Clean and/or rehabilitate Denver Basin wells in preparation for pumping – assuming the full capacity of groundwater rights has not been met via increasing pumping from existing wells, the Town can rehabilitate existing wells to obtain maximum flow rates, and prolong their useful



life. Well rehabilitation and maintenance methods may include flushing of water lines (to reduce plugging) and doing general in-house alluvial well cleaning.

- Maximize use of our recycled water supplies.
- Use any water currently available and stored in tanks and reservoirs (e.g. Rueter-Hess, Walker, CRR1 and CRR2).

## 7.2.2 Demand-Side Response Measures

The demand-side measures that were triggered under the Advisory drought stage will continue to be active into the Watch drought stage. In addition, Castle Rock will add the following measures:

### Castle Rock Water

- Implement a drought surcharge design as follows: Reduce ET Factors from 80% to 40% which will reduce the outdoor water budget for all customers putting them into Tier 3 rates for water usage over half their normal outdoor budget.
- Conduct irrigation audits on municipal parks and open spaces.
- Reach out to high water use customers and collaboratively develop water savings targets.
- Provide instructional resources to businesses on developing a drought mitigation and response plan specific to their business/office.
- Restrict outdoor misting devices in public buildings and spaces.
- Reduce public street cleaning.
- Prohibit watering of turf on Town-owned property during fall, winter, and early spring and consider this also for summer depending on conditions.
- Reduce frequency of hydrant flushing.

### Residential Voluntary and Mandatory Restrictions for General Use

- Outdoor mandatory restrictions – In addition to the mandatory outdoor watering restrictions imposed during summer months (traditionally from May 1 to September 30), this stage requires stricter outdoor watering limitations. Lawn and other irrigation will be limited to every-fourth day (i.e. twice a week), with the same watering schedule outlined in Table 16.
- Residents will be encouraged to reduce turf and all outdoor irrigation from September 30 to May 1.
- Residents will be encouraged to forego the installation of new sod, seeding, and landscaping until the drought has ceased.

- Power washing and spraying on residential impervious surfaces (driveways, sidewalks, patios, etc.) will be prohibited.

#### Commercial and Institutional Voluntary and Mandatory Restrictions

- Outdoor mandatory watering restrictions – In addition to the mandatory outdoor watering restrictions imposed during summer months (traditionally from May 1 to September 30), this stage requires stricter outdoor watering limitations. Lawn and other irrigation will be limited to every-fourth day, with the same watering schedule outlined in Table 16.
- Businesses are encouraged to forego the installation of new sod, seeding, and landscaping until the drought has ceased.
- All restaurants are encouraged to not serve water unless customers specifically ask for it. This is intended for public awareness purposes and not expected to result in significant water savings.
- Additional year-round outdoor water use guidelines are outlined in Table 7 in Section 5.1.1.

### 7.3 Warning Drought Stage

**Drought Trigger Points:** Water Supply Index score ranging from 0.99 to 0.95, with all available supplies producing at their maximum capacity.

**Drought Stage and Trigger Summary:** The Warning drought stage is the third in the series of five, and more severe than the previous two. The drought response is to primarily focus on mandatory restriction measures with the objective of reaching a water use reduction target of 40%.

#### 7.3.1 Supply-Side Response Measures

Supply-side response actions triggered in the Advisory and Watch drought stages will continue into the Warning drought stage. In addition, Castle Rock Water will consider the following:

- Direct Potable Reuse on a temporary basis – work with the Colorado Department of Public Health and Environment to create a temporary permit authorization to utilize direct potable reuse to limit losses of reusable water supplies during drought and construct emergency infrastructure (pipe connections, etc.). Direct potable reuse can limit losses from evaporation and loss of water into dry stream beds.

### 7.3.2 Demand-Side Response Measures

Demand-side response actions triggered in the Advisory and Watch drought stages will continue into the Warning drought stage. In addition, the following measures will be considered:

#### Castle Rock Water

- Implement a drought surcharge design as follows: Reduce ET Factors from 80% to 40% which will reduce the outdoor water budget for all customers putting them into Tier 3 rates for water usage over half their normal outdoor budget. Reduce conservation threshold to 30,000 gallons and increase Tier 3 rate by 10%.
- Restrict or eliminate turf irrigation on Town parks and open spaces. Sports fields, trees, and shrubs may be irrigated on a pre-determined limited basis. Preferred “green spaces” may be specified in advance by a public outreach survey conducted at any time.
- Conduct indoor water audits on public buildings and on privately-owned buildings that have applied for an audit.
- Use of all water for fire training and of water from the hydrant will be prohibited unless essential for public safety.
- Utilize catastrophic failure reserves to ColoradoScape parks and open spaces where high water using turf is in place or allow that turf to go without water and replace the turf once the drought is over using those same failure reserves.

