



**Notice of Regular Meeting**  
**Cherry Creek Basin Water Quality Authority**  
**Board of Directors Meeting**  
**Thursday, November 16, 2023 at 9:00 a.m.**

**The meeting will be conducted in-person and virtually as set forth below.**  
**In-person attendance is encouraged due to audio limitations in the meeting room.**

**In-Person: SEMSWA**  
**7437 S. Fairplay St.**  
**Centennial, CO 80112**

**Virtual: Zoom**  
<https://us06web.zoom.us/j/87425775963> Passcode: CCBWQA  
**Phone (646)931-3860 Mtg ID 874 2577 5963# Passcode: #815374**

**CCBWQA Board of Directors Meeting Documents can be found online at the link below.**  
[https://drive.google.com/drive/folders/1KqGcDC9eS\\_gMEdSiXPPPBGefAHTib7pf?usp=share\\_link](https://drive.google.com/drive/folders/1KqGcDC9eS_gMEdSiXPPPBGefAHTib7pf?usp=share_link)

1. Call to Order and Pledge of Allegiance
2. Consent Agenda (5 minutes)  
*(Items on the consent agenda can be approved with a single motion or, items can be requested to be moved from the consent agenda and moved to the "discussion" or "direction and/or action" section.)*
  - a. Approval of the October 19, 2023 Minutes (enclosed)
  - b. Acceptance of the Schedule of Cash Position Dated November, 2023 (enclosed)
  - c. Acceptance of the Paid Claims for October, 2023 (enclosed)
  - d. Approval of Unpaid Claims as of November, 2023 (enclosed)
  - e. Approval of 2023 Agreement Amendments/Extensions (enclosed)\*
    - i. Wright Water - BMP Effectiveness Study
    - ii. Wright Water - Lone Tree, Windmill, and Cottonwood Creeks Study in CCSP
    - iii. RESPEC - East Shade Shelters and Tower Loop
    - iv. Muller - Cherry Creek from Reservoir to Lake View Drive Alternatives Analysis
  - f. Approval of 2024 Agreements (enclosed)
    - i. CLA
    - ii. Collins Cole Flynn Winn & Ulmer Engagement Letter
    - iii. Hydros
    - iv. LRE Water
    - v. R2R As Needed Transition
    - vi. RESPEC
    - vii. RG and Associates
    - viii. Wright Water
3. Direction and/or Action (40 minutes)
  - a. Public Hearing - 2024 Budget (Flynn/Clary, enclosed)
    - i. Resolution 2023-11-01 Approving Fees for 2024 (enclosed)
    - ii. Resolution 2023-11-02 Adopting the 2024 Budget (enclosed)
    - iii. Resolution 2023-11-03 Authorizing Appropriation (enclosed)
    - iv. Resolution 2023-11-04 Setting the Mill Levy (enclosed)
  - b. Authorization for Executive Committee to Approve Payment on End of Year Invoices (Clary, enclosed)
  - c. PWSD Presentation on Regulation 72 Dewatering Proposal and Recommendation (Clary, enclosed)
  - d. Letter of Support for CU Boulder Landscape Conversion Research Project (Clary, enclosed)
4. Discussion (20 minutes)
  - a. 2024 to 2033 CIP and [Accompanying Spreadsheet](#) (Borchardt, enclosed)
  - b. 2023 Annual PRF/PAP Observation and Maintenance Report (Goncalves, enclosed)
  - c. WY 2023 Monitoring Report Considerations and Schedule (Stewart, enclosed)
5. Presentations (none)
6. Board Member Items

7. Updates (10 minutes)
  - a. Technical Manager
    - i. Regulation 38 Site Specific Standards Letter to CDPHE and Updated Hydros Technical Memorandum (enclosed)
  - b. Cherry Creek Stewardship Partners (Davenhill)
    - i. [Upcoming Events](#)
    - ii. October Report (enclosed)
  - c. TAC (Erickson)
  - d. Contract Staff
    - i. PAPM
      - a. CIP Status Report (Borchardt, enclosed)
      - b. Maintenance and Operations Status Report (Goncalves)
    - ii. [Water Quality Update](#) (Stewart)
    - iii. Regulatory (DiToro)
    - iv. Land Use Referrals - [2023 Tracking](#) (Endyk)
  - e. Legal
    - i. TCW Risk Management Fee Increase
    - ii. Proposition HH Update
  - f. Other
    - i. No December Board Meeting
    - ii. New Member Orientation
8. Adjournment

[Board Binder](#)



**Cherry Creek Basin Water Quality Authority**  
**Minutes of the Board of Directors**  
**Thursday, October 19, 2023 at 9:00 a.m.**

**Board Members Present**

Abe Laydon, Douglas County (zoom)  
Bill Ruzzo, Assistant Secretary, Governor's Appointee (zoom)  
John McCarty, Secretary/Treasurer, Governor's Appointee  
Leslie Summey - Arapahoe County  
Margaret Medellin, Governor's Appointee  
Max Brooks, Town of Castle Rock  
Mike Anderson, City of Lone Tree  
Mike Sutherland, City of Centennial - Alternate  
Rebecca Tejada - Special Districts, Parker Water and Sanitation District - Alternate (zoom)  
Ryan Adrian, Douglas County - Alternate (zoom)  
Tom Downing, Governor's Appointee  
Tom Stahl, City of Greenwood Village

**TAC Members Present**

Cayla Cappello, City of Greenwood Village (zoom)  
David Van Dellen, Town of Castle Rock  
Jacob James, City of Lone Tree  
Jon Erickson, TAC Chair, Board Appointee, Colorado Parks and Wildlife (zoom)  
Lisa Knerr, TAC Vice Chair, Arapahoe County  
Rick Goncalves, Board Appointee

**Others Present**

Alan Leak, RESPEC  
Erin Stewart, LRE Water  
Jane Clary, Wright Water Engineers, CCBWQA Technical Manager  
Richard Borchardt, R2R Engineers (zoom)  
Tim Flynn, Collins Cole Flynn Winn & Ulmer, PLLC  
Val Endyk, CCBWQA

**1. Call to Order and Pledge of Allegiance**

Director McCarty called the meeting to order at 9:05 am and led the pledge of allegiance.  
Remote Board member attendance and voting was approved by Director McCarty and legal counsel due to fall break and travel conflicts.

**2. Consent Agenda**

- a. **Approval of the September 21, 2023 Minutes**
- b. **Acceptance of the Schedule of Cash Position Dated October, 2023**
- c. **Acceptance of the Paid Claims for September, 2023**
- d. **Approval of Unpaid Claims as of October, 2023**
- e. **Approval of 2024 Agreements**
  - i. **Cherry Creek Stewardship Partners Proposal Letter**
  - ii. **Davis Graham & Stubbs Engagement Letter**
  - iii. **ERO As Needed Agreement**

**iv. Fiscal Focus Partners Audit Engagement Letter**

**v. Pinpoint Systems**

**vi. Val Endyk Administrative Services**

Legal counsel for the Authority provided a summary of the agreements listed in the consent agenda and of the Executive Committee and Technical Manager's review process followed prior to submittal to the Board.

Director Brooks moved to approve the consent agenda. Seconded by Director Downing. The motion carried.

**3. Direction and/or Action**

**a. Authorization of IGA Amendment for Cherry Creek at Scott Road**

Rich Borchardt provided an [action item memo](#) to the Board detailing the Cherry Creek upstream of Scott Road project. The project is in Douglas County and is a partner project with the County, CCBWQA, and Mile High Flood District which is the project lead. Muller Engineering is the design consultant. The proposed stream reclamation benefits the water quality in Cherry Creek and the Cherry Creek Reservoir by reducing bed and bank erosion and immobilizing phosphorus in the adjacent soils. It is estimated that this 0.81 mile long project will immobilize 73 pounds of phosphorus annually. Due to project cost increases, MHFD and Douglas County have increased their 2023 funding to the project, and MHFD has requested CCBWQA participate in the cost increase. The total current project costs are estimated at \$5,477,012 from the IGA Amendment.

Rich also provided a [table](#) explaining cost considerations on Cherry Creek at Scott Road and Dove Creek from Otero to Pond D-1.

Further project details and budget implications can be found in the memo.

The Board reviewed the proposed [IGA Amendment](#).

Director Anderson moved that the Board authorize the execution of the IGA Amendment for the stream reclamation on Cherry Creek upstream of Scott Road and an expenditure for an amount not to exceed \$409,000. Seconded by Director Sutherland. The motion carried.

**b. Authorization of IGA for Dove Creek Construction Phase 2**

Rich Borchardt provided an [action item memo](#) to the Board detailing construction of Phase 2 for the Dove Creek project. RESPEC is the design engineer. The project sponsors are CCBWQA and SEMSWA, which is the project lead. The proposed stream reclamation benefits the water quality in Cherry Creek and the Cherry Creek Reservoir by reducing bed and bank erosion and immobilizing phosphorus in the adjacent soils. It is estimated that this 0.51 mile long project will immobilize 46 pounds of phosphorus annually. The second phase of construction between Chambers Road and Pond D1 is scheduled for early 2024.

Rich also provided a [table](#) explaining cost considerations on Cherry Creek at Scott Road and Dove Creek from Otero to Pond D-1.

Further project details and budget implications can be found in the memo .

The Board requested Rich provide an estimate of phosphorus removal including the amount trapped by the sediment basin at a later meeting.

Director Brooks moved to recommend that the Board authorize the preparation of IGA with SEMSWA for the second phase of construction of the Dove Creek Stream Reclamation, an expenditure for an amount not to exceed \$540,000, and a member of the executive committee to execute the IGA. Seconded by Director Medellin. The motion carried.

**c. Authorization to Prepare an RFP/RFQ for Pollution Abatement Project Manager (PAPM) Position**

Jane Clary discussed the [memo](#) regarding the request to prepare a RFP/RFQ for a PAPM for the CCBWQA.

Director Ruzzo moved to direct the Executive Committee and Technical Manager to prepare a scope of work for the PAPM position, publicly post a request for proposal/qualifications for the position, pursue candidates to fill the PAPM position, and recommend a candidate to the Board. Seconded by Director Downing. The motion carried.

**d. Update on October 11, 2023 Meeting with CDPHE Regarding Site Specific Standards (moved from Updates to Direction and/or Action)**

Jane Clary provided an update on the meeting with EPA, CDPHE's WQCD, and CPW where Christine Hawley from Hydros provided a detailed explanation of the development of site specific water quality standards for Cherry Creek Reservoir based on the WQCD's methodology. CDPHE requested additional information on when CCBWQA would propose the new standard with 2025 or 2027 being options. Concerns about delaying the proposal relate to the data set becoming outdated (analysis included a dataset through 2022). The attached [action item memo](#) provides additional information and requests the approval of the [draft letter](#) which is included in the packet. The draft letter recommends proposing the site-specific standards in 2025 with a delayed effective date after 12/31/2027. This proposal can be changed at the 2024 Issues Formulation Hearing for Regulation 38 if needed.

Director Downing moved to authorize the Executive Committee to submit a letter to the Water Quality Control Commission notifying them that CCBWQA may propose site-specific total phosphorus and total nitrogen standards for Cherry Creek Reservoir (COSPCH02) at the June 2025 Regulation 38 Rulemaking Hearing. The letter will be substantively similar to the draft discussed at the Board meeting. Seconded by Director Stahl. The motion carried.

**4. Discussion**

**a. 2024-2033 Capital Improvement Program**

Rich Borchardt provided the Board with the [2024-2033 CIP](#) detailing the potential pollutant reduction facilities revisions for 2024-2033 and summarizing the recommended pollutant reduction facilities for 2024-2033 budget projections.

Rich noted that he has been coordinating with CCBWQA partners during the draft process for the 10-year CIP. Jane Clary noted that CCBWQA is actively working with potential partners for funding the Cherry Creek Reach 1 project in Cherry Creek State Park.

**b. CCBWQA 2024 Draft Budget**

Jane Clary provided the Board with the Authority's [2024 Draft Budget](#).

Jane provided an overview of the draft budget process including a brief review of 2023 budget numbers compared to the 2024 general fund, pollution abatement fund, and enterprise fund.

Legal counsel for the Authority explained that CLA uses preliminary assessed valuations to estimate property tax revenues from Douglas County and Arapahoe County. If Proposition HH passes, it will reduce the Authority's property tax valuations in both Douglas and Arapahoe Counties.

The Resolution implementing the Authority's 60/40 spending requirement is based on a rolling 5-year capital improvement spending average.

**5. Presentations (none)**

**6. Board Member Items**

**7. Updates**

**a. Technical Manager**

Jane suggested Parker Water and Sanitation provide an update to the TAC and Board in November regarding the revised Reg. 72 dewatering proposal, which has been revised based on stakeholder meetings. Jane noted that the Authority's engagement in the stakeholder process has helped refine the proposal. Jane recommends that the Authority file party status in December to allow engagement in the rulemaking hearing in February 2024. This item will be brought to the Board for action in November.

Other updates:

Jane represented CCBWQA at SP CURE's Confluence at the Confluence event, which built upon discussions with other watershed organizations who participated in the Cherry Creek Annual Conference.

Jane reported that three individuals have expressed interest in open Board positions as Governor's appointees. Jane briefly raised an opportunity to partner with CU-Boulder researchers on the water quality effects of landscape transformations. More information will be provided at the November meeting.

**i. Update on October 11, 2023 Meeting with CDPHE Regarding Site Specific Standards (moved to Direction and/or Action)**

**b. Cherry Creek Stewardship Partners [3rd Quarter Update](#) and [Events](#) (Davenhill, enclosed)**

**c. TAC (Erickson)**

Jon Erickson provided highlights from the October TAC meeting.

**d. Contract Staff**

**i. PAPM**

**a. CIP Status [Report](#)**

**b. Maintenance and Operations Status Report**

[RDS Operations Report](#) and [PRF Maintenance and Repair Report](#)

**ii. [Water Quality Update](#) and [Memo](#)**

**a. CCBWQA Sampling Analysis Plan/Quality Assurance Program Plan (SAP/QAPP)**

Erin Stewart provided a brief update on considerations for future revisions to the CCBWQA SAP/QAPP which include changes to the lab providing analysis on the phytoplankton and zooplankton samples collected in Cherry Creek Reservoir.

**b. Lakeview Drive and Impacts to Flow Calculations**

The 2023 flooding events caused equipment damage and associated loss of data that is used to calculate inflows to Cherry Creek Reservoir. The damage along with the clogged culverts and beaver activity at Lakeview Drive continue to cause very high water levels above the road. As a result, the water is being diverted to the culverts to the west, which bypass the monitoring station at CC-10 upstream of the Reservoir. It is likely that the inflow information and associated annual water balance calculations will be impacted in both WY 2023 and WY 2024.

**iii. Regulatory**

**iv. Land Use Referrals - [2023 Tracking](#)**

**e. Legal**

**f. Other**

**i. December Board Meeting**

The December Board meeting is canceled.

**8. Executive Session pursuant to Section 24-6-402(4) C.R.S., if necessary.**

No Executive Session held.

**9. Adjournment**

There being no further business to come before the Board, Director McCarty adjourned the meeting at 11:07 am.

[Board Binder](#)

**Cherry Creek Basin Water Quality Authority**  
**Schedule of Cash Position**  
September 30, 2023  
as of November 10, 2023

	<b>General Fund</b>	<b>Pollution Abatement Fund</b>	<b>Enterprise Fund</b>	<b>Total</b>
<b><u>1st Bank - Checking Account</u></b>				
Balance as of 09/30/23	\$ 26,809.55	\$ 26,452.13	\$ 5,754.53	\$ 59,016.21
Subsequent activities:				
10/02/23 VISA Charges	(200.00)	-	-	(200.00)
10/17/23 Monthly Transfer for AP	71,000.00	66,000.00	6,000.00	143,000.00
10/25/23 Bill.com Payments	(71,448.89)	(54,579.81)	(5,805.25)	(131,833.95)
10/25/23 Verizon ACH	(51.58)	-	-	(51.58)
10/26/23 XCEL ACH	-	(11,120.16)	-	(11,120.16)
10/31/23 Interest Income	8.32	-	-	8.32
11/06/23 VISA Charges	(200.00)	-	-	(200.00)
<i>Anticipated Activities</i>				
<i>Transfer from ColoTrust for bills</i>	49,000.00	517,000.00	4,000.00	570,000.00
<i>Bill.com open claims</i>	(48,694.92)	(516,057.77)	(4,353.18)	(569,105.87)
<i>Anticipated balance</i>	<u>\$ 26,222.48</u>	<u>\$ 27,694.39</u>	<u>\$ 5,596.10</u>	<u>\$ 59,512.97</u>
<b><u>ColoTrust General - (8001)</u></b>				
Balance as of 09/30/23	\$ 1,385,098.35	\$ 3,028,002.47	\$ 1,542,779.03	\$ 5,955,879.85
Subsequent activities:				
10/10/23 Ptax Arapahoe Cty (Sep)	10,448.42	-	-	10,448.42
10/10/23 Ptax Douglas Cty (Sep)	14,189.30	-	-	14,189.30
10/17/23 Monthly Transfer for AP	(71,000.00)	(66,000.00)	(6,000.00)	(143,000.00)
10/31/23 Deposits Dev Checks	-	-	57,331.60	57,331.60
10/31/23 Interest Income	27,925.61	-	-	27,925.61
11/7/23 Deposits Dev Checks to date	-	-	3,621.72	3,621.72
11/10/23 Ptax Arapahoe Cty (Oct)	10,637.85	-	-	10,637.85
11/10/23 Ptax Douglas Cty (Oct)	15,364.46	-	-	15,364.46
<i>Anticipated Activities</i>				
<i>Monthly Transfer for AP</i>	(49,000.00)	(517,000.00)	(4,000.00)	(570,000.00)
<i>Anticipated balance</i>	<u>\$ 1,343,663.99</u>	<u>\$ 2,445,002.47</u>	<u>\$ 1,593,732.35</u>	<u>\$ 5,382,398.81</u>
<b><u>ColoTrust Pollution Abatement - (8002)</u></b>				
Balance as of 09/30/23	\$ -	\$ 56,510.69	\$ -	\$ 56,510.69
Subsequent activities:				
10/31/23 Interest Income	-	265.97	-	265.97
<i>Anticipated balance</i>	<u>\$ -</u>	<u>\$ 56,776.66</u>	<u>\$ -</u>	<u>\$ 56,776.66</u>
<b><u>CSAFE - Savings Account</u></b>				
Balance as of 09/30/23	\$ 859,161.30	\$ 42,246.04	\$ 404,055.62	\$ 1,305,462.96
Subsequent activities:				
10/31/23 Interest Income	-	-	6,068.12	6,068.12
<i>Anticipated balance</i>	<u>\$ 859,161.30</u>	<u>\$ 42,246.04</u>	<u>\$ 410,123.74</u>	<u>\$ 1,311,531.08</u>
<b><i>Total funds available as of date above</i></b>	<u><u>\$ 2,229,047.77</u></u>	<u><u>\$ 2,571,719.56</u></u>	<u><u>\$ 2,009,452.19</u></u>	<u><u>\$ 6,810,219.52</u></u>
<b><u>Effective monthly yield (as of 10/31/2023)</u></b>				
1st Bank - 0.100%* if Balance >\$20,000				
ColoTrust Plus - 5.5294%				
CSAFE - 5.46%				