#### Residential Restrictions and General Use

- Outdoor mandatory watering restrictions – Lawn and other irrigation will be limited to once a week, with the same watering schedule outlined in Table 16 for the summer months, and will extend from May 1 to September 30.
- Residents will be prohibited from irrigating turf from October 31 to April 30.
- Residents will be prohibited from installing new sod, seeding, and landscaping until the drought has ceased.
- All washing of personal vehicles will be prohibited except at commercial car washes.
- The filling of private swimming pools and hot tubs will be prohibited.

#### Commercial and Institutional Restrictions

- Businesses/institutions will be prohibited from installing new sod, seeding, and landscaping until the drought has ceased.

- Outdoor watering and irrigation will be limited to once a week, and will take place from May 1 to September 30.
- Customers will be prohibited from irrigating turf from October 1 to April 30.
- The filling of commercial swimming pools and hot tubs will be highly discouraged.
- All commercial car washes will be required to implement best management practices and limit water use to 20 gallons per vehicle<sup>5</sup>.
- All washing of vehicles on car dealership property will be prohibited.
- Work in partnership with commercial customers to offer large rebates using catastrophic failure reserves to ColoradoScape large irrigated turf spaces where high water using turf is in place or allow that turf to go without water and replace the turf once the drought is over using those same failure reserves.

## 7.4 Emergency Drought Stage

**Drought Trigger Points:** Water Supply Index score ranging from 0.94 to 0.90, with all available supplies producing at their maximum capacity.

**Drought Stage and Trigger Summary:** The Emergency drought stage is the second most rigorous stage. The drought responses focus on reaching a water use reduction target of about 50%, as well as tapping into reserve resources, increasing water pumping and surface water use, and working with partners to utilize more regional water.

### 7.4.1 Supply-Side Response Measures

Supply-side response actions triggered in the Advisory, Watch, and Warning drought stages will continue into the Emergency drought stage. In addition, the following measures will be considered:

- Draw from drought reserves.
- Increase groundwater pumping – extract from the Denver Basin up to the full capacity of the Town’s water rights, to the extent which water supplies can’t be made up with renewable supply.
- Drill additional Denver Basin wells if necessary, and re-drill out-of-service wells to the extent possible.
- Work with water partners (e.g. WISE) to increase water use allocation for the Town (if excess supply is available)

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<sup>5</sup> The Southwest Car Wash Association (comprised of many Colorado car washes), states that a full serve conveyor car washing facility will spend an average of 30-40 gallons per car. For more information please visit <https://swcarwash.org>

- Look to purchase or lease water supplies from agricultural interests.

## 7.4.2 Demand-Side Response Measures

Demand-side response actions triggered in the Advisory, Watch, and Warning drought stages will continue into the Emergency drought stage. In addition, the following measures will be considered:

### Castle Rock Water

- Implement a drought surcharge design as follows: Reduce ET Factors from 40% to 0% which will eliminate outdoor water budgets for all customers putting them into Tier 3 rates for water usage for any outdoor water use. Reduce conservation threshold to 15,000 gallons, increase Tier 3 rate by 10%, and increase surcharge by 10%.
- Eliminate all turf irrigation on Town parks and open spaces unless necessary for emergency response or operations. Limited irrigation of trees with a hand-held hose or non-spray device may be allowed to help ensure survival.
- Washing of Town-owned vehicles will be prohibited.
- Hydrant washing and flushing will be prohibited unless necessary for public safety reasons.

### Residential Restrictions and General Use

- All outdoor water use and irrigation will be prohibited until drought conditions have eased.

### Commercial and Institutional Restrictions

- Use of all construction water will be prohibited unless necessary for public safety. Construction water use must be negotiated beforehand with Castle Rock Water.
- The filling of commercial swimming pools and hot tubs will be prohibited.
- Commercial car washes – all car washing is prohibited unless required for emergency operations or public safety reasons.

## 7.5 Critical/Crisis Drought Stage

**Drought Trigger Points:** Water Supply Index score falling below 0.90, with all available supplies producing at their maximum capacity.

**Drought Stage and Trigger Summary:** The Critical/Crisis drought stage is the most severe of all five stages. The drought response involves heavily focusing on strict water savings measures (outdoors and indoors) with the objective of reaching a water use reduction target of more than 60%, while engaging in collaborative efforts with water partners to bring in water sources. Maximizing water reuse (e.g. from wastewater) is also a key measure in this stage.

### 7.5.1 Supply-Side Response Measures

Supply-side response actions triggered in the Advisory, Watch, Warning, and Emergency drought stages will continue into the Critical/Crisis drought stage. In addition, the following measures will be considered:

- Work with WISE partners and other local, regional, and even national sources to allocate and bring in water for necessary activities and critical use (e.g. drinking water, bathing, cooking), as well as to supplement available water for emergency response, operations, and public safety.
  - Consider other options for example bringing water supplies to Town via rail car.

### 7.5.2 Demand-Side Response Measures

Demand-side response actions triggered in the Advisory, Watch, Warning, and Emergency drought stages will continue into the Critical/Crisis drought stage. In addition, the following measures will be considered:

#### All Town departments, Residential, and Commercial and Institutional

- Implement a drought surcharge as follows: Reduce ET Factors from 40% to 0% which will eliminate outdoor water budgets for all customers putting them into Tier 3 rates for water usage for any outdoor water use. Reduce conservation threshold to 15,000 gallons, increase Tier 3 rate by 10%, and increase surcharge by 10% as well as periodic water shutoffs as needed.
- Eliminate all outdoor water use and irrigation unless required for emergency operations and response.
- Indoor water use is restricted to critical activities such as cooking, drinking water, or bathing. Limitations on gallons used per household will be implemented according to the specific drought conditions, and complete water shutoffs may be periodically necessary.

## 8 PLAN IMPLEMENTATION AND MONITORING

### 8.1 Mitigation Action Plan

Many of the mitigation measures are either a component of this Drought Management Plan, are specified in Castle Rock's other water related plans (e.g. 2023 Water Efficiency Master Plan, 2021 Water Resources Strategic Master Plan, 2024 Water Use Management Plan), or are standard practices conducted by Town staff. These measures are generally conducted and/or tested on a routine annual basis. The majority of mitigation measures related to the development of new water supplies and operation/maintenance changes are to occur when new supplies are anticipated to come online. Table 18 summarizes the water efficiency activities currently in place, in progress, or presently being considered for implementation, along with the relevant periods of implementation and the customer class they may affect.

**Table 18: Mitigation Action Plan**

<b>Water Efficiency Activities</b>	<b>Period of Implementation</b>	<b>Customer Class</b>
<b>Foundational Activities</b>		
Water budget rate structure (Nonresidential)	2008 – present	Non-residential
Water budget rate structure (Residential)	2009 – present	Residential
Historical Consumption Information on Bills	2009 – present	Residential, Non-residential
Advanced Metering Infrastructure	Implementing – completion expected by 2027	Residential, Non-residential
Formal Meter Testing Program	In Progress	Residential, Non-residential
Leak Detection / Non-revenue Water Program	2008 – present	Municipal
Public Right-of-Way & Town Park Landscape & Irrigation Retrofits	Ongoing – performed as determined to be cost effective	Municipal
<b>Targeted Technical Assistance and Incentives</b>		
Rotary nozzle retrofit	2009 - Present	Residential, Non-residential
Smartscape landscape retrofit	2009 - Present	Residential
Rain sensor	2009 - Present	Residential
Smart controller	2009 - Present	Residential, Non-residential
Irrigation Audit/Sprinkler Inspection	2008 - Present	Residential, Non-residential
High Efficiency Toilet retrofit	2020 - Present	Residential, Non-residential
Indoor Conservation Incentive Program	Considering	Could apply to residential and non-residential
<b>Ordinances and Regulations</b>		
Water Use Management Plan	Early 2000 - present	Residential, Non-residential
Watering Restrictions	1985 - present	Residential, Non-residential
Water Monitoring Program	Early 2000 - present	Residential, Non-residential
Soil Amendment and Inspection Requirements	Early 2000 - present	Primarily for non-residential, and mandatory on residential new builds
Irrigation Exemptions	1985 – present	All Residential and non-residential irrigation customers
Landscape Regulations for New Developments	1999 – present	Requirements for non-residential, recommended for residential (with the exception of Kentucky Blue Grass, which is prohibited. In addition, moderate and low water use turf alternatives are required for single-family and two-family residential areas)
Water Efficiency Plan Guidelines	2014 - present	Residential, Non-residential
Emergency Regulation of Water	2018 - present	Residential, Non-residential
No Turf Ordinance	2023 - present	Residential, Non-residential
Revised supply side and drain side plumbing codes compatible with water efficient fixtures	Considering	Could apply to residential and non-residential
Hot Water Recirculation Units	Considering	Could apply to residential and non-residential
<b>Educational Activities</b>		
Historical Consumption Info on Bills	2009 - present	Residential, Non-residential
Water Wiser	2004 - present	Available for all sectors but geared toward residential