**Cherry Creek Basin Water Quality Authority**  
**Paid Claims October 12, 2023 through November 9, 2023**

<b>Process Date</b>	<b>Vendor</b>	<b>Invoice Number</b>	<b>Payment Reference</b>	<b>Amount</b>
10/25/2023	Cherry Creek State Park	Donation032423	P23102401 - 8374637	\$ 1,308.67
10/25/2023	CliftonLarsonAllen LLP	3905210	P23102401 - 8374648	4,591.82
10/25/2023	CliftonLarsonAllen LLP	3905211	P23102401 - 8374664	6,164.78
10/25/2023	Collins Cole Flynn Winn & Ulmer, PLLC	4480	P23102401 - 8374669	5,312.00
10/25/2023	Davis Graham & Stubbs LLP	855940	P23102401 - 8374673	562.50
10/25/2023	LRE Water	24190	P23102401 - 8374658	45,257.37
10/25/2023	Muller Engineering Company	37261	P23102401 - 8374651	15,276.50
10/25/2023	Pinpoint Systems Inc.	10063	P23102401 - 8374675	453.75
10/25/2023	R2R Engineers, Inc.	2023-09	P23102401 - 8374679	18,061.18
10/25/2023	RESPEC	Multiple	P23102401 - 8374640	1,483.88
10/25/2023	RG and Associates LLC	153478	P23102401 - 8374681	8,456.00
10/25/2023	Valerie Endyk	21	P23102401 - 8374661	3,787.50
10/25/2023	Wright Water Engineers, Inc.	Multiple	P23102401 - 8374643	21,118.00
			Subtotal	<b>\$ 131,833.95</b>
<b>Other Payments</b>				
10/25/2023	Verizon		ACH	51.58
10/26/2023	XCEL Energy		ACH	11,120.16
11/6/2023	Get Streamline.com Website		Visa	200.00
			Subtotal	<b>\$ 11,320.16</b>
			<b>Total Payments</b>	<b>\$ 143,154.11</b>



**Cherry Creek Basin Water Quality Authority  
Unpaid Claims as of 11/9/23**

Invoice date	Invoice	Vendor*	Fund	Chart of account	Invoice amount
10/31/2023	857190	Davis Graham & Stubbs LLP	10	7050 - WQCC Regulation Hearings	\$ 250.00
10/31/2023	547-008	Hydros Consulting Inc.	11	7440 - Management/administration	14,938.50
9/30/2023	4992	L & M Enterprises, Inc.	11	7817 - Wetlands Harvesting	90,000.00
10/19/2023	5003	L & M Enterprises, Inc.	11	7812 - PRF Repairs and maintenance	1,498.00
10/25/2023	24539	LRE Water	10	Various Budget Codes Gen Func	30,793.09
10/25/2023	24539	LRE Water	11	7817 - Wetlands Harvesting	322.50
10/21/2023	37438	Muller Engineering Company	40	7683 - Reservoir to 12-Mile Park Study	1,966.93
10/21/2023	37439	Muller Engineering Company	11	7762 - SR - Reservoir to LV Road	11,350.08
10/31/2023	10118	Pinpoint Systems Inc.	10	7480 - Office/Miscellaneous	405.00
10/31/2023	2023-10	R2R Engineers, Inc.	10	7440 - Management/administration	6,581.25
10/31/2023	2023-10	R2R Engineers, Inc.	11	7440 - Management/administration	11,989.60
9/30/2023	INV-0923-968	RESPEC	11	7511 - RSS East Shade Shelter	1,810.00
9/30/2023	INV-0923-969	RESPEC	11	7440 - Management/administration	1,125.00
10/31/2023	153536	RG and Associates LLC	10	7415 - TAC Coordination	3,160.00
10/31/2023	153536	RG and Associates LLC	11	Various Budget Codes PA Func	2,960.00
10/25/2023	45224	Southeast Metro Stormwater Authority	11	7761 - SR - Piney Creek (Reach 1-2)	63,000.00
10/13/2023	13399	TCW Risk Management	10	1280 - PrePaid Insurance	875.00
11/1/2023	INV02980	Urban Drainage and Flood Control District	11	7755 - SR - CC Arapahoe (R3-4)	300,000.00
10/25/2023	22	Valerie Endyk	10	7201 - Administrative Assistant	4,500.00
11/30/2023	SEP	Verizon (Estimate)	10	7480 - Miscellaneous	51.58
9/30/2023	68003	Wright Water Engineers, Inc	40	7677 - CCBQWA Planning	2,386.25
10/31/2023	68138	Wright Water Engineers, Inc	10	7050 - WQCC Regulation Hearings	2,079.00
10/31/2023	68138	Wright Water Engineers, Inc	11	7440 - Management/administration	16,128.75
10/31/2023	851629935	Xcel Energy	11	7818 - Utilities - Reservoir Destratificator	935.34
					<b>\$ 569,105.87</b>

General Fund - 10	\$ 48,694.92
Pollution Abatement Fund - 11	516,057.77
Enterprise Fund - 4C	4,353.18
<b>Total Claims by Funding Source</b>	<b>\$ 569,105.87</b>

\* by vendor



## ACTION ITEM MEMORANDUM

To: CCBWQA Board of Directors  
From: Richard Borchardt, Pollution Abatement Project Manager  
Date: November 16, 2023  
Subject: Time of performance extensions to Consultant Agreements/Amendment

**Request:** The Board approves the extending of the contract time of performance and authorizes the appropriate contract amendments be prepared, and delegates authority to the Board Chair and Secretary to sign the amendments.

**Projects:** The Board previously approved the Consultant Agreements/Amendments with times of performance. Due to various reasons beyond the control of these Consultants, time extensions are needed to complete their work, which requires board action. These time extensions include the following Consultant Agreements/Amendments.

- Wright Water Engineers for the Best Management Practices (BMP) Effectiveness Study that has a completion date of December 31, 2023, was delayed incorporating updates from the Mile High Flood District's Volume 3 Criteria Manual and would be extended to June 30, 2024.
- Wright Water Engineers for Lone Tree, Windmill, and Cottonwood Creeks Major Drainageway Planning Study (MDP) within Cherry Creek State Park that has a completion date of September 30, 2023, was delayed matching the report and review schedule of MDP for upstream watershed and would be extended to June 30, 2024.
- RESPEC for the design of the East Shade Shelters and Tower Loop Shoreline Stabilization projects that has a completion date of December 30, 2023, was delayed due to the 2023 storm events and damage and Colorado Parks and Wildlife staff changes and coordination and would be extended to June 30, 2024.
- Muller for the alternatives analysis on Cherry Creek from Reservoir to Lake View Drive (aka Reach 1) that has a completion date of December 20, 2023, was delayed by due to the 2023 storm events and damage and staffing changes and would be extended to June 30, 2024.

**TAC Review:** TAC has not reviewed this time extension.

**Budget:** No additional costs are associated with these contract time of performance extensions.

**Motion:** **No separate motion is required. This item is included under the consent agenda for Board Authorization.**



# Special Districts Master Services Agreement

Cherry Creek Basin Water Quality Auth  
8390 E. Crescent Pkwy., Ste.300, Greenwood Village, CO, 80111  
MSA Date: October 15, 2023

This master service agreement (“MSA”) documents the terms, objectives, and the nature and limitations of the services CliftonLarsonAllen LLP (“CLA,” “we,” “us,” and “our”) will provide for Cherry Creek Basin Water Quality Auth (“you,” “your,” “board of directors” or “the district”). The terms of this MSA will apply to the initial and each subsequent statement of work (“SOW”), unless the MSA is changed in a communication that you and CLA both sign or is terminated as permitted herein.

## **Scope of professional services**

CLA will provide services as described in one or more SOW that will reference this MSA. The SOW will describe the scope of professional services; the nature, limitations, and responsibilities related to the specific services CLA will provide; and the fees for such services.

If modifications or changes are required during CLA’s performance of requested services, or if you request that we perform any additional services, we will provide you with a separate SOW for your signature. Such SOW will advise you of the additional fee and time required for such services to facilitate a clear understanding of the services.

Our services cannot be relied upon to disclose errors, fraud, or noncompliance with laws and regulations. Except as described in the scope of professional services section of this MSA or any applicable SOW, we have no responsibility to identify and communicate deficiencies in your internal control as part of any services.

## **Board of director responsibilities**

The board of directors of the district acknowledge and understand that our role is to provide the services identified in one or more SOWs issued per this MSA and that the board of directors of the district has certain responsibilities that are fundamental to our undertaking to perform the identified services. The district may engage CLA to perform management functions to help the board of directors of the district to meet your responsibilities, but the board of directors of the district acknowledges its role in management of the district.

## **Responsibilities and limitations related to nonattest services**

For all nonattest services we may provide to you, you agree to oversee all management services; evaluate

the adequacy and results of the services; ensure that your data and records are complete; and accept responsibility for the results of the services. CLA and the district agree that the foregoing sentence is not intended and shall not be construed to be a limitation of liability for the benefit of CLA nor an exculpatory clause for the benefit of CLA. CLA is and will remain liable to the district for CLA's negligence and gross negligence in the work that it performs under this MSA or under any SOW.

### **Fees and terms**

See the applicable SOW for the fees for the services.

Work may be suspended if your account becomes 60 days or more overdue and will not be resumed until your account is paid in full. If we elect to terminate our services for nonpayment, our engagements will be deemed to have been completed even if we have not completed the services. You will be obligated to compensate us for all time expended and to reimburse us for all out-of-pocket expenditures permitted by this MSA through the date of termination.

Payments may be made utilizing checks, Bill.com, your online banking platform, CLA's electronic payment platform, or any other client initiated payment method approved by CLA. CLA's electronic online bill pay platform [claconnect.com/billpay](http://claconnect.com/billpay) accepts credit card and Automated Clearing House (ACH) payments. Instructions for making direct bank to bank wire transfers or ACH payments will be provided upon request.

### **Other Fees**

You also agree to compensate us for any time and expenses, including time and expenses of legal counsel, we may incur in responding to discovery requests or participating as a witness or otherwise in any legal, regulatory, or other proceedings that we are asked to respond to on your behalf.

### **Finance charges and collection expenses**

You agree that if any statement is not paid within 30 days from its billing date, the unpaid balance shall accrue interest at the monthly rate of one percent (1.00%), which is an annual percentage rate of 12%. In the event that any collection action is required to collect unpaid balances due us, reasonable attorney fees and expenses shall be recoverable if and as provided by Colorado law.

### **Limitation of remedies**

Each party agrees that in no event shall the other party be liable for any indirect, special, incidental, consequential, punitive or exemplary damages, or for loss of profits or loss of goodwill, costs, or attorney fees.

The exclusive remedy available to you shall be the right to pursue claims for actual damages related to CLA's acts or omissions in performance of our duties under the terms of this MSA or any SOW issued under this MSA.

### **Time limitation**

The nature of our services makes it difficult, with the passage of time, to gather and present evidence that fully and fairly establishes the facts underlying any dispute that may arise between you and any CLA party. Any legal or equitable action brought by the district to recover on a dispute shall be commenced within the applicable statute of limitations under Colorado state statutes and case law.

**CLA shall be authorized to the following cash access services:**

- Using any or a combination of the following methods and approval processes, we will pay your vendors and service providers based upon invoices that you have reviewed and approved:
  - Paper checks – we will prepare the checks for your approval and wet ink signature
  - Payments using Bill.com – we will only release payments after you have electronically approved and authorized such payments
  - ACH/Wire – we will use this method as needed/as requested, with your approval

We understand that you will designate one or more members of the board of directors to approve disbursements using the above methods.

- If applicable, access the entity credit card for purposes of purchasing products and services on your behalf up to a certain limit that will be discussed with you and documented separately
- Obtain administrator access to your bank accounts for purposes of performing the duties documented in our engagement letter identified above
- Take deposits to the bank that include cash
- If applicable, have access to cash-in-kind assets, such as coupons
- If applicable, initiate direct deposits or sign checks as part of the payroll processing function

**Board of Directors' responsibilities relevant to CLA's access to your cash**

All members of your board of directors are responsible for the processes below; however, we understand that you will designate one or more board of directors to review and give approvals for disbursements. All approvals must be documented in writing, either electronically or manually, then formally ratified in board meetings and documented in the meeting minutes.

- Approve all invoices and check payments
- Approve all new vendors and customers added to the accounting system
- Approve non-recurring wires to external parties
- Pre-approve for recurring wires, then board of directors will ratify approval
- Approve all new employees and all employee status changes prior to those employees or changes being added to the payroll system
- Approve all credit card statements prior to those expenses being processed in the accounting system and subsequently paid

- Approve (or delegate to the CLA controller if applicable) all customer and vendor credit memos and accounts receivable amounts written off
- Review and approve (or delegate to the CLA controller if applicable) all bank statements and affiliated monthly reconciliations

### **Other provisions**

Except as expressly permitted by the “Consent” section of this agreement, CLA shall not disclose any confidential, proprietary, or privileged information of the district or you to any person or party, unless the district or you authorizes us to do so, it is published or released by the district, it becomes publicly known or available other than through disclosure by us, or disclosure is required by law. This confidentiality provision does not prohibit us from disclosing your information to one or more of our affiliated companies in order to provide services that you have requested from us or from any such affiliated company. Any such affiliated company shall be subject to the same restrictions on the use and disclosure of your information as apply to us.

Pursuant to authority given by law or regulation, we may be requested to make certain workpapers available to a regulator for its regulatory oversight purposes. We will notify you of any such request, if permitted by law. Access to the requested workpapers will be provided to the regulator under the supervision of CLA personnel and at a location designated by our firm. Furthermore, upon request, we may provide copies of selected workpapers to such regulator. The regulator may intend, or decide, to distribute the copies or information contained therein to others, including other governmental agencies.

You acknowledge and agree that this agreement and the pricing structure and billing rates of CLA are sensitive information which you shall not furnish or otherwise disclose to any third party without the prior written consent of CLA or as required by the Colorado Open Records Act, Section 24-72-200.1 et seq., C.R.S. (“CORA”).

### **Insurance:**

CLA shall acquire and maintain in full force and effect, during the entire term of the MSA, the insurance coverages set forth in below in order to protect the district including its board of directors, and CLA from claims that arise out of or result from the operations under this MSA by the CLA or its affiliates or by anyone acting on their behalf or for which they may be liable. Failure to maintain the insurance policies shall be a material breach of this MSA and the district may request certificates of insurance reflecting the coverages outlined below.

- A.** Workers’ Compensation Insurance
- B.** Commercial General Liability Insurance
- C.** Commercial Automobile Liability Insurance
- D.** General Professional Liability
- E.** Network Security (Cyber) Liability Insurance

## **F. Excess/Umbrella Liability Coverage**

The relationship of CLA with the district shall be solely that of an independent contractor and nothing in this agreement shall be construed to create or imply any relationship of employment, agency, partnership, or any relationship other than an independent contractor.

If applicable, accounting standards and procedures will be suggested that are consistent with those normally utilized in a district of your size and nature. Internal controls may be recommended relating to the safeguarding of the district's assets. If fraud is initiated by your employees or other service providers, your insurance is responsible for covering any losses.

The district agrees that CLA will assume fiduciary responsibility on the district's behalf during the course of this agreement only if provided in SOWs issued under this MSA; and the parties, in entering into this MSA, do not intend to create an overarching fiduciary relationship.

CLA may, at times, utilize external web applications to receive and process information from our clients; however, it is not appropriate for you to upload protected health information using such applications. All protected health information contained in a document or file that you plan to transmit to us via a web application must be redacted by you to the maximum extent possible prior to uploading the document or file. In the event that you are unable to remove or obscure all protected health information, please contact us to discuss other potential options for transmitting the document or file.

### **Annual Appropriation and Budget**

The district does not intend hereby to create a multiple-fiscal year direct or indirect debt or other financial obligation whatsoever. CLA expressly understands and agrees that the district's obligations under this MSA shall extend only to monies appropriated for the purposes of this MSA by the board of directors and shall not constitute a mandatory charge, requirement or liability in any ensuing fiscal year beyond the then-current fiscal year. No provision of this MSA shall be construed or interpreted as a delegation of governmental powers by the district, or as creating a multiple-fiscal year direct or indirect debt or other financial obligation whatsoever of the district or statutory debt limitation, including, without limitation, Article X, Section 20 or Article XI, Section 6 of the Constitution of the State of Colorado. No provision of this MSA shall be construed to pledge or to create a lien on any class or source of district funds. The district's obligations under this MSA exist subject to annual budgeting and appropriations, and shall remain subject to the same for the entire term of this MSA.

### **Governmental Immunity**

Nothing in this MSA shall be construed to waive, limit, or otherwise modify, in whole or in part, any governmental immunity that may be available by law to the district, its respective officials, employees, contractors, or agents, or any other person acting on behalf of the district and, in particular, governmental immunity afforded or available to the district pursuant to the Colorado Governmental Immunity Act, §§ 24-10-101, et seq., C.R.S.

### **No Third-Party Beneficiaries**

It is expressly understood and agreed that enforcement of the terms and conditions of this MSA, and all rights of action relating to such enforcement, shall be strictly reserved to the Parties and nothing contained

in this MSA shall give or allow any such claim or right of action by any third party. It is the express intention of the Parties that any person other than Parties receiving services or benefits under this MSA shall be deemed to be an incidental beneficiary only.

### **Personal Identifying Information**

During the performance of this MSA, the district may disclose Personal Identifying Information to CLA. “Personal Identifying Information” means a social security number; a personal identification number; a password; a pass code; an official state or government-issued driver’s license or identification card number; a government passport number; biometric data, as defined in § 24-73-103(1)(a), C.R.S.; an employer, student, or military identification number; or a financial transaction device, as defined in § 18-5-701(3), C.R.S. In compliance with § 24-73-102, C.R.S., CLA agrees to implement and maintain reasonable security procedures and practices that are: (i) appropriate to the nature of the Personal Identifying Information disclosed to CLA; and (ii) reasonably designed to help protect the Personal Identifying Information from unauthorized access, use, modification, disclosure, or destruction.