Water Efficiency Activities	Period of Implementation	Customer Class
Public Information and Education (including classroom visits)	Early 2000 - present	Residential, Non-residential
Coloradoscape Demonstration Gardens	2005 - present	Residential, Non-residential
Registration for Landscape Professionals	2004 - present	Landscape & Irrigation design, installation, and maintenance contractors
Water Ambassador Program	2009 - present	Residential customers through school education
Water Conservation Website	2010 - present	Residential, Non-residential
Drought Management webpage with live Drought Indicator	2022 - present	Residential, Non-residential
Coloradoscape Guidelines	2022 - present	Residential, Non-residential
Coloradoscape Classes	2007 - present	Residential, Non-residential
Coloradoscape Contest	2019 - present	Residential
Conservation Contests	Considering	All

## 8.2 Drought Declarations

Castle Rock Water’s approach to drought declarations is specified in Municipal Code section 13.12.070, Emergency Regulation of Water which code provides the Director of Castle Rock Water the power to make a drought declaration which would be authorized by Council in general accordance with this plan or as deemed necessary immediately for any other reason in consultation with the Town Manager and subsequent confirmation by Council within 21 days of such declaration. The drought triggers shown in Table 14 serve as a general guideline for action. However, the proposed drought monitoring data, in addition to the experience and skill of Castle Rock Water and other relevant departments’ staff, also play a large role in determining the severity and corresponding action or declaration of a drought. As such, Castle Rock Water staff reserve the right to make modifications, based on their experience and resources, to the drought trigger guidelines, drought stages, drought response strategies, or any other appropriate factors associated with drought.

As previously mentioned in Section 6.3, it is important for the Town to officially declare a drought and adjust correspondingly to drought stages, in a timely manner. If a drought is declared too late or actions are not taken early enough to reduce water use, supplies can be severely depleted and strict water restrictions may be required, leading to economic impacts that could have been avoided. Conversely, premature drought declarations can result in unnecessary mandatory water restrictions and associated impacts while customers can lose confidence in the declaration. The Castle Rock Water Director is ultimately responsible for providing final recommendations on the timing of drought declaration and corresponding stage of a drought to Town Council.

The following protocol will be followed to officially declare a drought:

- Castle Rock Water staff will discuss the drought monitoring data with the Director providing recommendations on the timing of the drought declaration and the appropriate drought stage (severity).
- The Director of Castle Rock Water will provide recommendations to the Town Council.



- Town Council members will have an opportunity to ask questions and comment on recommendations in an official public Town Council meeting that is either regularly scheduled or scheduled as an emergency specifically to discuss drought conditions.
- The Town Council will decide whether to declare a drought (and corresponding drought stage) based on the Castle Rock Water Director’s recommendations and comments from Castle Rock Water staff members. Greatest credence should be given to the Castle Rock Water Director’s recommendations, however. This decision will be made at the Town Council meeting, whether it be a regular meeting or a special meeting.
- If the Town Council decides to declare a drought, direction will be given to the Communications Manager to convey the drought declaration to Town and County Emergency Management, CWCB, Colorado Division of Homeland Security and Emergency Management, and to the public.