**CLA agrees to report within twenty-four (24) hours to the district’s board of directors any Data Security Incidents that may result in the unauthorized disclosure of Personal Identifying Information. For the purposes of this MSA “Data Security Incident” is defined to mean any actual or reasonably suspected: (a) unauthorized use of, or unauthorized access to, CLA systems; (b) inability to access business and other proprietary information, data, or the CLA systems due to a malicious use, attack, or exploit of such business and other proprietary information or systems; (c) unauthorized access to, theft of, or loss of business and other proprietary information, or of storage devices that could reasonably contain such information; (d) unauthorized use of business and other proprietary information or data for purposes of actual or reasonably suspected theft, fraud, or identity theft; (e) unauthorized disclosure of business and other proprietary information or data.**

### **Consent to use financial information**

Annually, we assemble a variety of benchmarking analyses using data obtained through our client engagements. Some of this benchmarking information is published and released publicly. However, the information that we obtain is confidential, as required by the AICPA Code of Professional Conduct. Your acceptance of this MSA will serve as your consent to use of Cherry Creek Basin Water Quality Auth information, excluding Personal Identifying Information, in these cost comparison, performance indicator, and/or benchmarking reports.

### **Technology**

CLA may, at times, use third-party software applications to perform services under this agreement. CLA can provide a copy of the application agreement at your request. You acknowledge the software vendor may have access to your data.

Colorado law requires special districts to maintain websites and further requires that certain documents which may be prepared by CLA to be uploaded to those websites. CLA specifically acknowledges and agrees that the district may upload to its website any documents prepared by CLA for the district and further, that those documents may be used in public meetings hosted by or to which the district is a party.



### **Counterpart Execution**

This MSA may be executed in counterparts, each of which shall be deemed an original, and all of which together shall constitute one and the same instrument.

### **Electronic Signatures**

The parties consent to the use of electronic signatures pursuant to the Uniform Electronic Transactions Act, Sections 24-71.3-101, et seq., Colorado Revised Statutes, as may be amended from time to time. The MSA, and any other documents requiring a signature hereunder, may be signed electronically by the parties in a manner acceptable to the district. The parties agree not to deny the legal effect or enforceability of the MSA solely because it is in electronic form or because an electronic record was used in its formation. The parties agree not to object to the admissibility of the MSA in the form of an electronic record, or a paper copy of an electronic document, or a paper copy of a document bearing an electronic signature, on the ground that it is an electronic record or electronic signature or that it is not in its original form or is not an original.

### **MSA Modification**

The MSA may not be amended, altered, or otherwise changed except by a written agreement signed by authorized representatives of the parties.

### **Termination of MSA**

Either party may terminate this MSA at any time by giving 30 days written notice to the other party. In that event, the provisions of this MSA shall continue to apply to all services rendered prior to termination.

### **Agreement**

We appreciate the opportunity to be of service to you and believe this MSA accurately summarizes the significant terms of our relationship. This MSA, along with the applicable SOW(s), constitute the entire agreement regarding services to be performed and supersedes all prior agreements (whether oral or written), understandings, negotiations, and discussions between you and CLA. If you have any questions, please let us know. If you agree with the terms of our relationship as described in this MSA, please sign, date, and return.

### **CliftonLarsonAllen LLP**

Jason Carroll  
Managing Principal of Office  
303-265-7835  
jason.carroll@CLAconnect.com

### **Response**

This MSA correctly sets forth the understanding of Cherry Creek Basin Water Quality Auth and is accepted by:

**CLA**  
CliftonLarsonAllen LLP

*Jason Carroll*

Jason Carroll, Managing Principal of Office

**SIGNED** 10/17/2023, 4:42:39 PM CDT

**Client**  
Cherry Creek Basin Water Quality Auth

SIGN: \_\_\_\_\_

Joshua Rivero, Chair

DATE: \_\_\_\_\_



# Special Districts Preparation Statement of Work

Date: October 18, 2023

This agreement constitutes a Statement of Work (“SOW”) to the Master Service Agreement (“MSA”) made by and between CliftonLarsonAllen LLP (“CLA,” “we,” “us,” and “our”) and Cherry Creek Basin Water Quality Auth (“you,” “your,” “board of directors” or “the district”) dated October 15, 2023 or any superseding MSA. The purpose of this SOW is to outline certain services you wish us to perform through December 31, 2024 in connection with that agreement.

## **Scope of professional services**

Jason Carroll is responsible for the performance of the preparation engagement and other services identified in this agreement. They may be assisted by one or more of our authorized signers in the performance of the preparation engagement.

## **Ongoing normal accounting services:**

- Outsourced accounting activities
  - For each fund of the district, CLA will generally prepare and maintain the following accounting records:
    - Cash receipts journal
    - Cash disbursements journal
    - General ledger
    - Accounts receivable journals and ledgers
    - Deposits with banks and financial institutions
    - Schedule of disbursements
    - Bank account reconciliations
    - Investment records
    - Detailed development fee records

- Process accounts payable including the preparation and issuance of checks for approval by the board of directors
- Prepare billings, record billings, enter cash receipts, and track revenues
- Reconcile certain accounts regularly and prepare journal entries
- Prepare depreciation schedules
- Prepare quarterly financial statements and supplementary information, but not perform a compilation with respect to those financial statements; additional information is provided below
- Prepare a schedule of cash position to monitor the district's cash deposits, funding for disbursements, and investment programs in accordance with policies established by the district's board of directors and in accordance with state law
- At the direction of the board of directors, assist with the coordination and execution of banking and investment transactions and documentation
- Prepare the annual budget and assist with the filing of the annual budget
- Assist the district's board of directors in monitoring actual expenditures against appropriation/budget
- If an audit is required, prepare the year-end financial statements (additional information is provided below) and related audit schedules for use by the district's auditors
- If an audit is not required, prepare the Application for Exemption from Audit, perform a compilation engagement with respect to the Application for Exemption from Audit, and assist with the filing of the Application for Exemption from Audit – additional information is provided below
- Monitor compliance with bond indentures and trust agreements, including preparation of continuing disclosure reports to the secondary market as required
- Review claims for reimbursement from related parties prior to the board of directors' review and approval
- Read supporting documentation related to the district's acquisition of infrastructure or other capital assets completed by related parties for overall reasonableness and completeness
  - Procedures in excess of providing overall reasonableness and completeness will be subject to a separate SOW

- These procedures may not satisfy district policies, procedures, and agreements' requirements
  - Note: our procedures should not be relied upon as the final authorization for this transaction
- Attend board meetings as requested
  - Be available during the year to consult with you on any accounting matters related to the district
  - Review and approve monthly reconciliations and journal entries prepared by staff
  - Reconcile complex accounts monthly and prepare journal entries
  - Analyze financial statements and present to management and the board of directors
  - Develop and track key business metrics as requested and review periodically with the board of directors
  - Document accounting processes and procedures
  - Continue process and procedure improvement implementation
  - Report on cash flows
  - Assist with bank communications
  - Perform other non-attest services

### **Compilation services**

If an audit is not required, we will complete the Application for Exemption from Audit in the form prescribed by the Colorado Office of the State Auditor and perform a compilation engagement with respect to the Application for Exemption from Audit.

### **Preparation services - financial statements**

We will prepare the quarterly financial statements of the governmental activities, the business-type activities, the aggregate discretely presented component units, each major fund, and the aggregate remaining fund information if applicable of the district, which comprise the balance sheet – governmental funds and the related statement of revenues, expenditures, and changes in fund balance – general fund. The financial statements will not include the related notes to the financial statements; the government-wide financial statements; the statement of revenues, expenditures, and changes in fund balances – governmental funds; statement of cash flows for business type activities, if applicable; and required supplementary information.

### **Preparation services - annual**

If an audit is required, we will prepare the year-end financial statements of the government wide governmental activities, the business-type activities, the aggregate discretely presented component units, each major fund, and the aggregate remaining fund information if applicable, and Management Discussion and Analysis, if applicable, which collectively comprise the basic financial statements of the district, and the related notes to the financial statements. The year-end financial statements, including the related notes to the financial statements, will be prepared for use by the district's auditors.

**Preparation services – prospective financial information (i.e., unexpired budget information)**

You have requested that we prepare the financial forecast, which comprises the forecasted financial statements identified below.

A financial forecast presents, to the best of management's knowledge and belief, the entity's expected financial position, results of operations, and cash flows for the forecast period. It is based on management's assumptions reflecting conditions it expects to exist and the course of action it expects to take during the forecast period.

The financial forecast will omit substantially all of the disclosures required by the guidelines for presentation of a financial forecast established by the American Institute of Certified Public Accountants (AICPA presentation guidelines) other than those related to the significant assumptions.

The supplementary information accompanying the financial forecast will be prepared and presented for purposes of additional analysis and is not a required part of the basic financial forecast. References to financial statements in the remainder of this SOW are to be taken as a reference to also include the prospective financial information, where applicable.

**Engagement objectives and our responsibilities**

The objectives of our engagement are to:

- a) Prepare quarterly financial statements in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP), except for the departures from U.S. GAAP identified above, based on information provided by you and information generated through our outsourced accounting services.
- b) As requested, apply accounting and financial reporting expertise to assist you in the presentation of your quarterly financial statements without undertaking to obtain or provide any assurance that there are no material modifications that should be made to the financial statements in order for them to be in accordance with U.S. GAAP, except for the departures from U.S. GAAP identified above.
- c) Prepare the annual budget in accordance with the requirements prescribed by Colorado Revised Statutes C.R.S. 29-1-105 based on information provided by you.
- d) Apply accounting and financial reporting expertise to assist you in the presentation of the annual budget without undertaking to obtain or provide any assurance that there are no material

modifications that should be made to the annual budget in order for the annual budget to be in accordance with requirements prescribed by Colorado Revised Statutes C.R.S. 29-1-105.

- e) If an audit is required, prepare the year-end financial statements in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP) based on information provided by you.
- f) If applicable, we will complete the Application for Exemption from Audit in the form prescribed by the Colorado Office of the State Auditor and perform a compilation engagement on the application.

We will conduct our preparation and compilation engagements in accordance with Statements on Standards for Accounting and Review Services (SSARSS) promulgated by the Accounting and Review Services Committee of the American Institute of Certified Public Accountants (AICPA) and comply with the AICPA's Code of Professional Conduct, including the ethical principles of integrity, objectivity, professional competence, and due care.

#### **Engagement procedures and limitations**

We are not required to, and will not, verify the accuracy or completeness of the information provided to us for the engagement or otherwise gather evidence for the purpose of expressing an opinion or a conclusion. Accordingly, we will not express an opinion, a conclusion, nor provide any assurance on the financial statements, the annual budget, the Application for Exemption from Audit (if an audit is not required), the year-end financial statements (if an audit is required), and the supplementary information.

Our engagement cannot be relied upon to identify or disclose any misstatements in the quarterly financial statements, the annual budget, the Application for Exemption from Audit, and the year-end financial statements, including misstatements caused by fraud or error, or to identify or disclose any wrongdoing within the district or noncompliance with laws and regulations. However, if any of the foregoing are identified as a result of our engagement, we will promptly report this information to the board of directors of the district. We have no responsibility to identify and communicate deficiencies in your internal control as part of this engagement, but will promptly report them to the board of directors of the district if they are identified. You agree that we shall not be responsible for any misstatements in the district's financial statements, the annual budget, the Application for Exemption from Audit, and the year-end financial statements that we may not identify as a result of misrepresentations made to us by you.

#### **Our report**

The compilation report on the Application for Exemption from Audit will state that management is responsible for the accompanying application included in the prescribed form, that we performed a compilation of the application, that we did not audit or review the application, and that, accordingly, we do not express an opinion a conclusion, nor provide any form of assurance on it. The report will also state that the Application for Exemption from Audit is presented in accordance with the requirements of the Colorado Office of the State Auditor and is not intended to be a presentation in accordance with accounting principles generally accepted in the United States of America. The report will include a statement that the report is intended solely for the information and use of the Colorado Office of the State Auditor and is not intended to be and should not be used by anyone other than this specified party and may not be suitable for another

purpose.

There may be circumstances in which the report may differ from its expected form and content. If, for any reason, we are unable to complete the compilation on the Application for Exemption from Audit (if an audit is not required), we will not issue report on the Application for Exemption from Audit as a result of this engagement.

### **No assurance statements**

The quarterly financial statements prepared for the district will not be accompanied by a report. However, management agrees that each page of the financial statements will include a statement clearly indicating that no assurance is provided on them.

As part of our preparation of financial statements each page of the financial statements and supplementary information will include the following statement: “No assurance is provided on these financial statements. Substantially all required disclosures, the government-wide financial statements, and the statement of revenues, expenditures, and changes in fund balances – governmental funds have been omitted if applicable, For business type activities, the Statement of Cash Flows has been omitted”.

If an audit is required, the year-end financial statements prepared for use by the district’s auditors will not be accompanied by a report. However, management agrees that each page of the year-end financial statements will include a statement clearly indicating that no assurance is provided on them.

### **Management responsibilities**

The financial statement engagement to be performed is conducted on the basis that management acknowledges and understands that our role is to prepare financial statements in accordance with U.S. GAAP and assist management in the presentation of the financial statements in accordance with U.S. GAAP, except for the departures from U.S. GAAP identified above.

The annual budget engagement to be performed is conducted on the basis that management acknowledges and understands that our role is to prepare the annual budget in accordance with the requirements prescribed by Colorado Revised Statutes C.R.S. 29.1.105 and assist management in the presentation of the annual budget in accordance with the requirements prescribed by Colorado Revised Statutes C.R.S. 29.1.105.

The Application for Exemption from Audit engagement to be performed is conducted on the basis that management acknowledges and understands that our role is to prepare the Application for Exemption from Audit in accordance with the requirements prescribed by the Colorado Office of the State Auditor and assist management in the presentation of the Application for Exemption from Audit in accordance with the requirements prescribed by the Colorado Office of the State Auditor.

We are required by professional standards to identify management’s responsibilities in this agreement. Professional standards define management as the persons with executive responsibility for the conduct of the district’s operations and may include some or all of those charged with governance. Those standards require that you acknowledge and understand that management has the following overall responsibilities that are fundamental to our undertaking the engagement in accordance with SSARs:



- a) The selection of the financial reporting framework to be applied in the preparation of the financial statements, the annual budget, and the Application for Exemption from Audit.
- b) The preparation and fair preparation of the financial statements in accordance with U.S. GAAP, except as identified as above, the preparation and fair presentation of the annual budget in accordance with the requirements prescribed by Colorado Revised Statutes C.R.S. 29.1.105, and the preparation and fair presentation of the Application for Exemption from Audit (if applicable) in accordance with the requirements prescribed by the Colorado Office of the State Auditor.
- c) The presentation of the supplementary information.
- d) The design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements, the annual budget, and the Application for Exemption from Audit (if applicable) that are free from material misstatement, whether due to fraud or error.
- e) The prevention and detection of fraud.
- f) To ensure that the entity complies with the laws and regulations applicable to its activities.
- g) The accuracy and completeness of the records, documents, explanations, and other information, including significant judgments, you provide to us for the engagement to prepare financial statements.
- h) To provide us with the following:
  - i) Access to all information relevant to the preparation and fair presentation of the financial statements, and the annual budget, the Application for Exemption from Audit (if applicable) such as records, documentation, and other matters.
  - ii) Additional information that may be requested for the purpose of the engagement.
  - iii) Unrestricted access to persons within the entity with whom we determine it necessary to communicate.

We understand that you are engaging us to make recommendations and perform services to help you meet your responsibilities relevant to the preparation and fair presentation of the financial statements, the annual budget, and the Application for Exemption from Audit (if applicable).

For all accounting services we may provide to you, including the preparation of your financial statements, the annual budget, and the Application for Exemption from Audit (if applicable), management agrees to assume all management responsibilities; oversee the services by designating an individual (i.e., the board treasurer); evaluate the adequacy and results of the services; and accept responsibility for the results of the services.

## **Fees and terms**

Billing rates guaranteed through **December 31, 2024**:

<b>Services performed by</b>	<b>Rate per hour</b>
Principal	\$300-\$600
Consulting CFO	\$290-\$400
Consulting Controller	\$240-\$380
Assistant Controller	\$210-\$290
Senior	\$150-\$220
Staff	\$130-\$190
Administrative Support	\$120-\$170

Subsequent to the billing rate guarantee date, the rates may be adjusted as agreed between you and CLA through a new SOW.

Our professional fees will be billed based on the degree of responsibility and contribution of the professionals working on the engagement. We will also bill for expenses (including internal and administrative charges) plus a technology and client support fee of five percent (5%) of all professional fees billed.

**Use of financial statements, the annual budget, the Application for Exemption from Audit**

The financial statements, the annual budget, and the Application for Exemption from Audit (if applicable) are for management's use. If you intend to reproduce and publish the financial statements, the annual budget, and the Application for Exemption from Audit (if applicable) and our report thereon, they must be reproduced in their entirety. Inclusion of the financial statements, the annual budget, and the Application for Exemption from Audit (if applicable) in a document, such as an annual report or an offering document, should be done only with our prior approval of the document. You are responsible to provide us the opportunity to review such documents before issuance.

With regard to the electronic dissemination of financial statements, the annual budget, and the Application for Exemption from Audit (if applicable) that have been subjected to a compilation engagement, including financial statements, the annual budget, and the Application for Exemption from Audit (if applicable) published electronically on your website, you understand that electronic sites are a means to distribute information and, therefore, we are not required to read the information contained in those sites or to consider the consistency of other information in the electronic site with the original document.

We may issue preliminary draft financial statements to you for your review. Any preliminary draft financial

statements should not be relied on or distributed.

**Municipal advisors**

For the avoidance of doubt, the district is not engaging CLA as a municipal advisor, and CLA is not a municipal advisor as defined in Section 975 of the Dodd-Frank Wall Street Reform and Consumer Protection Act or under Section 158 of the Securities Exchange Act of 1934 (the “Act”). CLA is not recommending an action to you, is not acting as an advisor to you, and does not owe a fiduciary duty to you pursuant to Section 158 of the Act with respect to the information and material contained in the deliverables issued under this engagement. You should discuss any information and material contained in the deliverables with any and all internal and external advisors that you deem appropriate before acting on this information or material.

**Agreement**

We appreciate the opportunity to provide the services described in this SOW related to the MSA. All terms and provisions of the MSA shall apply to these services. If you agree with the terms of this SOW, please sign below and return a signed copy to us to indicate your acknowledgment and understanding of, and agreement with, this SOW.

**CliftonLarsonAllen LLP**

Jason Carroll  
Managing Principal of Office  
303-265-7835  
jason.carroll@CLAconnect.com

**Response**

This SOW correctly sets forth the understanding of Cherry Creek Basin Water Quality Auth and is accepted by:

**CLA**  
CliftonLarsonAllen LLP

*Jason Carroll*

---

Jason Carroll, Managing Principal of Office

**SIGNED** 10/18/2023, 3:01:41 PM CDT

**Client**  
Cherry Creek Basin Water Quality Auth

SIGN:

---

Joshua Rivero, Chair

DATE:

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November 16, 2023

Board of Directors  
Cherry Creek Basin Water Quality Authority  
P.O. Box 3166  
Centennial, CO 80161

**Re: 2023 Letter of Engagement**

Dear Board Members:

I am pleased that the Board of Directors (“Board”) of the Cherry Creek Basin Water Quality Authority (the “Client”) desires to continue the retention of Collins Cole Flynn Winn & Ulmer, PLLC, a Colorado professional limited liability company (the “Law Firm”), as the Client’s general counsel for 2024. This letter is intended to outline the terms governing our service to the Client.

1. Scope of Services.

The Law Firm will advise the Client on all Client-related matters referred to the Law Firm by the Client. We will take our direction from the Board of Directors (“Board”) and the President and/or Secretary of the Board, or such other person as is designated by the Board to be its representative and spokesperson for purposes of communication with the Law Firm. We do not represent (i) any person or entity (except the Client itself); (ii) individual members of the Board; or (iii) employees or agents of the Client (collectively, the “Other Persons”), and all services are provided only for the benefit of the Client and not for the Other Persons. The Law Firm owes professional responsibilities only to the Client itself. In all matters involving the Client, such Other Persons should retain their own legal counsel.

2. Designation of Attorneys and Assistants.

I will serve as the Attorney primarily responsible for the legal services rendered to the Client. My billing rate is currently \$415.00 per hour. Other qualified Attorneys and paralegals may perform services for the Client under my supervision in order to most effectively provide a particular service or to minimize costs. A listing of the other attorneys in the firm and their hourly billing rates is attached hereto as Exhibit A. These rates may be updated on or before January 1, 2024 and I will inform the Board of the revised rates at that time.

3. Term.



Our engagement shall continue effective January 1, 2024 upon the Board's approval of this engagement letter and will remain in effect through December 31, 2024, unless terminated by either party, with or without cause, upon 30 days prior written notice to the other party.

4. Compensation.

The Law Firm shall provide to the Client a monthly billing statement detailing the services rendered and the amount of time spent in performance thereof. The Client shall pay for the total time of all attorneys, paralegals and law clerks at the current rates in effect for the services rendered.

Secretarial and legal assistance services are not routinely billed to the Client, but out-of-the-ordinary use of a secretarial or legal assistance person's time may be billed in the attorney's reasonable discretion. Paralegals and law clerks are utilized when their skills are commensurate with a particular project, so as to minimize the costs billed to the Client. The attorney supervises the work product of associate attorneys, paralegals and law clerks.

The Client shall pay for Services within thirty days of the date of the invoice. The Law Firm shall not be obligated to perform any Services if payment of fees is sixty days overdue.

5. Expenses.

Expenses for which the Law Firm will or will not receive reimbursement are as follows, along with the rates for such reimbursement:

(a) Mileage.

No charge, unless lengthy travel distance.



(b) Out-of-Town Travel.

Expenses at cost without mark-up. Travel time by attorneys and staff will be billed at current billing rates. Trips will be coordinated with other clients, to the extent possible, to minimize travel costs.

(c) Long-Distance Telephone Service.

No charge.

(d) Teleconferencing.

Billed at cost without mark-up.

(e) Computer Expenses.

No charge, except for computer research, Lexis/Nexis or other special costs; billed at actual cost without mark-up.

(f) Photocopies.

No charge for in-house copying, unless large volume of copying. Outside copying and printing billed at actual cost without mark-up.

(g) Postage.

No charge for usual first-class mailings, such as mailings to the Client, courts, counsel of record and other consultants. Mass mailings, such as election notices, and overnight and special delivery mailings billed at actual cost without mark-up.



(h) Couriers.

Courier service will be used on an as-needed basis with the cost thereof being billed to the Client without mark-up.

(i) Other Reimbursables.

Other reimbursables include our payment of filing fees, costs for service of process and related services, expert witness fees (only as pre-authorized by the Client), court reporter fees for transcript of testimony, court reporter appearance fees, county clerk and recorder's fees for recording of documents, title company's fees for reports of title, publication fees, election materials and other related expenses. All such reimbursables will be billed to the Client at cost without mark-up.

(j) Other Expenses.

Certain services and expenses not otherwise documented herein (e.g., private investigator, special counsel, etc.) may become necessary under certain circumstances. To the extent that such services are required, the Law Firm will first obtain authorization from the Client before incurring such costs. As such expenses are incurred, they will be billed to the Client.

6. Potential Conflict of Interest.

I am not aware of any potential conflict of interest that may stem from my ongoing representation of other clients.





7. Communications between Law Firm and Client.

Written and oral communication between the Law Firm and the Client on the Client's matters shall be made using all current forms of technology including mail, courier, email, POTS, VoIP and cellular telephone, and other electronic means of communication as such technology becomes available. The security of such means of communication, particularly electronic means such as e-mail and cellular telephone cannot be guaranteed, and therefore a risk exists that privileges such as the attorney-client privilege may be waived if a communication is inadvertently received by persons other than the Client. If the Client desires to avoid the risk of inadvertent disclosure by any particular means of communication, the Client must contact the Law Firm and instruct the Law Firm as to any unacceptable means of communication for Client matters.

8. Cloud Services.

During and/or after termination of our engagement we may use cloud services. Where we do so, or where we use a subcontractor to provide cloud services, we will ensure an appropriate level of security.

9. Disclaimer of Warranties.

There can be no warranties as to the success of any matter undertaken by the Law Firm in the representation of the Client. All expressions made by the Law Firm relative thereto are solely matters of the Law Firm's opinion.

10. Power of Attorney to Execute Documents.

The Client grants to the Law Firm the power to execute documents connected with the representation of the Client, which have been generally approved by the Client, including pleadings, applications, protests, contracts, commercial papers, settlement agreements and



releases, verifications, dismissals, orders, and all other documents associated with the services provided hereunder.

11. Document Retention/Destruction.

Files created and compiled by the Law Firm for work on Client matters, including correspondence, pleadings, research and any other documents prepared by the Law Firm, will not be retained indefinitely. Law Firm will retain files for sixty days following conclusion of a matter or conclusion of representation, at which time Client may retrieve the file(s), so long as the Client has paid all fees and costs, or the file(s) may be disposed of at the discretion of the Law Firm, except that we will not destroy (i) original documents entrusted to us for continued representation as part of our services; and (ii) any documents that the Client is obligated by law to retain.

12. Entire Agreement.

The terms herein represent the entire agreement of the parties concerning the representation of the Client by the Law Firm. The agreement represented by this letter may not be amended or modified except in writing and signed by both parties hereto.

**Collins Cole Flynn Winn & Ulmer, PLLC,  
a professional limited liability company**

**Cherry Creek Basin Water Quality  
Authority**

A handwritten signature in blue ink, appearing to read "Timothy J. Flynn".

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**By: Timothy J. Flynn**

---

**Joshua Rivero, President**



**BILLING RATES**

***Effective 1/2023***

<b>Name</b>	<b>2023 Rates</b>
James P. Collins, Partner	\$450
Robert G. Cole, Partner	\$415
Timothy J. Flynn, Partner	\$415
Kathryn G. Winn, Partner	\$400
Allison C. Ulmer, Partner	\$400
Bart W. Miller, Of Counsel	\$315
Peggy Rupp, Paralegal	\$240
Crystal Schott, Paralegal	\$235

## CONSULTING SERVICES AGREEMENT

### CHERRY CREEK BASIN WATER QUALITY AUTHORITY

**THIS CONSULTING SERVICES AGREEMENT** (“Agreement”) is entered into as of this \_\_ day of \_\_\_\_\_, 2023, to be effective as of January 1, 2024 (“Effective Date”), between the **CHERRY CREEK BASIN WATER QUALITY AUTHORITY**, a quasi-municipal corporation and political subdivision of the State of Colorado (“Authority”), whose address is P.O. Box 3166, Centennial, CO 80161 and **HYDROS CONSULTING INC.**, a Colorado corporation (“Consultant”) whose address is 1628 Walnut Street, Boulder CO 80302 telephone number (303) 284-1841. Consultant and Authority may hereinafter singularly be referred to as a “Party” and collectively as the “Parties.”

### RECITALS

**WHEREAS**, the Authority was established for the purpose of preserving and protecting the water quality in the Cherry Creek Reservoir (“Reservoir”) and the Cherry Creek Watershed (“Watershed”); and

**WHEREAS**, the Colorado Water Quality Control Commission (“Commission”) has adopted table value standards statewide for Total Nitrogen (“TN”) and Total Phosphorus (“TP”) with a delayed effective date of 2027; and

**WHEREAS**, the Reservoir is unique, and the Authority believes that it would be appropriate for the Commission to adopt site specific standards for TN and TP for the Reservoir; and

**WHEREAS**, Consultant has previously provided the Authority with an approach to developing such site-specific standards for TN and TP and presented the approach to the Colorado Water Quality Control Division; and

**WHEREAS**, the site-specific standards approach and associated standards prepared by the Consultant will be revisited at the 2024 Issues Formulation Hearing for Regulation 38; and

**WHEREAS**, the Authority also needs technical support from Consultant to link the Authority’s Watershed Model (developed by others) to the Reservoir Model (previously developed by Consultant) to support watershed planning and nutrient reduction efforts for the Authority; and

**WHEREAS**, further the Authority desires to utilize Consultant’s services generally on an on-call, as-needed basis; and

**WHEREAS**, Consultant represents that it has the personnel and expertise necessary to perform such services for Authority in a competent and timely manner.

**NOW, THEREFORE**, in consideration of the promises set forth herein, Authority and Consultant agree as follows:

1. **Scope of Services.** Consultant agrees, subject to the conditions set forth in Paragraph 5 below, to perform the services identified herein as the following three Tasks: Site-Specific Standard Support, Reservoir Model Runs, and On-Call Support, being more particularly described on Exhibit A, as attached hereto and incorporated herein by this reference (“Scope of Services”), together with all necessary labor, materials, scheduling, procurement and related work and services as may be necessary or reasonably inferable from the Scope of Services to complete the totality of the obligations imposed upon the Consultant by this Agreement (herein collectively the “Services”). The Services will be performed in accordance with this Agreement, including the Scope of Services; provided, however, that in an event of a conflict or inconsistency between the terms and provisions of the Scope of Services and the text of this Agreement, the text of this Agreement shall control.

2. **Notice to Proceed.** As of the Effective Date and provided Authority has received satisfactory certificates of insurance as required by Paragraph 16 below, Consultant is hereby authorized to provide the Services when requested to do so by the Authority’s Technical Manager.

3. **Completion Date.** Consultant shall give this Agreement and the Services to be performed hereunder such priority as is necessary to cause the Services to be timely and promptly performed generally in accordance with the time periods and milestone dates set forth in the Scope of Services. At any time during the Term of this Agreement Authority may request and Consultant shall, within twenty (20) days of such request, submit for Authority’s approval a written schedule for the completion of the various tasks which comprise the Services. Unless delayed by acts or the failure to act of Authority or other causes beyond the control of Consultant, and without extending any deadline established in this Agreement, all Services required under this Agreement shall be entirely completed to Authority’s reasonable satisfaction and all deliverables, if any, as set forth in the Scope of Services, shall be delivered to Authority no later than December 31, 2024.

3.1 **Deliverables.** Without in anyway limiting the deliverables as described in the Scope of Services, Consultant shall provide the Authority with an electronic and up to five hard copies of all final product documents and reports prepared by Consultant pursuant to this Agreement. In addition, all deliverables shall comply with such reasonable requirements as the Authority’s Technical Manager may establish from time to time provided those requirements are communicated in writing to Consultant no later than twenty (20) days following the execution of this Agreement by both Parties.

4. **Responsibility for Services.** The Authority shall not supervise the work of Consultant or instruct the Consultant on how to perform the Services. Consultant shall be fully responsible for the professional quality, technical accuracy, timely completion, and coordination of Services including all work and reports that are a part thereof, whether such work is performed directly by Consultant or by any subconsultant or subcontractor hired by Consultant and approved Authority in accordance with Paragraph 12 below. Without additional compensation and without limiting Authority's remedies, Consultant shall promptly remedy and correct any errors, omissions, or other deficiencies in the Services. Consultant warrants that all Services provided under this Agreement shall be performed with competence and in accordance with the standard of care of Consultant's profession prevailing in Colorado.

5. **Compensation.** Authority will compensate Consultant in accordance with Consultant's hourly rates and reimbursable costs, if any, as set forth on Exhibit B in accordance with Consultant's anticipated cost per Task as set forth in the Scope of Services. The total amount of compensation that Consultant may receive under this Agreement for performing Task 1 (Site-Specific Standard Support) and Task 2 (Reservoir Model Runs) will not exceed \$65,000 without the prior express written consent of the Authority. Task 2, however, will require further scoping and definition and hence will not be performed until expressly authorized by the Authority's Executive Committee. Task 3 services will be performed on an as needed basis (On-Call Support) and accordingly will be performed only upon request from the Authority's Executive Committee or technical manager, and in no event shall the total amount of compensation for Task 3 exceed \$10,000 without the prior express written consent of the Authority.

The per Task limit for each of the Tasks set forth above, shall not be exceeded by fifteen percent (15%) without the Authority's prior written consent. Authority will not compensate Consultant for preparing or responding to Authority's questions regarding Consultant's invoices. If Consultant is requested to perform any work that is not expressly described in the Scope of Services or that will cause the estimated time to perform any work described in the Scope of Services to be increased, Consultant will immediately notify Authority in writing and will not perform such work until authorized to do so in writing by Authority's representative.

The compensation to be paid Consultant under this Agreement is entire and complete and includes any and all reimbursable and other costs as set forth, and only as set forth within the Scope of Services. Consultant further represents and agrees that the reimbursable costs charged to Authority together with any approved subconsultant or approved subcontractor costs are at Consultant's actual cost and will not include any additional mark-up. It is understood and agreed that Consultant will contract with and pay directly all approved subconsultants or approved subcontractors retained by Consultant for the performance of any Services or portion thereof.

5.1 **Rates and Employee Categories.** The Scope of Services sets forth the anticipated amount of compensation to Consultant for each Task that is expected to be

performed under this Agreement. The hourly rates the Consultant will bill are set forth on Exhibit B. Consultant agrees that all labor performed hereunder shall be performed for an hourly rate and by the category of the employee as identified in the Scope of Services, except that if any work is performed by an employee whose hourly rate is less than the rate described in the Scope of Services, Authority shall be charged the lesser rate. Further, should any employee's job category or classification change during the term of this Agreement, that change shall not in any way affect or modify the employee's billing rate under this Agreement unless the billing rate has been reduced as a result of such job reclassification, in which case the reduced billing rate shall be applied for purposes of the invoices prepared and submitted to the Authority.

6. **Method of Payment.** No later than the 25<sup>th</sup> day of the month Consultant shall provide an invoice for the Services completed through the last day of the preceding month ("Billing Period"). Each invoice shall be submitted only for those Services actually performed during the Billing Period. Consultant shall submit with each invoice such supporting documentation as Authority may reasonably request. Each invoice submitted by Consultant shall constitute a representation to Authority that the Services are completed to the point as represented in the billing invoice. Unless Consultant does not properly perform the Services, invoices will be paid within thirty (30) to forty-five (45) days after receipt. Invoices that are not received by Authority within thirty (30) days after the last day of the Billing Period, shall be deemed inconsistent with this Agreement. Authority shall have the right to refuse to pay all or a portion of any invoice that is inconsistent with this Agreement. Authority may delay payment until it can verify the accuracy of an invoice, obtain releases or waivers with respect to Services covered in the invoice, or resolve a dispute with Consultant regarding an invoice. Further, with regard to any invoice that is submitted by Consultant ninety (90) days or more after the Billing Period, Authority shall have the right to deduct from said invoice all costs and expenses incurred by Authority in reviewing such invoice which are in the Authority's determination attributable to Consultant's delay in furnishing the invoice.

7. **Conflict of Interest.** Consultant agrees that it shall not accept any employment during the term of this Agreement that creates a potential conflict of interest or compromises the effectiveness of Consultant or otherwise interferes with the ability of Consultant to perform the Services required by this Agreement.

8. **Records and Audits.** Consultant shall at all times maintain a system of accounting records in accordance with its normal billing procedures, together with supporting documentation for all work, purchases, Services and billings under this Agreement. Consultant shall make available for audit and reproduction by Authority all records, in whatever form, related to the Services. Consultant shall provide such availability during the term of this Agreement and for two (2) years after final payment. Consultant shall refund to Authority any charges determined by Authority's audit to be inconsistent with this Agreement.

9. **Confidentiality of Information.** Except as required by law or as is necessary for the performance of the Services, Consultant shall retain in strictest confidence all information furnished by Authority and the results of any reports or studies conducted as a result of this Agreement, along with all supporting work papers and any other substantiating documents. Consultant shall not disclose such information to others without the prior written consent of Authority's representative. Notwithstanding the foregoing, Consultant shall have no confidentiality obligation with respect to information that: (i) becomes generally available to the public other than as a result of disclosure by Consultant or its agents or employees; (ii) was available to Consultant on a nonconfidential basis prior to its disclosure by Authority; and (iii) becomes available to Consultant from a third party who is not, to the knowledge of Consultant, bound to retain such information in confidence.

10. **Ownership of Work Product and Documents.** All printed materials and electronic documents produced as a result of the Services performed under this Agreement shall be the sole property of Authority and may not be used, sold or disposed of in any manner without prior written consent of Authority's representative. All documents applicable to each Task identified in the Scope of Work shall be delivered and turned over to Authority as and when such Task is completed, or at such time as Consultant has been paid in full all monies due Consultant hereunder. Notwithstanding the foregoing, Consultant may retain a copy of all printed material, electronic or other documents prepared under this Agreement.

11. **Changes in Services.** The Authority shall have the right to order additions, deletions or changes in the Services at any time, so long as such changes are within the Scope of Services covered by this Agreement. Requests for material changes in the Services may be made by Authority's representative orally or in writing; provided, however, that oral requests shall be confirmed by a written request within ten (10) days after the oral request. If Authority directs Consultant to proceed with a material change, Consultant shall be paid for the change as agreed to by the Parties.

12. **Approval of Subconsultants.** Except as set forth in the Scope of Services, Consultant shall not employ any subconsultant or subcontractor without the prior written approval of Authority's representative nor shall Consultant assign any rights or obligations under this Agreement in whole or in part without the Authority's prior written approval which may be withheld for any reason. Consultant shall be responsible for the coordination, accuracy, and completeness of all Services in accordance with generally accepted principles and practices of Consultant's profession, regardless of whether the Services are performed by Consultant or one or more subconsultants. Consultant shall endeavor to bind each of its approved subcontractors or approved subconsultants, if any, to the terms of this Agreement. In the event that a subconsultant or subcontractor is unwilling or unable to comply with any term or provision of this Agreement, Consultant will inform Authority of the specific term or provision at issue. Authority may accept the lack of compliance to the terms of this Agreement on the part of the subconsultant or subcontractor or may request that a different subconsultant or subcontractor be retained. This Agreement may be terminated by



Authority if subcontracted or assigned, either in whole or in part, by the Consultant without the express written consent of Authority's representative.

13. **Independent Contractor.** In the performance of the Services, Consultant shall be, for all purposes, an independent contractor and not an employee or agent of Authority. Consultant and its employees and Subconsultants shall in no way represent themselves to third parties as agents or employees of Authority.