The same drought declaration protocol will be followed, per the Castle Rock Water staff’s discretion, to change a drought stage (e.g. water shortages are increased from a warning to an emergency drought stage or reduced from an emergency to a warning level) and to end a drought, returning to normal operating conditions. If, for emergency reasons, the declaration or adjustment of a drought stage is necessary within a shorter timeframe than specified above, Chapter 13.12.070 of the Municipal Code allows the Town Council to regulate water usage during times of drought or emergency. This is limited to circumstances when the safety and health of the community are at risk due to stressed (e.g. drought-related) water supply conditions. A thorough review of supply conditions and implementation of the drought response program shall be conducted by Castle Rock Water following such declaration.

### 8.3 Implementation of the Staged Drought Response Program

The staged drought response program requires actions to be taken by Castle Rock Water, Parks, Communications and Finance Departments. In addition, Town staff are expected to follow water use restrictions imposed by the staged drought response program. The roles and responsibilities are provided below.

- Castle Rock Water – administer, implement, and enforce the staged drought response program. The Castle Rock Water Director will ultimately be responsible for facilitating necessary communication and coordination with other departments.
- *Parks and Recreation* – coordinate outdoor irrigation efforts on Town-owned property closely with Castle Rock Water.
- *Communications and Castle Rock Water*– communicate with appropriate state and federal agencies regarding drought conditions and responses, convey the drought declaration and key messages to the public, and aid in implementing the public drought campaign.
- *Communications, Castle Rock Water and Development Services* communicate with appropriate developers, home builders and others involved in construction within the community

- *Finance Department* – closely monitor revenue and coordinate with Castle Rock Water to determine if operating reserves, revenue stabilization reserves or catastrophic failure reserves are needed for operations.
- *All Town Departments* – follow water use restrictions imposed by the staged drought response program, and enforce water use guidelines and all other imposed regulations and ordinances.

Weekly staff meetings will be initiated by the Castle Rock Water Director among key departments and Town staff at the onset of a drought, to ensure that the program is properly carried out. The initial staff meetings will focus on implementation of the staged drought response program and public drought campaign/s, and will include:

- Review of Town budget and funds available for implementation of the Plan.
- Actions necessary to initiate the designated staged drought response measures to achieve the appropriate response target.
- Specific drought messages to convey to the public and methods used for education using the framework provided in this Plan (See Section 5.4).
- Actions necessary for enforcement (See Section 8.4).
- Review of roles and responsibilities of each staff member.

#### **8.4 Enforcement of the Staged Drought Response Program**

The purpose of enforcement is to maintain the integrity of the water system during peak periods to ensure positive pressure exists and fire flow demands are met. This code enforcement is conducted to protect the interests of the public, the Town, and protect public health and safety. The focus of the program is encouragement of compliance, as well as education. As such, standard first violations are issued as warnings with no surcharges applied (although, per the Castle Rock Water staff's discretion and based on the specific drought circumstances and type of violation, first-time violators may be imposed more stringent penalties). Subsequent violations are on a graduating scale. Water monitors can include all other Town of Castle Rock staff when needed. Town staff are trained and authorized to issue violations and shut off meters if necessary. The Town can also allow overtime pay to Town staff for water monitoring, when necessary. Members of the public can submit an affidavit of out-of-compliance irrigation or other water usage, upon which the Town may issue a violation.

Castle Rock's level of enforcement will be customized to the severity of the drought (drought stage) as well as to how responsive the public is to mandatory drought response measures. During the Advisory drought stage, enforcement may not be necessary given that the majority of drought response is voluntary. However, for the remaining drought stages, enforcement will consist of several strategies, such as: a call-in service where customers have an opportunity to report infractions, patrolling of neighborhood and business districts to identify owners/residents that are in violation of mandatory restrictions/requirements, the implementation of a neighborhood watch program, issuance of citations and appropriate penalties based on the drought stage and number of violations, and at times even resorting to temporary or permanent water shutoffs as necessary.

Each staff member responsible for patrol will be continually trained to ensure that a consistent drought message is conveyed, and that conflicts are handled and conducted in a responsible, orderly fashion.

Table 19 provides the pre-defined penalty structure associated with each drought stage, and outlines the standard number of infractions per resident/business owner per calendar year. This will be posted on Castle Rock Water’s website and conveyed to the public through the public drought campaign. Citations and monetary fines will be primarily issued through the mail and/or email (with occasional citations potentially being issued in person, depending on the drought stage and/or infraction severity). If inclined, residents/occupants will have an opportunity to appeal citations. Written appeals may be mailed/emailed to Castle Rock Water providing justification for why the citation should be appealed. Reasons for appeal may include:

- The citation mistakenly included the wrong address.
- Irrigation is necessary for extraordinary circumstances.
- A new resident has moved into a house that had received multiple previous citations through no fault of the new resident.