14. **No Unemployment Insurance or Workers' Compensation Benefits.** Consultant agrees that it is not entitled to unemployment insurance or workers' compensation benefits as a result of performance of the Services for Authority. Consultant is required to provide workers' compensation and unemployment insurance benefits for its employees and/or subconsultants as required by law.

15. **Payment of Taxes.** Consultant is solely liable for any federal, state and local income and withholding taxes, unemployment taxes, FICA taxes and workers' compensation payments and premiums applicable to the performance of the Services under this Agreement. Consultant shall indemnify Authority for any liability resulting from nonpayment of such taxes and sums.

16. **Insurance.** It is understood and agreed that Consultant and any and all subconsultants and agents currently have and shall keep in full force and effect the following minimum insurance coverages:

16.1 **Workers' Compensation Insurance.** The Consultant and each subconsultant and each subcontractor, if any, shall carry workers' compensation insurance to cover liability under the laws of the State of Colorado in connection with the Services performed pursuant to this Agreement. Consultant and each subconsultant or subcontractor shall carry separate policies.

16.2 **Commercial General Liability Insurance.** The Consultant and each subconsultant and subcontractor, if any, shall carry commercial general liability insurance, which shall include blanket contractual liability coverage. Such insurance shall be in an amount specified in the Colorado Governmental Immunity Act, § 24-10-101, *et. seq.*, C.R.S., as may be amended from time to time (currently \$424,000 per person, \$1,195,000 per occurrence for bodily injury and property damage).

16.3 **Automobile Liability Insurance.** The Consultant and each subconsultant and subcontractor, if any, shall carry automobile liability insurance to include owned, non-owned and hired vehicles used in the performance of Services under this Agreement. Such insurance shall be in the amounts specified in the Colorado Governmental Immunity Act § 24-10-101, *et. seq.*, C.R.S., as it may be amended from time to time (currently \$424,000 per person, \$1,195,000 per occurrence for bodily injury and property damage).

16.4 **Professional Liability Insurance.** Consultant and each subconsultant and subcontractor, if any, shall carry professional liability insurance in the amount of \$1,000,000 per claim and aggregate limit, unless an alternate amount is agreed to in writing by the Authority.

If not already provided, within fifteen days after the date of this Agreement, Consultant shall provide the Authority a certificate of insurance evidencing the insurance policies required by paragraphs 16.1, 16.2, 16.3 and 16.4 as well as the amounts of coverage for the respective types of insurance required. The required commercial general liability and automobile liability policies shall: (i) name the Authority as an additional insured for coverage only, with no premium payment obligation; (ii) provide that coverage for the Authority shall not be impaired Consultants or any subcontractor's failure to comply with any of the terms or conditions of the policy. Authority and each subcontractor shall provide certificates of insurance (and renewals thereof) identifying this Agreement and demonstrating that the required coverages have been obtained. The Consultant shall not allow any subcontractor, agent or employee to commence work on any Services until appropriate certificates of insurance have been obtained and approved by the Authority, or the Authority has modified or waived the insurance coverage requirements. The coverages specified in each certificate of insurance shall not be terminate, reduced or modified without providing at least thirty (30) days prior written notice to the Authority.

17. **Compliance with Laws.** In performing this Agreement, Consultant shall comply with all applicable laws, rules and regulations, including but not limited to all federal, state and local laws.

18. **Communications.** It is understood by Authority and Consultant that successful progress under this Agreement requires frequent, concise, and documented communication between the Party's representatives. Authority hereby designates Bill Ruzzo and Jane Clary, each of whom individually or together shall have authority to give information to and receive information from Consultant. Authority may change its designated representative or name additional representatives from time to time.

Consultant hereby designates Christine Hawley, Principal Environmental Engineer, Owner/Partner of Hydros Consulting Inc., as its representative who shall give information to and receive information from Authority. Consultant may change its designated representative only with the prior written approval of Authority. Each designated representative shall have full authority to not only accept and receive information but also to accept notices, give approvals and to fully represent its respective Party for all purposes under this Agreement.

19. **Liability.** Consultant agrees to pay any damages and costs for any liability or claim of whatsoever kind or nature arising in any way out of this Agreement, to the extent caused by any negligent or wrongful act or omission of the Consultant, Subconsultants, or Consultant's and Subconsultants' officers, agents, or employees. This Paragraph 19 shall survive termination of this Agreement.

Notwithstanding anything to the contrary elsewhere in this Agreement, Consultant's liability to Authority shall not exceed the amount of the total compensation paid to Consultant under this Agreement. This capped liability provision shall apply to: (i) direct claims by Authority against Consultant; (ii) Consultant's obligation to defend, indemnify and hold harmless for third party claims; and (iii) Authority's access to Consultant's insurance coverage as an additional insured.

20. **Acceptance Not a Waiver.** The Authority's approval of studies, drawings, designs, plans, specifications, reports, computer programs and other work or material shall not in any way relieve Consultant of responsibility for the technical accuracy of the Services. The Authority's approval or acceptance of, or payment for, any Services shall not be construed to operate as a waiver of any rights under this Agreement, or of any cause of action arising out of the performance of this Agreement.

21. **Termination or Suspension.** The Authority reserves the exclusive right to terminate or suspend all or a portion of the Services under this Agreement by giving fourteen (14) days written notice to the Consultant. If any portion of the Services shall be terminated or suspended, the Authority shall pay the Consultant equitably for all services properly performed pursuant to this Agreement. If the work is suspended and the Consultant is not given an order to resume work within sixty (60) days from the Effective Date of the suspension, this Agreement will be considered terminated. Upon termination, the Consultant shall immediately deliver to the Board any documents then in existence, that have been prepared by the Consultant pursuant to this Agreement.

22. **Default.** Each and every term and condition of this Agreement shall be deemed to be a material element of this Agreement. In the event either Party shall fail or refuse to perform according to the material terms of this Agreement, such Party may be declared in default by the other Party by a written notice.

23. **Remedies.** In the event a Party has been declared in default, such defaulting Party shall be allowed a period of fifteen (15) days within which to correct or commence correcting the default. In the event that the default has not been corrected or begun to be corrected, or the defaulting Party has ceased to pursue the correction with due diligence, the Party declaring default may elect to (i) terminate this Agreement and seek damages; (ii) treat the Agreement as continuing and require specific performance; or (iii) avail itself of any other remedy at law or in equity.

24. **Term.** Unless sooner terminated in accordance with the provisions of paragraph 21 above, this Agreement shall remain in effect until the Services are fully performed, at which time the Agreement shall terminate and be of no further force and effect, except as to those provisions which expressly survive termination, including but not limited to Paragraphs 8, 9, 10, and 19.

25. **Force Majeure.** The Parties shall not be responsible for any failure or delay in the performance of any obligations under this Agreement caused by acts of God, flood,

fire, war or public enemy or the failure of Authority to furnish timely information or to approve or disapprove Consultant's instruments of service within a reasonable period of time.

26. **Assignment.** Subject to the provisions of Paragraph 12, this Agreement shall bind and inure to the benefit of the Parties and their respective successors and assigns.

27. **No Third-Party Beneficiaries.** This Agreement is intended to benefit only the Parties and neither subconsultants, subcontractors nor suppliers of Consultant nor any other person or entity is intended by the Parties to be a third-party beneficiary of this Agreement.

28. **Governing Law.** This Agreement shall be governed by and construed under the laws of the State of Colorado.

29. **Notice.** All notices required or given under this Agreement shall be in writing and shall be deemed effective: (i) when delivered personally to the other Party; or (ii) seven (7) days after being deposited in the United States mail, first-class postage prepaid, properly addressed as follows; or (iii) when sent by facsimile transmission and receipt is confirmed by return facsimile transmission.

If to Consultant:

Jean Marie Boyer, Ph.D., P.E., Principal  
Hydros Consulting Inc.  
1628 Walnut Street  
Boulder, Colorado 80302

If to Authority:

Jane Clary, Technical Manager  
Post Office Box 3166  
Centennial, Colorado 80161

With a copy to:

Timothy J. Flynn  
Collins Cole Flynn Winn & Ulmer, PLLC  
165 South Union Boulevard, Suite 785  
Lakewood, Colorado 80228-1556

Or such other persons or addresses as the Parties may designate in writing.

30. **Governmental Immunity.** The Parties understand and agree that the Authority is relying upon, and has not waived, the monetary limitations of \$424,000 per person, \$1,195,000 per occurrence, and all other rights, immunities and protections provided by the Colorado Governmental Immunity Act § 24-10-101 *et. seq.*, C.R.S., as it may be amended from time to time.

31. **Entire Agreement.** This Agreement constitutes the entire agreement between the Authority and Consultant and replaces all prior written or oral agreements and understandings. It may be altered, amended, or repealed only by a duly executed written instrument.

32. **Effective Date.** This Agreement shall become effective as of January 1, 2024, once it is signed by an appropriate representative of each Party.

**IN WITNESS WHEREOF**, the Parties have executed this Agreement in duplicate original as of the date set forth above. This Agreement must have the signature of an authorized person of Consultant on both original copies.

**AUTHORITY:  
CHERRY CREEK BASIN WATER  
QUALITY AUTHORITY**

By: \_\_\_\_\_  
Joshua Rivero, Chairman of the Board

Attest:

\_\_\_\_\_  
John A. McCarty, Secretary/Treasurer

Approved as to Form:

\_\_\_\_\_  
Timothy J. Flynn, General Counsel  
Cherry Creek Basin Water Quality Authority

This Agreement is accepted by:

**HYDROS CONSULTING INC.,**  
a Colorado Corporation

By: \_\_\_\_\_  
Jean Marie Boyer, Ph.D., P.E., Principal

Attest:

\_\_\_\_\_  
John Carron, Secretary

By execution, signer certifies that he or she is authorized to accept and bind Consultant to the terms of this Agreement.

**EXHIBIT A**  
**SCOPE OF SERVICES**

1. **\$15,000 Site-Specific Standard Support** – It is anticipated that Hydros support will be needed in 2024 to continue efforts related to the site-specific TN and TP standards proposal for the reservoir. This support may include presentations at stakeholder meetings (to meet the ripeness test), ongoing technical coordination with the Water Quality Control Division, and/or technical support in development of materials for submission to the Water Quality Control Commission.

2. **\$50,000 Reservoir Model Runs** – This task involves running a series of simulations with the Cherry Creek Reservoir Model, using watershed model results as the basis for inputs. The number of runs is yet to be determined. This will be the first full test of linkage of the models. At this time, it is anticipated that the linkage will proceed following the linkage approach developed for CCBWQA by Hydros, RESPEC, and Roger Kilgore in 2020. Any unanticipated challenges encountered with linkage will be brought to the attention of CCBWQA for resolution. Modeling results/findings will be provided to CCBWQA in the form a brief technical memorandum.

3. **\$10,000 On-Call Support** – Recognizing the uncertainty in the 2024 scoping effort at this time, an additional \$10k is included in the Hydros budget for as-needed support. This is the same level of as-needed support that was in the 2023 contract for Hydros.

**EXHIBIT B**

**Hydros Consulting Inc.  
Hourly Rate and Expense Schedule**

**Hourly Labor Rates**

<b>Name</b>	<b>Title</b>	<b>Hourly Rate</b>
Jean Marie Boyer, PhD, PE	Principal	\$275
John Carron, PhD	Principal	\$275
Christine Hawley, MS	Senior Managing Environmental Engineer	\$248
Steve Setzer, MS, PE	Senior Water Resources Engineer	\$241
Kevin Bierlein, PhD	Environmental Engineer	\$191
Cory McDonald, PhD	Environmental Engineer	\$190
Taylor Adams, MS, PE	Environmental/Water Resources Engineer	\$188
Nick Mander, MS, PE	Water Resources Engineer	\$186
John Craven, MS	Water Resources Engineer	\$183
Karen Tamari	Administrative Support	\$89

Rates valid through December 31, 2024.  
Expenses billed at cost; mileage at published Federal rate.



## CONSULTANT AGREEMENT

### FOR

### TECHNICAL, REGULATORY, AND MONITORING CONSULTING SERVICES

**THIS CONSULTANT AGREEMENT FOR TECHNICAL, REGULATORY, AND MONITORING CONSULTING SERVICES** (“Agreement”) is entered into as of the \_\_\_\_\_ day of November 2023, to be effective as of January 1, 2024, between the **CHERRY CREEK BASIN WATER QUALITY AUTHORITY**, a quasi-municipal corporation and political subdivision of the State of Colorado (“Authority”), whose address is P.O. Box 3166, Centennial, Colorado 80161, and **LRE WATER**, a Colorado corporation (“Consultant”) whose address is 1221 Auraria Parkway, Denver, Colorado 80204. Consultant and Authority may hereinafter singularly be referred to as a “Party” and collectively as the “Parties.”

### RECITALS

**WHEREAS**, the Authority was established for the purpose of preserving and protecting the water quality in the Cherry Creek Reservoir (“Reservoir”) and the Cherry Creek Watershed (“Watershed”); and

**WHEREAS**, in furtherance of its purposes, the Authority has retained and continues to retain, from time to time, numerous technical consultants; and

**WHEREAS**, Authority desires to receive Reservoir and Watershed Technical and Regulatory Consulting Services (“Watershed Consulting”) from Consultant for calendar year 2024 in accordance with the terms and conditions of this Agreement; and

**WHEREAS**, Authority also desires to receive Reservoir and Watershed Water Quality Monitoring, Sampling, Laboratory, and Technical Consulting Support Services (“Monitoring Consulting”) from Consultant for calendar year 2024 in accordance with the terms and conditions of this Agreement; and

**WHEREAS**, Consultant represents that it has the personnel and expertise necessary to perform such services for Authority in a competent and timely manner.

**NOW, THEREFORE**, in consideration of the promises set forth herein, Authority and Consultant agree as follows:

1. **Scope of Services**. Consultant agrees to perform and provide Watershed Consulting Services consisting of Tasks W-1 through W-8, and Monitoring Consulting services consisting of Tasks M-1 through M-9, in accordance with this Agreement as described in the Scope of Services, attached hereto as **Exhibit A** (consisting of 17 pages) which is incorporated herein by this reference which, together with all necessary labor, materials, scheduling, procurement and such related work and services may be necessary and

reasonably inferable from the Scope of Services to complete the totality of the obligations imposed upon Consultant by this Agreement (collectively the “Services”). The Services will be performed in accordance with this Agreement and the Scope of Services; provided, however, that in the event of a conflict between the terms and provisions of the Scope of Services and the text of this Agreement, the text of this Agreement shall control, unless determined otherwise by the Authority. Notwithstanding any other provision contained herein to the contrary, the Tasks identified in the Scope of Services as being performed on an as requested or optional basis will not be performed unless authorized in writing by the Authority’s designee identified in Paragraph 18 below.

2. **Notice to Proceed.** Provided Authority has received satisfactory Certificates of Insurance as required by paragraph 16 below, Consultant is authorized to provide the Services; except as referenced above, Consultant will not perform any Task identified in the Scope of Services as, optional, or that will be performed on an as-requested basis or that requires prior approval, until Consultant receives specific written direction from the Authority directing Consultant to proceed with such Task.

3. **Completion Date.** Consultant shall give this Agreement and the Services to be performed hereunder such priority as is necessary to cause the Services to be timely and promptly performed in accordance with the time periods contemplated or expressly provided for in the Scope of Services. At any time during the Term of this Agreement Authority may request and Consultant shall, within twenty (20) days of such request, submit for Authority’s approval a written schedule for the completion of the various Tasks which comprise the Services. Unless delayed by acts or the failure to act of Authority or other causes beyond the control of Consultant, and without extending any deadline established elsewhere in this Agreement or otherwise, all Services required under this Agreement shall be entirely completed to Authority’s reasonable satisfaction and all deliverables as set forth in the Scope of Services shall be delivered to Authority no later than December 31, 2024.

3.1 **Deliverables.** Without in anyway limiting the deliverables as described in the Scope of Services, Consultant shall provide the Authority with an electronic and up to five hard copies of all final product documents and reports prepared by Consultant pursuant to this Agreement. In addition, all deliverables shall comply with such reasonable requirements as the Authority’s Manager may establish from time to time provided those requirements are communicated in writing to Consultant no later than twenty (20) days following the execution of this Agreement by both Parties.

4. **Responsibility for Services.** The Authority shall not supervise the work of Consultant or instruct the Consultant on how to perform the Services. Consultant shall be fully responsible for the professional quality, technical accuracy, timely completion, and coordination of Services including all work and reports that are a part thereof, whether such work is performed directly by Consultant or by any subconsultant or subcontractor hired by Consultant and approved Authority in accordance with Paragraph 12 below. Without additional compensation and without limiting Authority’s remedies, Consultant shall

promptly remedy and correct any errors, omissions, or other deficiencies in the Services. Consultant warrants that all Services provided under this Agreement shall be performed with competence and in accordance with the standard of care of Consultant's profession prevailing in Colorado.

5. **Compensation.** Authority shall compensate Consultant in accordance with Consultant's hourly rates and reimbursable costs as set forth on **Exhibit B** (consisting of 1 page) attached hereto and incorporated herein by this reference; provided, however, that the total amount of compensation that Consultant may receive under this Agreement for the performance of Watershed Consulting services, shall not exceed \$275,000, without the prior express written consent of the Authority, unless optional Task-8 is authorized in which case total compensation to Consultant for Watershed Consulting services shall not exceed \$287,000. The total amount of compensation that Consultant may receive for Monitoring Consulting services shall not exceed \$329,000, without the prior express written consent of the Authority. The total compensation that Consultant may receive under this Agreement, if all Tasks including all optional and as requested Tasks are performed, shall not exceed \$616,000, without the Authority's prior express written consent.

Consultant's compensation includes the compensation and costs for Consultant's approved subcontractors, pursuant to paragraph 12 below. If Consultant is requested to perform any work that is outside the Scope of Services as defined herein, or that will cause the estimated time to perform any work that is part of the Services to be increased, Consultant will immediately notify Authority in writing and will not perform such work until authorized to do so in writing by the Authority's representative.

The amount of compensation Consultant may receive for the performance of any Task, identified in the Scope of Services, shall under no circumstances exceed fifteen percent (15%) of the estimated cost for such Task as set forth on page 17 of the Scope of Services without Authority's prior express written consent. Authority will not compensate Consultant for preparing or responding to Authority's questions regarding Consultant's invoices. If Consultant is requested to perform any work that is not expressly described in the Scope of Services or that will cause the estimated time to perform any work described in the Scope of Services to be increased, Consultant will immediately notify Authority in writing and will not perform such work until authorized to do so, in writing, by Authority's representative.

The compensation to be paid Consultant under this Agreement is entire and complete and includes any and all reimbursable costs as set forth, and only as set forth on **Exhibit B**. Consultant further represents and agrees that the reimbursable costs to Authority together with any approved subconsultant or approved subcontractor costs are at Consultant's actual cost and do not include any additional mark-up whatsoever. It is understood and agreed that Consultant will contract with and pay directly all approved subconsultants or approved subcontractors retained by Consultant for the performance of any Services or portion thereof.

5.1 **Rates and Employee Categories.** Page 17 **Exhibit A** sets forth the estimated man hours for each of the Tasks described in the Scope of Services and **Exhibit C** identifies the category of Consultant's employees that are expected to perform work under this Agreement. **Exhibit B** sets forth the hourly rates for each category of Consultant's employee that will be performing Services under this Agreement. Consultant agrees that all labor performed hereunder shall be performed for an hourly rate and by the category of employee so identified, except that if any work by an employee whose hourly rate is less than the rate described in **Exhibit B**, Authority shall be charged the lesser rate. Further, should any employee's job category or classification change during the term of this Agreement, that change shall not in any way affect or modify the employee's billing rate under this Agreement unless the billing rate has been reduced as a result of such job reclassification, in which case the reduced billing rate shall be applied for purposes of the invoices prepared and submitted to the Authority.

6. **Method of Payment.** Consultant shall provide an invoice each month for the Services completed for the period of the 26<sup>th</sup> of each month through the 25<sup>th</sup> of the following month. Each invoice shall be submitted only for those Services actually performed during the period for which the invoice is submitted. Consultant shall submit with each invoice such supporting documentation as Authority may reasonably request. Each invoice submitted by Consultant shall constitute a representation to Authority that the Services are completed to the point as represented in the billing invoice. Unless Consultant does not properly perform the Services, invoices will be paid within thirty (30) to forty-five (45) days after receipt. Authority shall have the right to refuse to pay all or a portion of any invoice that is inconsistent with this Agreement. Authority may delay payment until it can verify the accuracy of an invoice, obtain releases or waivers with respect to Services covered in the invoice, or resolve a dispute with Consultant regarding an invoice.

Notwithstanding the foregoing, Consultant's invoice for Services performed during the month of December shall include all Services performed up to and including the last day of the month.

7. **Conflict of Interest.** Consultant agrees that it shall notify the Authority of potential conflicts and determine if an informed consent agreement is acceptable between the parties. Consultant agrees that it shall not accept any employment during the term of this Agreement that creates a conflict of interest or compromises the effectiveness of Consultant or otherwise interferes with the ability of Consultant to perform the Services required by this Agreement.

8. **Records and Audits.** Consultant shall at all times maintain a system of accounting records in accordance with its normal billing procedures, together with supporting documentation for all work, purchases, Services and billings under this Agreement. Consultant shall make available for audit and reproduction by Authority all records, in whatever form, related to the Services. Consultant shall provide such availability during the term of this Agreement and for two (2) years after final payment. Consultant shall refund to

Authority any charges determined by Authority's audit to be inconsistent with this Agreement.

9. **Confidentiality of Information.** Except as required by law or as is necessary for the performance of the Services, Consultant shall retain in strictest confidence all information furnished by Authority and the results of any reports or studies conducted as a result of this Agreement, along with all supporting work papers and any other substantiating documents. Consultant shall not disclose such information to others without the prior written consent of Authority's representative. Notwithstanding the foregoing, Consultant shall have no confidentiality obligation with respect to information that: (i) becomes generally available to the public other than as a result of disclosure by Consultant or its agents or employees; (ii) was available to Consultant on a nonconfidential basis prior to its disclosure by Authority; and (iii) becomes available to Consultant from a third party who is not, to the knowledge of Consultant, bound to retain such information in confidence.

10. **Ownership of Work Product and Documents.** All printed materials and electronic documents produced as a result of the Services performed under this Agreement shall become the sole property of Authority after payment to Consultant and may not be used, sold or disposed of by Consultant in any manner without prior written consent of Authority, except that Consultant may use and reproduce such materials and documents for purposes solely relating to Consultant's performances of Services under this Agreement including but not limited to Consultant's archival records.

The Authority acknowledges that the Consultant's work papers, and preliminary documents are Consultant's instruments of service. Nevertheless, the final documents prepared under this Agreement shall become the property of the Authority upon completion of the Services and payment in full of all monies due to the Consultant. The Authority agrees, to the fullest extent permitted by law but without waiving any of the protections immunities and defenses available to Authority under the Colorado Governmental Immunity Act to indemnify and hold Consultant, its officers, directors, employees and subconsultants (collectively, the Consultant) harmless from and against any damages, liabilities or costs, including reasonable attorneys' fees, arising out of Authority's negligent or wrongful use of such materials and final documents.

Under no circumstances shall the transfer of ownership of the Consultant's drawings, specifications, electronic files or other instruments of service be deemed a sale by the Consultant that contains any warranties, either express or implied, of merchantability and fitness for any particular purpose.

11. **Changes in Services.** Authority and, in particular, the Authority's manager shall have the right to order additions, deletions or changes in the Services at any time and for any reason, but especially for purposes of improving coordination between the Authority's consultants and eliminating the duplication of Services. Requests for material changes in the Services may be made by Authority's representative orally or in writing;

provided, however, that oral requests shall be confirmed by a written request within ten (10) days after the oral request. If Authority directs Consultant to proceed with a material change, Consultant shall be paid for the change as agreed to by the Parties.

12. **Approval of Subconsultants.** Except as set forth in the Scope of Services, Consultant shall not employ any subconsultant or subcontractor without the prior written approval of Authority's representative nor shall Consultant assign any rights or obligations under this Agreement in whole or in part without the Authority's prior written approval which may be withheld for any reason. Consultant shall be responsible for the coordination, accuracy and completeness of all Services in accordance with generally accepted principles and practices of Consultant's profession, regardless of whether the Services are performed by Consultant or one or more subconsultants. Consultant shall endeavor to bind each of its approved subcontractors or approved subconsultants, if any, to the terms of this Agreement. In the event that a subconsultant or subcontractor is unwilling or unable to comply with any term or provision of this Agreement, Consultant will inform Authority of the specific term or provision at issue. Authority may accept the lack of compliance to the terms of this Agreement on the part of the subconsultant or subcontractor or may request that a different subconsultant or subcontractor be retained. This Agreement may be terminated by Authority if subcontracted or assigned, either in whole or in part, by the Consultant without the express written consent of Authority's representative.

13. **Independent Contractor.** In the performance of the Services, Consultant shall be, for all purposes, an independent contractor and not an employee or agent of Authority. Consultant and its employees and subconsultants shall in no way represent themselves to third parties as agents or employees of Authority.

14. **No Unemployment Insurance or Workers' Compensation Benefits.** Consultant agrees that it is not entitled to unemployment insurance or workers' compensation benefits as a result of performance of the Services for Authority. Consultant is required to provide workers' compensation and unemployment insurance benefits for its employees and/or subconsultants as required by law.

15. **Payment of Taxes.** Consultant is solely liable for any federal, state and local income and withholding taxes, unemployment taxes, FICA taxes and workers' compensation payments and premiums applicable to the performance of the Services under this Agreement. Consultant shall indemnify Authority for any liability resulting from nonpayment of such taxes and sums.

16. **Insurance.** Neither the Consultant nor any subconsultant, agent, or employee thereof shall continue work on any Services until the following minimum insurance coverages have been obtained:

16.1 **Workers' Compensation Insurance.** The Consultant and each subconsultant and each subcontractor, if any, shall carry workers' compensation insurance to

cover liability under the laws of the State of Colorado in connection with the Services performed pursuant to this Agreement. Consultant and each subconsultant or subcontractor shall carry separate policies.

16.2 **Commercial General Liability Insurance.** The Consultant and each subconsultant and subcontractor, if any, shall carry commercial general liability insurance, which shall include blanket contractual liability coverage. Such insurance shall be in an amount not less than specified in the Colorado Governmental Immunity Act, § 24-10-101, et. seq., C.R.S., as may be amended from time to time, currently \$425,000 per person, \$1,175,000 per occurrence for bodily injury and property damage.

16.3 **Automobile Liability Insurance.** The Consultant and each subconsultant and subcontractor, if any, shall carry automobile liability insurance as required by the laws of the State of Colorado.

16.4 **Professional Liability Insurance.** The Consultant and each subconsultant and subcontractor, if any, shall carry professional liability insurance in the amount of \$1,000,000 per claim and aggregate limit, unless an alternate amount is agreed to in writing by the Authority.

Prior to commencing any Services under this Agreement, Consultant shall provide Authority a Certificate of Insurance evidencing the coverages required by this paragraph as well as the amounts of coverage for the respective types of coverage required. The required commercial general liability policy shall: (i) name the Authority as an additional insured for coverage only, with no premium payment obligation; and (ii) provide that the coverage for the Authority will not be impaired by the Consultant's subconsultant's or subcontractor's failure to comply with any of the terms or conditions of the policy.

The Consultant and each subconsultant and subcontractor, if any, shall provide Certificates of Insurance (and renewals thereof) identifying this Agreement and demonstrating that the required coverages have been obtained. The Consultant shall not allow any subcontractor, agent, or employee to commence work until appropriate Certificates of Insurance have been obtained and approved by the Authority. The coverages specified in each Certificate of Insurance shall not be terminated, reduced, or modified without providing at least thirty (30) prior written days' notice to the Authority.

17. **Compliance with Laws.** In performing this Agreement, Consultant shall comply with all applicable laws, rules and regulations, including but not limited to all federal, state and local laws.

18. **Communications.** It is understood by Authority and Consultant that successful progress under this Agreement requires frequent, concise, and documented communication between the Party's representatives. Authority hereby designates each member of its Executive Committee, its Technical Manager, or such other person as the Authority may

from time-to-time designate in writing, as its representatives who each shall be able to give information to and receive information from Consultant. Authority may change its designated representatives or name additional Authority representatives as necessary from time to time.

Consultant hereby designates Jessica DiToro and Erin Stewart, as its representatives who will give information to and receive information from Authority. Consultant may change its designated representative only with the prior written approval of Authority. Each designated representative shall have full authority to not only accept and receive information but also to accept notices, give approvals and to fully represent its respective Party for all purposes under this Agreement; except that for the Consultant all contract documents must be executed by the President or Treasurer of the Consultant.

19. **Indemnification**. The Consultant agrees, to the fullest extent permitted by law, to indemnify and hold harmless the Authority, its officers, directors, and employees (collectively, the “Authority”) from and against any and all damages, liabilities or costs, including reasonable attorneys’ fees and defense costs, to the extent caused by the Consultant’s negligent performance of Services under this Agreement and that of its subconsultants or anyone for whom the Consultant is legally liable.

20. **Acceptance Not a Waiver**. The Authority’s approval of studies, drawings, designs, plans, specifications, reports, computer programs and other work or material shall not in any way relieve Consultant of responsibility for the technical accuracy of the Services. The Authority’s approval or acceptance of, or payment for, any Services shall not be construed to operate as a waiver of any rights under this Agreement, or of any cause of action arising out of the performance of this Agreement.

21. **Termination or Suspension**. The Authority reserves the full right to terminate or suspend, for any reason or no reason, all or a portion of the Services under this Agreement by giving ten (10) days written notice to the Consultant. If any portion of the Services shall be terminated or suspended, the Authority shall pay the Consultant equitably for all Services properly performed pursuant to this Agreement. If the work is suspended and the Consultant is not given an order to resume work within sixty (60) days from the effective date of the suspension, this Agreement will be considered terminated. Upon termination, the Consultant shall immediately deliver to the Board any documents then in existence, which have been prepared by the Consultant pursuant to this Agreement.

22. **Default**. Each and every term and condition of this Agreement shall be deemed to be a material element of this Agreement. In the event either Party shall fail or refuse to perform according to the material terms of this Agreement, such Party may be declared in default by the other Party by a written notice.

23. **Remedies**. In the event a Party has been declared in default, such defaulting Party shall be allowed a period of fifteen (15) days within which to correct or commence



correcting the default. In the event that the default has not been corrected or begun to be corrected, or the defaulting Party has ceased to pursue the correction with due diligence, the Party declaring default may elect to (i) terminate this Agreement and seek damages; (ii) treat the Agreement as continuing and require specific performance; or (ii) avail itself of any other remedy at law or in equity.

24. **Term**. Unless sooner terminated in accordance with the provisions of paragraphs 21 and 23 above, this Agreement shall remain in effect until the Services are fully performed, at which time the Agreement shall terminate and be of no further force and effect, except as to those provisions which survive termination, including but not limited to paragraphs 8, 9, 10, and 19.

25. **Force Majeure**. The Parties shall not be responsible for any failure or delay in the performance of any obligations under this Agreement caused by acts of God, flood, fire, war or public enemy or the failure of Authority to furnish timely information or to approve or disapprove Consultant's instruments of service within a reasonable period of time.

26. **Assignment**. Subject to the provisions of paragraph 12, this Agreement shall bind and inure to the benefit of the Parties and their respective successors and assigns.

27. **No Third-Party Beneficiaries**. This Agreement is intended to benefit only the Parties and neither subconsultants, subcontractors nor suppliers of Consultant nor any other person or entity is intended by the Parties to be a third-party beneficiary of this Agreement.

28. **Governing Law**. This Agreement shall be governed by and construed under the laws of the State of Colorado.

29. **Notice**. All notices required or given under this Agreement shall be in writing and shall be deemed effective: (i) when delivered personally to the other Party; or (ii) seven (7) days after being deposited in the United States mail, first-class postage prepaid, properly addressed as follows; or (iii) when sent by facsimile transmission and receipt is confirmed by return facsimile transmission.

If to Consultant: Carolyn Nobel  
LRE Water  
1221 Auraria Parkway  
Denver, Colorado 80204

If to Authority: Executive Committee  
Cherry Creek Basin Water Quality Authority  
P.O. Box 3166  
Centennial, Colorado 80161

With a copy to: Timothy J. Flynn  
Collins Cole Flynn Winn & Ulmer, PLLC  
165 South Union Boulevard, Suite 785  
Lakewood, Colorado 80228

Or such other persons or addresses as the Parties may designate in writing.

30. **Governmental Immunity**. The Parties understand and agree that the Authority is relying upon, and has not waived, the monetary limitations of \$424,000 per person, \$1,175,000 per occurrence, and all other rights, immunities and protections provided by the Colorado Governmental Immunity Act § 24-10-101 et. seq., C.R.S., as it may be amended from time to time.

31. **No Multiple Fiscal Year Obligations**. No provision of this Agreement shall be construed or interpreted as creating an indebtedness or a multiple fiscal year direct or indirect debt, or other multiple year financial obligation whatsoever of Authority within the meaning of any constitutional or statutory debt limitation provision, including, without limitation, Article XI, §§ 1, 2 and 6, and Article X, § 20 of the Colorado Constitution. This Agreement shall not directly or indirectly obligate the Authority to make any payments beyond the funds legally available to it for the then current fiscal year. No provision of this Agreement shall be construed to pledge or create a lien on any class or source of monies of the Authority, nor shall any provision of this Agreement restrict or limit the discretion of the Authority in the budgeting and appropriating its funds. The Authority shall notify Consultant if funds are exhausted for any fiscal year, and Consultant may, at its discretion, decide whether to continue providing Services to the Authority during that fiscal year.

32. **Entire Agreement**. This Agreement constitutes the entire agreement between the Authority and Consultant and replaces all prior written or oral agreements and understandings. It may be altered, amended or repealed only by a duly executed written instrument.

33. **Effective Date**. This Agreement shall become effective on the date it is signed by the appropriate representatives of the Authority.

**IN WITNESS WHEREOF**, the Parties have executed this Agreement in duplicate original as of the date set forth above. This Agreement must have the signature of an authorized person of Consultant on both original copies.

**AUTHORITY:**

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY**, a quasi-municipal corporation and political subdivision of the State of Colorado

By: \_\_\_\_\_  
Joshua Rivero, Chair

Attest:

\_\_\_\_\_  
John A. McCarty, Secretary/Treasurer

**APPROVED AS TO FORM:**

\_\_\_\_\_  
Timothy J. Flynn, General Counsel  
Cherry Creek Basin Water Quality Authority

This Agreement is accepted by:

**CONSULTANT:**

**LRE WATER**, a Colorado corporation

By: \_\_\_\_\_  
Carolyn Nobel, Chief Operating Officer

Attest:

\_\_\_\_\_  
Mary Presecan, Chairman of the Board

By execution, signer certifies that he or she is authorized to accept and bind Consultant to the terms of this Agreement.



**EXHIBIT A**

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY**

**2024 Watershed Technical, Regulatory, and Monitoring Consulting  
Scope of Services**

LRE Water will provide Cherry Creek Basin Water Quality Authority (CCBWQA) with:

- **Watershed Consulting:** Watershed technical and regulatory consulting services and technical support to assist with implementation of the CCBWQA’s statutory charges, meeting regulatory requirements such as Regulation 72, and the CCBWQA’s reservoir and watershed management responsibilities (*Watershed*), and
- **Monitoring Consulting:** Watershed and Reservoir water quality monitoring services, consulting, and technical support in accordance with CCBWQA’s Routine Sampling and Analysis Plan/ Quality Assurance Project Plan.

Key Staff identified in Exhibit C will be the primary points of contact and will continue in specified roles for the 2024 contract unless requested otherwise by LRE and approved by the CCBWQA.

Watershed Technical and Regulatory Consulting and Monitoring Sections are presented separately for consistency and comparability with previous years, as illustrated below:

<b>Watershed Technical and Regulatory Consulting (W Tasks)</b>	<b>2</b>
W1. CCBWQA Meetings and Project Coordination	2
W2. Regulatory Services	3
W3. Technical Services	3
W4. Annual Reporting and Presentation	4
W5. Information Management Support	5
W6. Database Modules	7
W7. Geographic Information Systems (GIS) Technical Assistance	8
W8. Optional Social Media Initiatives Task	8
<b>Water Quality Monitoring Services (M Tasks)</b>	<b>9</b>
M1. Reservoir Sampling and Monitoring	9
M2. Watershed Sampling and Monitoring	11
M3. Water Quality Monitoring, Repairs, Upgrades, and Communications	13
M5. Sampling and Analysis Plan Refinements	14
M6. Consulting and Other Services	15
M7. Data and Database Support	15
<b>Additional Tasks</b>	<b>15</b>
M8. Wetland Harvesting Project Management	15
<b>Direct Costs</b>	<b>16</b>
M9. Laboratory Fees and other Direct Costs	16

## Watershed Technical and Regulatory Consulting (W Tasks)

LRE Water will provide the Cherry Creek Basin Water Quality Authority (CCBWQA) with technical and regulatory consulting services and technical support to assist with the implementation of the CCBWQA's statutory charges, Regulation 72, and the CCBWQA's reservoir and watershed management responsibilities.

The 2024 scope of services differ from previous years by:

- Task W1 has been revised to limit some of the administrative costs associated with some meetings. When possible consultant participation will be limited. In addition, monitoring consultant meeting efforts have been transferred from Task M6 to W1.
- Tasks W3, W6 and W7 include technical and web-based support services based on the identification of steps needed for development of the updated Watershed Plan.
- Task W5 includes a task to update the portal database.
- Task W8 has been added as an optional task to provide social media support and training to CCBWQA, as requested.