Castle Rock Water will review each citation and determine whether sufficient justification has been provided to forfeit the citation and penalty. Isolated exemptions to water restrictions may also be made in certain cases upon review and approval of Castle Rock Water staff.

**Table 19: General Guidelines for Enforcement of the Staged Drought Response Program**

	Advisory	Watch	Warning	Emergency or Critical/Crisis
First Violation	n/a	Warning citation stating that next violation will result in monetary fine. Educational information on drought will be provided.	Warning citation stating that next violation will result in monetary fine. Educational information on drought will be provided.	Warning citation stating that next violation will result in monetary fine. Educational information on drought will be provided.
Second Violation	n/a	Monetary fine (to be determined) added to water bill <sup>†</sup>	Monetary fine (to be determined) added to water bill <sup>†</sup>	Monetary fine (to be determined) added to water bill. Phone call to educate and inform the violator of the impending penalty if another infraction occurs. <sup>†</sup>
Third Violation	n/a	Monetary fine (to be determined) added to water bill. Phone call to violator to educate and inform him/her of the impending penalty if another infraction occurs. <sup>†</sup>	Monetary fine (to be determined) added to water bill. Phone call to violator to educate and inform him/her of the impending penalty if another infraction occurs. <sup>†</sup>	Monetary fine (to be determined) added to water bill and possible installation of a flow restrictor or temporary termination of water service until cause of violation is corrected and fines are paid. <sup>†</sup>

\* Note that, based on the Castle Rock Water staff’s discretion and the specific drought circumstances and/or type of violation, these guidelines may be updated to reflect more stringent penalties. As such, violations could be handled on a case by case basis.

<sup>†</sup> Monetary fines will, at a minimum, be administered in accordance with the current Town Council approved Water Use Management Plan (WUMP).

	Advisory	Watch	Warning	Emergency or Critical/Crisis
Fourth Violation	n/a	Monetary fine (to be determined) added to water bill and possible installation of a flow restrictor or temporary termination of water service until cause of violation is corrected and fines are paid. †	Monetary fine (to be determined) added to water bill and possible installation of a flow restrictor or temporary termination of water service until cause of violation is corrected and fines are paid. †	Water service terminated indefinitely.

The Castle Rock Water Director and Castle Rock Water staff will be responsible for administering the enforcement of the staged drought response program and ensuring that appropriate messages concerning enforcement are conveyed to the public via the Communications Department. This will require close coordination with Castle Rock Water and Communications Departments. Roles and responsibilities of each department are as follows:

- *Castle Rock Water* – facilitation of call-in service for reports on infractions and follow up, patrol of service area, issuing written citations and fines, sending bills, recording and tracking of violations and fines, facilitating the appeals process, and installing flow restrictors to cut off service until violation is corrected.
- *Communications Department* – conveying accurate, consistent information on enforcement to the public through the public drought campaign.

**8.5 Revenue Implications and a Financial Budgeting Plan**

A reduction in customer water use during periods of drought reduces water sales and consequently could result in a revenue shortfall for Castle Rock. Increased costs associated with implementation of the staged drought response program, public drought campaign, and enforcement could further intensify the shortfall. During the 2002 and later 2012/2013 droughts, several neighboring water providers had to increase customer water rates in order to compensate for such a shortfall. These increases were not anticipated and the general public’s perception was that they were penalized for conserving water during the drought.

Castle Rock Water currently has access to water emergency reserve accounts (rate revenue stabilization reserve and catastrophic failure reserve), which could be utilized during the staged drought response program to alleviate surcharges to customers, for example. These funds may also be applied to implement the public drought campaign and other aspects tied to this drought management plan. In addition to Castle Rock Water’s emergency reserve account, the Town plans to seek financial drought-related assistance (public drought-related loans, grants, etc.) where needed and available.