### W1. CCBWQA Meetings and Project Coordination

1.1. Board and TAC Meetings: Attend and prepare for twelve monthly meetings of the CCBWQA TAC and Board of Directors. Includes participation in monthly teleconference calls to discuss meeting agenda items, coordination with other CCBWQA consultants, preparation of packet, and review of meeting minutes as designated.

1.2. Board and TAC Committees: As directed, attend and participate in Board and/or TAC interim or sub-committees, such as the Watershed Plan and modeling subcommittees as assigned by the CCBWQA Technical Manager.

1.3. Project Coordination: Coordinate with the CCBWQA Technical Manager, other CCBWQA consultants, and internal team members, regarding watershed and reservoir management activities, by telephone, email, and meetings. This includes meetings with outside stakeholders as necessary for project coordination as well as internal task management. This assumes the CCBWQA Technical Manager will continue to coordinate with LRE Water to assist with scope clarification, scope authorization, and other CCBWQA-related matters.

1.4. Consultant Selection and Assistance: Assist the CCBWQA Technical Manager with scoping and selection of other CCBWQA consultants for work, and input to consultants, during the budget year.

1.5. Watershed Conference Participation: Provide general feedback to the CCBWQA Technical Manager and the Cherry Creek Stewardship Partners regarding the Cherry Creek Watershed Annual Conference. This task includes conference attendance and participation for up to two LRE team members.

## **W2. Regulatory Services**

This task includes limited periodic participation in routine regulatory proceedings and/or Water Quality Control Commission (WQCC) hearing-related meetings and Water Quality Control Division (WQCD) workgroup meetings, as directed by the CCBWQA Technical Manager. This task includes:

- Tracking the implementation of the WQCD 10-Year Water Quality Roadmap, with respect to potential impacts on water quality standards in Cherry Creek and Cherry Creek Reservoir;
- Participation in WQCD and/or Water Quality Forum-lead TACs and/or stakeholder meetings (not directly related to any active WQCC rulemaking proceedings), including review of documents, data analysis for consistency with recommended methodology, participation in meetings, and/or other tasks, as directed;
- Participating in the Control Regulation 72 Rulemaking Hearing, scheduled for February 2024, regarding Parker Water and Sanitation District and Town of Castle Rock's dewatering proposal, if directed;
- Monitor the Regulation 31 Issues Scoping Hearing and the Regulation 38 Issues Formulation Hearing in November of 2024;
- Working with the CCBWQA consultants to develop site-specific total nitrogen and total phosphorus standards for Cherry Creek Reservoir, and if directed, assist with the development of a proposal to the WQCC;
- Compilation of data to support regulatory proceedings, workgroups, etc.;
- Updating the regulatory timeline and generating a Regulatory Hearings Memorandum that is included in the TAC and Board packets annually.

## **W3. Technical Services**

3.1. Assist with strategic initiatives to achieve the statutory purpose to improve, protect, and preserve the water quality of Cherry Creek and Cherry Creek Reservoir. These activities are directed by the CCBWQA Technical Manager and/or Executive Committee. They may include, but are not limited to:

- Providing technical support to the Board, TAC, and associated subcommittees;
- Evaluating technical project materials provided by others (e.g., water quality data/analyses, reviewing historical reports) and providing input/recommendations as requested;
- Communicating and coordinating with other watershed groups (e.g., Chatfield Watershed Authority, Barr Milton Watershed Association, Bear Creek Watershed Association) to promote collaboration and best practices;
- Providing comment letters on others' water quality control projects, and permit renewals, permit modifications, compliance schedules, site applications, etc.
- Coordinating with agencies (such as the Environmental Protection Agency (EPA), US Army Corps of Engineers, Colorado Parks and Wildlife (CPW), etc.) (e.g., annual dam release outreach and information);

- Provide technical assistance and input for evaluating and identifying options to work towards water quality standards compliance;
- Provide assistance with continued refinement of potential nutrient loading values and impact assessment for various sources identified as priorities by the Board, TAC, and authorized committees. This may include tasks such as provision of input loading information for the watershed and reservoir model runs; assistance with input needed for future reservoir and watershed modeling scenario development and evaluation of potential impacts of activities such as riparian protection, indirect and/or direct potable water reuse, and conservation on water quality;
- Obtain and evaluate annual discharge data from EPA ECHO and the Colorado Environmental Records for wastewater treatment facilities, water treatment facilities, and other permitted discharges; and
- Work planning, project management, and budget support activities

3.2 Continue efforts to update the CCBWQA Watershed Plan. Updates of existing information will be provided in 1Q 2024, a draft in September for TAC and Board review, with final completion scheduled by the end of 2024. Updates will include drafting Chapter language, analyses to identify current conditions, risks, and vulnerabilities, and developing graphics for inclusion in the Watershed Plan. The Plan will be a dynamic roadmap that compiles historical studies and can be updated with current and ongoing efforts. It will provide a basis for evaluation and prioritization of potential management strategies that can be implemented and monitored to achieve the CCBWQA goals. This Task includes meetings with staff, subcommittees, and contribution to TAC and Board meetings as needed.

3.3 Respond to special technical projects requests authorized by the Board, TAC, or CCBWQA Technical Manager or Executive Committee and not otherwise included in this Scope of Services, as budget allows.

#### **W4. Annual Reporting and Presentation**

4.1 Annual E-Report: LRE Water will compile information and prepare the 2023 Annual Report to the Water Quality Control Commission (WQCC), covering the Water Year October 1, 2022 – September 30, 2023 into the web-based “E-Report” format. Prior year reports will remain “as is” for content and access; a new 2023 E-Report will be generated, building from the previous year’s report. Several of the introductory/background pages will remain the same or have minor updates. All storyboards and linked references will be updated with current year information. LRE Water will work with the CCBWQA’s Manager and consultant team to prepare one draft for review (by the TAC first, and then the Board) and finalize the report. The final report will be ready for approval by the TAC and Board at their respective March meetings and will be delivered electronically to the WQCC by March 31, 2024. LRE Water’s work will include the preparation of all pages with input from Pollution Abatement Projects Manager, other consultants, and CCBWQA Technical Manager, editing for clarity and compliance with Regulation 72 requirements, and incorporating new information and activities undertaken by the CCBWQA.

#### Assumptions:

- The CCBWQA Technical Manager (or designee) will provide information on the names and associations for the 2023 TAC and Board Members, as well as the CIP Budget file.
- The Pollution Abatement Projects Manager will provide text on the Capital Projects Program and summary reports, including photographs, no later than November 30th of each year.
- Information on the Watershed and Reservoir Models will be compiled based on technical memorandums and/or reports provided by the Model Consultants and/or Models Committee, as available at the time the draft report is prepared.
- The Cherry Creek Stewardship Partners will provide report-ready information on basin education activities.
- The MS4 Permittees in the watershed will continue to provide their respective annual reporting information for inclusion in the report, as soon as their WY 2023 reporting data are compiled and available.

The draft report will be available via the portal for a final review. Multiple and conflicting comments from reviewers are possible; therefore, LRE Water will work to resolve conflicts in sufficient time to meet regulatory reporting deadlines. Because the report is available electronically via the portal, no hard copy reports will be produced.

**4.2 Executive Summary:** LRE Water will prepare an up to four page Executive Summary that presents the highlights of the CCBWQA Annual Report in a printable (pdf) format.

**4.3 Annual Presentation to the WQCC:** LRE Water will work with the CCBWQA Technical Manager and other consultants to prepare presentation materials for the WQCC and will attend/participate at the annual WQCC Annual Report presentation as directed by the CCBWQA Manager.

**4.4 Compile WY2024 Information:** As it becomes available in 2024, LRE will compile data and information to be used in the WY 2024 Annual Report the following year.

## **W5. Information Management Support**

This task includes leveraging the database portal to provide information management support for the CCBWQA team and stakeholders, including:

**5.1 Database Updates & Upgrades:** The initial CCBWQA database was developed over 12 years ago as a relatively simple data management compilation system for limited water quality data fields. Since that time both the data types and complexity included in the system and the technology have increased significantly. This task addresses priority database and system updates to promote the efficiency and scalability of the Portal, including:

- WQ data record flags have become more numerous and more complex; LRE will update the system to handle the growing complexity of flags, ensure it can scale over time as more flags are added, and verify all flags are properly documented in data downloads.



- The original system was created before CCBWQA collected biological data including full taxonomy representations; LRE will update the system to elegantly handle the taxonomy so it can be used to filter, search, and visualize, as well as properly include it in the data downloads.
- The data upload system is built on a software platform that is reaching end of life. We have a year before this happens but rebuilding the upload tools in 2024 will ensure we can continue supporting these important tools securely and reliably. The upgrade of these tools will also include better handling of flags and taxonomy as part of the upload QAQC process.

These updates will improve the reliability and scalability of the system and reduce the costs associated with other information management and support tasks in 2024 and future years. Prior to starting these recommended database updates, the details of the will be provided to the CCBWQA.

5.2 Data Integration, Upload, & Management Support: Watershed-related data is obtained and integrated into the CCBWQA Data Portal from a growing range of sources, including uploaded directly to the site, CCBWQA-owned and managed telemetry equipment, and public sources such as weather data. For this subtask LRE Water will continue to support site data integration, standardization and management through tasks such as:

- Providing technical support to troubleshoot upload errors due to issues such as improper standard template entry and duplicate data submissions
- Updating/uploading legacy data. 2024 updates may include but are not limited to incorporating soil data, reviewing and refining flag classifications and non-detects, standardizing legacy location and parameter names to be consistent with the current sampling nomenclature and/or populating historical flow data
- Revising/automating the calculation of flow based on telemetry acquired stage data, and support the implementation of additional monitoring equipment that can provide continuous monitoring.
- Automating the import of additional data sources, such as USGS stream gage flow data, model results and/or drought and climate information

5.2 System Hosting & Maintenance: LRE Water will continue to manage the system hosting for the CCBWQA. This includes the following:

- Domain renewal and management for <https://ccbwqportal.org>
- Cloud server hosting through Amazon Web Services for a dedicated virtual server
- Server and hosting maintenance and management: backups verification, critical software patches/upgrades, and system monitoring

5.3 Data and Analysis Requests: LRE Water will respond to general requests for information from the Board, TAC, CCBWQA consultants, and/or the public not otherwise required by this Scope of Services. Provide CCBWQA approved information to the public and other local, state, and federal governments and organizations on a request basis.

## W6. Database Modules

For this task, LRE Water will expand opportunities for transforming data into actionable information through enhancing existing and providing additional targeted analysis “story page” based on requests and requirements discussion from the CCBWQA Manager and team. The focus of the modules developed in 2024 will be to leverage and enhance Portal information to support the Watershed Plan Update. Options include:

- Spatial Statistics: Development and display of risk-based “heat maps” and spatial statistics analysis to help target priority strategies and locations
- Water Quality Module: Develop an interactive Module that:
  - Calculates and displays water quality summary statistics for selected time periods,
  - Displays water quality monitoring points on the map based on benchmark values for selected statistic, parameters and dates selected
  - Displays concentrations over time for selected parameters compared to benchmark values
  - Display yearly summary statistics compared to water quality benchmarks for selected parameter
- PAP Mapping & Evaluation: Enhance the PAP map with additional features (e.g., stormwater projects), and functions such as projects over time, associated costs, nutrient reduction estimates, links to project information
- PAP Effectiveness: Enhance the PAP Statistics Tool with additional sites and/or analyses & graphics to continue to provide quantitative, statistical tools to evaluate PAP effectiveness
- Soil Data and Visualization: Evaluate and implement options for the import, analysis and visualization of soil data
- Upstream to downstream data display: Automate the display of upstream to downstream watershed sampling events to help characterize changes over space
- Weather Story Page: Integrate the priority analysis and graphics developed for the prototype Weather Statistics Tool into the portal to enable analysis of weather and water quality data over time. Items may include: calculating correlation between input and response variables, predicting future values based on multivariate response variables
- Modeling Results: Import key reservoir and watershed modeling results into the CCBQWA database and develop an interface that allows users to efficiently query, access, review and compare various results and scenarios
- Additional story pages as directed by the CCBWQA Technical Manager, which could include storyboards developed for the Annual Report, Board or TAC

LRE Water will work with the CCBWQA Technical Manager and staff to identify and prioritize potential storyboard enhancements.

## **W7. Geographic Information Systems (GIS) Technical Assistance**

As requested by the CCBWQA management, provide technical support related to GIS, Google Earth, and other mapping and/or graphics generation needs or assistance.

**7.1 Spatial Inventory Development:** The primary focus of this task will be to develop, compile and document a CCBWQA Spatial Inventory that will inform the Watershed Plan and provide the framework for enhanced spatial analysis in the portal to support Board and TAC communication, evaluation and prioritization of initiatives. The Spatial Inventory will include:

- A compiled and standardized geodatabase
- A Spatial Inventory Table that includes information key feature, source, and update information

Additional GIS Technical assistance may include but is not limited to:

- Generating pdf maps and conducting spatial analysis, as directed
- Updating PRF and PAP mapping features
- Developing stormwater-related features and projects mapping features
- Supporting GIS needs for Annual Monitoring Report and Sampling and Analysis Plan.
- Generating KMZ or other graphics to be used as visual aids in Board/TAC meetings.

## **W8. Optional Social Media Initiatives Task**

As directed by CCBWQA, LRE Water will develop a social media initiative to provide an alternative outreach platform to educate the public about the CCBWQA's goals, efforts, and projects that help improve, protect, and preserve water quality in Cherry Creek and Cherry Creek Reservoir. Efforts could include:

- Identification of social media platform(s) that best align with the target audience and mission and vision of CCBWQA.
- Setting up a social media profile and optimizing it by ensuring it's engaging, informative, and appropriately branded to help community members and stakeholders discover more about the CCBWQA.
- Development of an editorial calendar and posting schedule that ensures regular, high-quality content (one-to-two times per month) leading to an increase in visibility and giving the surrounding community and stakeholders more opportunity to engage with the CCBWQA.
- Collaboration with CCBWQA staff, Board, and TAC members to get content promptly, ensuring it will be consolidated and prepared ahead of time.
- Creation and implementation of an engagement plan to guarantee accountability of continuous dialogue between CCBWQA and its stakeholders and partners through the social media platform.
- Regular monitoring of comments, messages, mentions, hashtags, and conversation that surrounds the authority, and responding to them as needed.
- Training for CCBWQA staff, Board, and TAC members on how to best interact with CCBWQA social media posts to boost reach, impressions, and engagement.

- Tracking the performance of posts to measure impact and refine content to optimize outreach, engagement, and awareness.

## Water Quality Monitoring Services (M Tasks)

LRE Water will provide the Cherry Creek Basin Water Quality Authority (CCBWQA) with water quality monitoring as outlined in the CCBWQA SAP/QAPP and additional related consulting services as directed by the CCBWQA Technical Manager and Executive Committee.

The 2024 scope of services differ from previous years by:

- Task M2 - Watershed Monitoring includes the study on the impacts of extended hold times in storm samples to determine the potential changes to nutrient fractions. This was added in 2022 and will be continued to obtain more data and determine variability. The additional analysis of the impacts of the hold times that occur during storm sampling could impact future SAP revisions.
- Task M3 - Continuous WQ Monitoring Upgrades and Communications has been revised to include the status monitoring and maintenance coordination of the Meteorological station at Cherry Creek State Park.
- Task M4 - Monitoring Report and Graphical Updates, has been revised to account for the provisional monitoring report draft to be provided to the TAC prior to Dec 31st.
- Task M6 - Consulting and Other Services, has been revised by removing all meeting attendance by monitoring consultant staff which is now accounted for in task W1.
- Task M9 - Laboratory Analysis Fees, Shipping charges, equipment costs, and other direct costs were divided into a separate task in 2023 which will continue in 2024. There have not been any significant increases to costs of services (lab fees, equipment/ boat rental, shipping costs, mileage, etc).

### M1. Reservoir Sampling and Monitoring

The Cherry Creek Reservoir monitoring program will include:

- Routine vertical profiling and nutrient/biological sampling
- Precipitation Station maintenance and sampling
- Sampling frequency and laboratory analyses are outlined in the SAP and Table 1.
- CCR-1, CCR-2 and CCR-3 will be profiled and sampled once per month in March, April, October, November and December (ice conditions permitting) for a total of five (5) sampling events.
- CCR-1, CCR-2 and CCR-3 will be profiled and sampled twice per month from May-September a total of ten (10) sampling events.
- Installation and collection of data on thermistor chain (1m increments) with DO loggers at the top and bottom of the Reservoir.
- Precipitation gage will be inspected weekly during storm sampling season and samples will be collected and analyzed following up to seven (7) storm events.
- 5-port Multiparameter Sonde (CCBWQA)
  - Vertical sampler (CCBWQA)
  - Secchi disk (CCBWQA)
  - Licor Quantum Sensor (CCBWQA)

- Plankton net
- Thermistor string of HOB0® Water Temp Pro data loggers and associated hardware and software – (CCBWQA)
- Real-Time Dissolved Oxygen probes and data loggers (CCBWQA) 1m below the surface and 0.5 meters off the bottom of the reservoir.
- Seasonal deployment on CCBWQA negotiated access to the State Park’s buoy system. LRE Water will coordinate during the year with Colorado Parks and Wildlife (CPW) staff on buoy placement and sampling schedule.

All equipment, either owned by CCBWQA or provided by LRE Water will be properly maintained, calibrated, verified, and documented prior to use. The proposal includes all sampling labor, monitoring equipment, record books, sample bottles, preservatives, safety equipment, coolers, and any other equipment/supplies as needed.

**Boat Use**

During the recreational boating season, the LRE Water will rent and utilize a boat from Pelican Bay at Cherry Creek (i.e. the Marina) to reduce the need and time associated with boat inspections from Colorado Parks and Wildlife for invasive species. LRE Water contractors and staff will adhere to CPW’s Boating Statutes and Regulations and operate under *Contractor’s Safe Work Practice for Working Over or Near Water* (SWP 5-6).