The staged drought response program also calls for temporary drought surcharges that increase in severity as the drought stage increases. These drought surcharges were reviewed and approved by Town Council on X/XX/XX at a public meeting. Outreach was provided to the public ahead of adoption of the surcharges in the following ways:

- Social Media

- Town Council Agendas
- Emails
- Stakeholder Meetings
- Public Open House on Drought Rates

The main objectives of these surcharges are to provide additional financial incentives to conserve water; however, as a secondary benefit, the drought surcharge will also be used to help compensate for reduced water sales and increased drought response costs. If drought conditions and corresponding water sale reductions are severe enough to warrant implementation of the drought surcharges, an intensive public outreach campaign will be implemented to convey the reasoning behind why the water rates are being raised, and inform about the status of the Town’s financial condition.

## 8.6 Monitoring of Plan Effectiveness

Monitoring provides the information and data necessary to improve the effectiveness of updates to Castle Rock’s Plan. This process will be key to improving Castle Rock’s ability to prepare and respond to drought. Monitoring will be both an ongoing and post-drought evaluation process. Ongoing monitoring should include testing components of the drought management plan when a drought is not occurring as well as tracking and following through with the drought mitigation measures.

In the first or second quarter of each year as appropriate, Castle Rock Water will organize an annual drought monitoring meeting. The meeting will entail the latest status of potential drought conditions in the upcoming irrigation year based on the current drought monitoring data, the status of the drought mitigation measures specified in this Plan, an overview of the public drought campaign efforts, and a review of individual staff member’s roles and responsibilities if a drought does occur. The meeting will also provide a forum for educating new staff members on their drought-related responsibilities as well as “testing” the implementation of the Plan by enabling staff members to question and discuss potential challenges and solutions that could arise via implementation of the Plan.

Castle Rock Water staff will also present or publicize the results from monitoring data collected to assess the effectiveness of the drought mitigation, response measures and enforcement (if applicable), and the public drought campaign. The following monitoring data will be collected and made available publicly by Castle Rock Water staff, on an annual basis (note that some of these data may not be applicable if a drought has not occurred):

- *Demands* – Comparison of the demands during historical droughts relative to the current year’s annual demands. These demand data will include monthly water usage by high water users, customer types, total per capita water usage, residential per capita water usage, and the Parks and Recreation Department’s monthly irrigation use, on Town parks and open spaces. Also, records on new development that can influence water demands (e.g. new housing developments, parks, commercial buildings) will be maintained on an annual basis. If a

drought occurred, information will also be presented on how effectively the water savings target response was achieved.

- *Lessons learned* – Key issues, challenges, and concerns arising during the implementation of the staged drought response program (if applicable), drought monitoring, mitigation activities, and public drought campaign. Castle Rock Water staff will interview Town staff members from other departments also involved with the Plan implementation to get a full inter-departmental spectrum of lessons learned.
- *Conditions of the water supply system* – This will include the drought indicator data such as tank levels, treatment and well production, data about infrastructure conditions, water obtained from direct flow rights, storage rights, etc.
- *Drought mitigation measures* – Status of the mitigation related activities to date and other relevant factors (e.g. budget).
- *Public perceptions and response to the drought* – This will include documenting comments provided at public meetings, Town council/board meetings, and electronic emails/letters sent to the Castle Rock public regarding the drought response. Formal public surveys may also be used to gather public input depending on the magnitude of the drought and Town budget available for the survey. These surveys will be developed in advance of a drought to ensure that there is sufficient time to develop a well thought out survey.
- *Administrative staged drought response program data* – This will include administrative summaries such as the number of citations delivered to customers, number of incentives distributed, number of hotline calls received, etc. Records will also be maintained on the level of effort the staff put into facilitating the staged drought response measures and public education campaign, to help make predictions and budget allotments for the future.

The monitoring data will help assess the effectiveness of the Plan, will provide a means to make adjustments to mitigation and response measures if necessary, to ultimately develop recommendations for updating and improving the plan.

## 9 FORMAL PLAN APPROVAL AND UPDATES

### 9.1 Public Review Process

Prior to finalization of the Plan in December 2024, the Town facilitated a public review process educating and providing the public an opportunity to review and provide feedback on the Plan. This process was important in developing an effective Plan that is reflective of the community's values and could mitigate potential conflict during a future drought event. The Town sent out emails to homeowner's associations, used social media, and posted on its website that a draft Drought Management Plan was available for the public to review and comment. This included notices in the "Your Town Talk" publication that is included with water bills, and a notice on the message block on the water bills. The public was provided more than 60 days to review and comment on the Plan, per the CWCB guidelines.



Castle Rock Water hosted an Open House at the beginning of the 60 day comment period on XXXXXX X, 2024 to allow the public to ask questions on the drought management plan. Approximately XX people attended. Some comments of appreciation of the Town's efforts to develop a drought management plan were received during the open house. There were no other public comments received during the comment period.

## 9.2 Ordinances and Official Agreements

The following drought-related ordinances are currently in place, and relate to the implementation and enforcement of the water restrictions outlined in this Plan. However, the Town reserves the right to create, modify, or remove any specific ordinances to suit the needs of the community.

### 9.2.1 Ordinances

- *Chapter 13.12.070 of the Municipal Code discusses the emergency regulation of water.* This chapter enables the Town Council to hold power over the regulations of water usage during time of drought, shortage, fire, or other emergency, and provides authority to the Director of Castle Rock Water and the Town Manager. This chapter was amended by ordinance (2018-011) on April 17, 2018 to specifically reference the Drought Management Plan and to provide power to the Town Manager and Director of Castle Rock Water to declare a water emergency.
- *Chapter 4.03.140 of the Municipal Code regards water related violations, enforcement, and penalties.* This section outlines a series of measures for handling infractions to Castle Rock Water's regulations, which may be related to compliance of water saving guidelines, limitations on water use, and other such requirements stated in any of the Town's Master Plans or ordinances. Castle Rock Water reserves the right to pursue action as necessary, including emergency action or any other enforcement action.
- *Chapter X.XX.XXX Drought Surcharges* NEED NEW SECTION IN CODE PROBABLY

### 9.2.2 Agreements

Castle Rock currently does not have any official agreements with other entities related to drought. However, these agreements may be an important component of drought mitigation and/or response in the future. Castle Rock's water supply yields may be increased by making some adjustments to how water rights are traditionally managed and through other synergies developed via cooperative agreements with local water users. Where possible, these agreements will be established in advance of a drought as part of the mitigation effort, and activated during drought periods. As part of their current strategies, The Town has been a member of the South Metro Water Supply Authority (SMWSA) since 2004, and has worked in partnership with them to develop the Water Infrastructure Supply Efficiency (WISE) project. In continuation with these collaborative efforts, additional provisions may be set in place with said partners to prepare for and respond to drought. Future agreements to partner with other kinds of entities regarding water and drought may include exploring Collaborative Water Sharing Agreements as a water sharing mechanism between agricultural and municipal water interests.

### 9.3 Drought Management Plan Approval

Castle Rock's Drought Management Plan was approved by Town Council at the XXXX XX, 2024 Town Council meeting. Each member had the opportunity to review the Plan and comment prior to finalization and formal approval of the Plan.

### 9.4 Periodic Review and Update

Drought management planning is most effective when viewed as an ongoing process rather than a discrete process that results in a shelved document reviewed only at the onset of a drought. Castle Rock Water's Drought Management Plan will be updated every five years (or more frequently if the Town deems appropriate). The next general update is scheduled for December 2029. The Director of Castle Rock Water will be responsible for initiating the update with Castle Rock Water staff in charge of the majority of the facilitation. The update will consist of a similar stakeholder process outlined in Section 2, where the stakeholder group will be responsible for reviewing the Plan objectives and operating principles in light of the Plan monitoring data and conclusions presented in the annual monitoring reports. This group will be charged with providing recommended changes to the goals and operating principles as well as identifying key changes necessary to improve the overall effectiveness of the revised Plan; important changes to future Plan updates may include holding additional Town meetings or requesting feedback from community members. This plan should be updated to reflect the Town's diversification in water supply, as well as other demographic, cultural, or transitional changes. As the Town continues to shift to more surface water supplies, the monitoring indicators and response measures will need to be modified accordingly.





# Town of Castle Rock

## Agenda Memorandum

**Agenda Date:** 8/28/2024

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**Item #:** 13. **File #:** WC 2024-091

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**To:** Members of the Castle Rock Water Commission

**From:** Mark Marlowe, P.E., Director of Castle Rock Water

**Upcoming Town Council Items**  
**Town Council Agenda Date:** NA

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### Executive Summary

This item is an informational update only, and is designed to give Commission a preview of time critical items that may need to go to council prior to review at a Commission Meeting.

#### ***Items for this month include:***

There are no items at this time.