**Table 1. Reservoir Sampling Parameters and Total Laboratory Analyses Mar- Dec**

Analyte	Monthly Nutrient - Biological Samples (Photic Zone) Mar-Dec		Monthly Nutrient Profile (4-7m) Mar-Dec	Bi-Monthly Sonde and Nutrient Samples May- Sept	During Storm Sampling Season (May-Oct)	Subtotal	Field Dups/ Blanks	Total # Samples
	2 Sites	1 Site	1 Site	3 Sites	1 Site			
	CCR-1, CCR-3	CCR-2	CCR-2	CCR-1, CCR-2, CCR-3	PRECIP			
<u>Inorganics</u>								
pH (field)								
Conductivity (field/ QC)	20	10	40	30		100	10	110
Total Nitrogen	20	10	40	30	7	107	10	117
Total Dissolved Nitrogen	20	10	40	30		100	10	110
Ammonia as N	20	10	40	30		100	10	110
Nitrate + Nitrite as N	20	10	40	30		100	10	110
Total Phosphorus	20	10	40	30	7	107	10	117
Total Dissolved Phosphorus	20	10	40	30		100	10	110
Orthophosphate as P	20	10	40	30		100	10	110
Chloride		4				4	0	4
Sulfate		4				4	0	4
Magnesium		4				4	0	4
Calcium		4				4	0	4
Potassium		4				4	0	4
Sodium		4				4	0	4

Alkalinity		4				4	0	4
<u>Organics</u>								
Total Organic Carbon		10	0	10		20	2	22
Dissolved Organic Carbon		10	0	10		20	2	22
Total Volatile Suspended Solids	20	10		15		45	7	52
Total Suspended Solids	20	10		15		45	7	52
<u>Biological</u>								
Chlorophyll-a	20	10		15		45	5	50
Phytoplankton		10		5		15	0	15
Zooplankton		10		5		15	0	15

### Data Validation

In LRE Water's commitment to the CCBWQA to produce defensible data, the frequency of the field duplicate and blank sample collection is approximately 10% for Reservoir samples. Field QA/QC samples shall be collected at each sampling event and any issues detected through the collection of these samples will be isolated to the samples only collected during the associated event. Due to the manner in which the zooplankton, phytoplankton, and rain (storm) event samples are collected or analyzed, field duplicate or field blank samples will not be generated from these monitoring program aspects.

The reservoir sampling parameters and laboratory analyses will be performed at the frequency indicated in Table 3, with the first reservoir sampling to be completed in March. An expedited turnaround time (4-6 weeks) will be utilized for phytoplankton and zooplankton enumeration during the crucial late spring through early fall months. Physical parameters will be collected in the field at the required frequencies in accordance with the current SAP, Table 1. (i.e., temperature, conductivity, pH, dissolved oxygen, oxidation/reduction potential, Secchi depth, 1% light transmittance, and continuous temperature and DO near station CCR-2 vertical profiles).

## M2. Watershed Sampling and Monitoring

Watershed monitoring will include surface and groundwater sampling to evaluate nutrient loading to the reservoir. In addition, other watershed monitoring such as sediment and wetland plant sampling to evaluate or estimate potential Pollution Abatement Project (PAP) effectiveness will occur at the direction of the director of the CCBWQA.

The program will include:

- Routine Surface Water Sampling, including PRF Pollutant Reduction Effectiveness Sampling – sites and frequency outlined in Table 2.
- Ten (10) surface water sampling stations throughout the Cherry Creek Basin will be sampled on a monthly or every other month basis March through December (10 site visits).
  - o CC-O, CC-7 Ecopark, CC-10, PC-1, CT-1, CT-2, CT-P1, CT-P2, MCM-1, MCM-2

- Nine (9) additional surface water sampling stations throughout the Cherry Creek Basin will be sampled twice per year (2 site visits) May and November.
  - *USGS @ Franktown, CC-1, CC-2, USGS @ Parker, CC-4, CC-5, CC-6, CC-8, CC-9*
- Groundwater Sampling - Four (4) alluvial groundwater monitoring wells along Cherry Creek will be sampled twice per year (2 site visits) May and November.
  - *MW-1, MW-5, MW-9, MW- Kennedy*
- Storm Event Sampling - Seven (7) surface water sites will be equipped with automatic (ISCO) samplers and programmed to collect stormwater samples during up to seven (7) storm events between May and October.
  - *CC-7, CC-10, CT-1, CT-2, CT-P1, CT-P2, PC-1*
  - Evaluation of change in nutrient fractions with extended hold times for storm samples will be completed during two of the events to determine if changes to SAP may be needed in the future.
- Soil Sampling - One (1) or two (2) project sites including up to 12 locations can be sampled and analyzed for particle size and phosphorus content per year. The results will be used in order to accurately estimate water quality benefits from sediment immobilization in stream improvement project areas. In addition up to three (3) samples will be collected and analyzed from PRF maintenance activities such as sediment removal when completed in the same year.
- Other Watershed Sampling - Other watershed sampling will be completed as specified by the CCBWQA management. Depending on the scope of the sampling, a separate project SAP may be developed to be approved by the TAC and Board.

#### **Surface and Groundwater Sampling Equipment**

- 5-port Multiparameter Sonde (CCBWQA)
- ISCO samplers with submerged probe level sensors
- *Data loggers with cellular telemetry and solar panels*
- *In-stream portable velocity flow-meter*
- *Portable thermistors*
- *Sutron ACCUBAR constant flow bubbler*
- *Data loggers with cellular telemetry and solar panels*
- *Groundwater bailer or pump*
- *Solnist Level Logger*

#### **Data Validation**

Data validation and QA/QC procedures will be followed as outlined in Task 1. Field duplicate and blank sample collection will account for approximately 10% for stream and groundwater samples.

**Table 2. Stream and Groundwater Sampling Parameters and Total Laboratory Analyses Jan- Dec**

	Monthly Surface Water	EO Month Surface Water	Storm Event Surface Water Iscos	Bi- Annual Surface Water	Bi- Annual Ground Water			
	8 Sites	2 Sites	7 sites	9 Sites	4 Sites			
Analyte	CC-0, CC-7, CC-10, CT-P1, CT-P2, CT1,CT2 PC-1	MCM-1, MCM-2	CC-10, CT-P1, CT-P1 CT1,CT2, CC-7 PC-1	USGS@FT USGS@ Parker, CC-1,CC-2, CC-4,CC-5, CC-6,CC-8, CC-9	MW-1, MW-5, MW-9, Kennedy	Subtotal	Field Dups, Splits and Blanks	Total # of Samples Jan-Dec
<b>Inorganics</b>								
Total Nitrogen	96	12	56	18	8	190	12	202
Ammonia as N	96	12	56	18	8	190	12	202
Nitrate + Nitrite as N	96	12	56	18	8	190	12	202
Total Phosphorus	96	12	56	18	8	190	12	202
Total Dissolved Phosphorus	96	12	56	18	8	190	12	202
Orthophosphate as P	96	12	56	18	8	190	12	202
Chloride	6				8	14	1	15
Sulfate	6				8	14	1	15
Magnesium	6					6	0	6
Calcium	6					6	0	6
Potassium	6					6	0	6
Sodium	6					6	0	6
Alkalinity	6					6	0	6
<b>Organics</b>								
Total Organic Carbon	24				8	32	1	33
Dissolved Organic Carbon	24				8	32	1	33
Total Volatile Suspended Solids	50	25	56			131	7	138
Total Suspended Solids	50	25	56			131	7	138

**M3. Water Quality Monitoring, Repairs, Upgrades, and Communications**

LRE Water will install, operate, troubleshoot, and maintain all monitoring equipment and telemetry communications hardware at stations outfitted with continuous level logging equipment. 15-minute data will be transmitted to Campbell Scientific-based cloud, and mobile application-based Logger Link/Logger Net software and will be directed to the Authority’s website for real-time graphical assessment of flow data. Monitoring of mobile application app(s) will be used to detect any abnormalities with equipment readings for troubleshooting and repairs, if necessary, to be completed quickly and reduce the potential for incomplete or inaccurate data.



- Stage discharge relationships will be updated annually and used to calculate flow from level measurements at each site. Flows will be measured multiple times per year (~4) in order to update the stage-discharge relationships so accurate flow can be available on CCBWQA's data portal.
  - If major changes have occurred in the stream channel or staff gages have had to be replaced more frequently measurements may be required.
- LRE Water will also be responsible for status monitoring the output and coordination of maintenance on the CCSP Meteorological Station. Data will be reviewed for potential problems or inconsistencies and if needed LRE Water will coordinate any repairs or request maintenance with One Rain outside of the preventative maintenance contract.

#### **M4. Annual Monitoring Report and Updates**

LRE Water will develop the Annual Monitoring report, including an executive summary, in coordination with the CCBWQA and the consultant team to support the Regulation 72 reporting requirements. All draft and final work products will be prepared on schedule, with a draft deliverable to be provided to the Technical Manager and available to the TAC by Dec. 31st so content can be reviewed prior to the January TAC meeting and report presentation.

LRE Water will present highlights of findings at the January TAC and Board meetings and will facilitate additional discussion during the February TAC and Board meetings. LRE Water will coordinate with CCBWQA Technical Manager, TAC, Board, other staff, and the consultant team in addressing comments and finalizing the report for approval and inclusion in the Annual Report to the WQCC prior to March 15<sup>th</sup>.

If factors outside of the control of the CCBWQA affect the timeline of the report, the information and any required modifications to the schedule will be communicated to the TAC and Board.

LRE Water will support the development of the CCBWQA Annual Report on Activities including documentation and graphics useful for presentation to the WQCC and other audiences. The report will include documentation of compliance (or determination of noncompliance) with the applicable Regulation 38 water quality standards (chlorophyll *a*, dissolved oxygen, pH, temperature, and nutrient standards when applicable), using the Water Quality Control Commission and Water Quality Control Division assessment methods. This documentation is required by Regulation 72.

#### **M5. Sampling and Analysis Plan Refinements**

In coordination with the CCBWQA management, staff, and modeling team, LRE Water will identify monitoring program efficiencies and other needs based on watershed and reservoir modeling outputs, or regulatory requirements. LRE Water will evaluate needs such as changes in monitoring locations, frequency, parameters, etc.

Based on discussions, efficiencies, and anticipated needs, changes to the Sampling and

Analysis Plan may be warranted. If modifications to the SAP are prudent, LRE Water will propose a streamlined review process, including proposed redline changes to the SAP based on consultant recommendations. The proposed changes will go before the TAC and Board for review and approval.

#### **M6. Consulting and Other Services**

LRE Water will assist with additional services related to the monitoring program or CCBWQA activities as needed. Services can include other water quality activities, tasks, consulting services, assistance with the development of monitoring services for annual budgeting, preparation of presentations or other documents required for meetings, or other technical support as specified by the CCBWQA Technical Manager or Executive Committee.

#### **M7. Data and Database Support**

All water quality data, field measurements, stream flows and physical records will be processed and validated by the QA/QC Manager and will be formatted in data-specific worksheet templates. Reviewed data will be uploaded to the CCBWQA's data portal. The listed QC programs include requirements for additional laboratory analyses which have been added to the total laboratory costs for all water samples in the SAP.

LRE Water will use the CCBWQA's data portal for regular water quality updates supported by other statistical software and spreadsheet analyses, during TAC and Board meetings and other times as needed.

LRE Water will use and support the use of the database by other staff or stakeholders as needed, to provide accurate datasets or content, for external meetings, subcommittees, CCBWQA staff requests, contractors, CCBWQA entities, as directed or approved by the CCBWQA Technical Manager or Executive Committee.

### **Additional Tasks**

#### **M8. Wetland Harvesting Project Management**

LRE Water will provide project management and oversight for the Wetland Harvesting Project on Cottonwood Creek. Services will include:

- Preparation of contract for services, management of the subcontractor performing the harvesting and removal efforts prior to and during activities, and notification and coordination of activities with Cherry Creek State Park staff;
- Survey and analysis of wetland plants for nutrient content from areas within planned areas of wetland harvesting to estimate the total mass of P and N removed during each harvesting event. Annually approximately six (6) sites will be sampled for plant composition and plants found will be measured to determine length and weight. Samples from each area will be sent to the lab for processing and analysis of total phosphorus and total nitrogen.
- Wetland Harvesting mapping and GIS analysis services will be provided to map the harvested area so additional calculations can be made to estimate nutrient removal based on area.

- Preparation of a project summary report that outlines the project activities and results of the survey, analysis, and total removal efforts. The Wetland Project Summary Report will be provided to the TAC and Board by April of each year for recommendation and approval of the funding budgeted for the current year.

*Note: The Wetland Harvesting Pilot Project started in 2021 and is scheduled for 6 years.*

## **Direct Costs**

### **M9. Laboratory Fees and other Direct Costs**

This task includes the direct costs associated with the completion of monitoring services and consulting included in the scope of work. Costs include:

- Laboratory fees associated with analysis of all samples included in the SAP/QAPP from the two main contracted labs, IEH Analytical, and Phycotech LLC;
- Laboratory fees for other labs specified (Eurofins/ Test America, CSU Soils Lab, ACZ Laboratories, etc.) for other monitoring tasks, such as wetland harvesting, soil sampling, or as directed by the CCBWQA Technical Advisor or Executive Committee;
- Rental of the barge, “The Kennedy” from the Pelican Bay Marina at Cherry Creek and other monitoring equipment such as measuring devices, samplers, and rental equipment such as flow meters for stream flow measurements;
- Required maintenance of the monitoring equipment including calibration supplies, repairs, replacement, and purchase of small parts and consumables as needed;
- Cellular data plan, currently paid to Hydrologik LLC, required for the seven (7) sites that are outfitted with telemetry to direct level and flow data to the CCBWQA portal; and
- Mileage billed at the current government rate from LRE Water to complete services outlined in the monitoring program and to attend meetings or other CCBWQA events or projects.

Note: Any large equipment repairs or purchases (e.g., those greater than \$1,000) will be approved by the CCBWQA and billed to the Enterprise Equipment Fund based on budget.

## Estimated Budget for CCBWQA 2024 Watershed, Regulatory, Technical & Water Quality Monitoring Consulting Services

Watershed Technical and Regulatory Consulting Services				
Code	Task	Est. Hrs	Avg. Rate	Total
107450	W1. CCBWQA Meetings and Project Coordination	217	\$221	\$48,000
107050	W2. Regulatory Services	92	\$217	\$20,000
107450	W3. Technical Services	357	\$224	\$80,000
107451	W4. Annual Report	142	\$190	\$27,000
107450	W5. Information Management Support	238	\$210	\$50,000
107453	W6. Database Modules	175	\$200	\$35,000
107453	W7. GIS Technical Assistance	91	\$165	\$15,000
TBD	W8. OPTIONAL Social Media Initiatives	96	\$125	\$12,000
<b>Watershed Services Total</b>				<b>\$275,000</b>
<b>Watershed Services Total (With Optional Task)</b>				<b>\$287,000</b>
Water Quality Monitoring Services				
Code	Task	Est. Hrs	Avg. Rate	Total
107501	M1. Reservoir & Watershed Sampling & Monitoring	202	\$198	\$40,000
107502	M2. Watershed Sampling & Monitoring	262	\$202	\$53,000
107500	M3. Continuous WQ Monitoring Upgrades and Communications	76	\$197	\$15,000
107505	M4. Monitoring Report and Monthly Graphical Updates	170	\$206	\$35,000
107500	M5. Sampling and Analysis Plan Refinements	24	\$208	\$5,000
107500	M6. Consulting and Other Services	91	\$220	\$20,000
107505	M7. Data and Database Support	110	\$209	\$23,000
117712	M8. Wetland Harvesting Project Management	94	\$191	\$18,000
107506	M9. Laboratory Analytical Fees and Other Direct Costs	202	\$198	\$120,000
<b>Monitoring Services Total<sup>11</sup></b>				<b>\$329,000</b>
<b>2024 Total Project Budget</b>				<b>\$604,000</b>
<b>Total Project Budget (With Optional Task W8)</b>				<b>\$616,000</b>

\*Average billing rates have been rounded for calculations

EXHIBIT B

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY  
2024 Watershed Technical and Regulatory and Monitoring  
Consulting Scope of Services**

**LRE Water 2024 RATE SCHEDULE**

	Hourly Rate
Student Intern .....	\$70 - \$100
Administrative Assistant .....	\$90 - \$125
Technician/IT Support .....	\$100 - \$150
Staff I Engineer/Scientist .....	\$110 - \$150
Staff II Engineer/Scientist .....	\$125 - \$165
Staff III Engineer/Scientist.....	\$140 - \$180
Project Engineer/Scientist .....	\$155 - \$190
Senior Project Engineer/Scientist.....	\$175 - \$205
Project Manager .....	\$185 - \$230
Senior Project Manager.....	\$215 - \$280

Expenses such as laboratory analysis, obtaining aerial photos, or other special services incurred directly in connection with the project are billed at cost. Reimbursable expenses billed at cost include airfare, automobile rental, and other travel or per diem costs including mileage billed at the current IRS rate.

EXHIBIT C

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY  
2024 Watershed Technical and Regulatory and Monitoring  
Consulting Scope of Services**

**LRE Water Staff Assigned to Project**

Staff Role	Billing Rate	Name
<b>Key Project Staff</b>		
Water Quality Monitoring Consultant	\$220	Erin Stewart
Regulatory and Watershed Support Consultant	\$218	Jessica DiToro
Sr. Technical Advisor	\$245	Carolyn Nobel
<b>Technical Staff</b>		
Sr. Technical Advisor (Data Management)	\$245	Kelly Close
Sr. Technical Advisor (Data Management)	\$195	Chris Holdren
Project Scientist	\$171	
Database & Web Development	\$200	
Graphics	\$125	
GIS	\$145	
Other	\$125-200	

## TRANSITION SERVICES CONSULTING AGREEMENT

**THIS TRANSITION SERVICES CONSULTING AGREEMENT** (“Agreement”) is made and entered into this \_\_ day of \_\_\_\_\_, 2023 to be effective as of January 1, 2024, between the **CHERRY CREEK BASIN WATER QUALITY AUTHORITY**, a quasi-municipal corporation and political subdivision of the State of Colorado (“Authority”), whose address is PO Box 3166, Centennial, Colorado 80161 and **R2R ENGINEERS, INC.**, a Colorado Corporation (“Consultant”), whose address is 5975 S. Quebec Street, Suite 225, Centennial, Colorado 80111, phone number (303)868-5767, Consultant and Authority may hereinafter singularly be referred to as a “Party” and collectively as the “Parties”.

### RECITALS

**WHEREAS**, Consultant, pursuant to prior agreements with the Authority, has served as the Authority’s Pollution Abatement Projects Manager and in that capacity has had general oversight responsibility for the administration, design, and construction of the Authority’s Pollution Abatement Projects; and

**WHEREAS**, Consultant is withdrawing from the role of the Authority’s Pollution Abatement Project Program Manager, effective January 1, 2024; and

**WHEREAS**, the Authority has requested and Consultant is willing to assist the Authority in onboarding a new Pollution Abatement Manager, when the new Manager is selected; and

**WHEREAS**, such onboarding will assist the new Project Manager in becoming familiar with the Authority’s needs and requirements for the management of its Pollution Abatement Projects.

**NOW, THEREFORE**, for and in consideration of the promises herein contained, the Parties hereto agree as follows:

1. **Manner and Method of Work**. In performing Services as herein after defined, Consultant shall be an independent contractor to the Authority and not an employee or agent of the Authority. Subject to the provisions of Paragraph 3 below, in performing Services hereunder, Consultant shall have full control over the selection of Consultant’s employees, and the manner and method of the provision of Services hereunder. The Authority is concerned only with the results of the Services performed by Consultant and that the same be provided in a timely and complete manner.

2. **Scope of Services**. As more particularly described in Paragraph 5 below, Consultant will provide Services to the Authority’s Technical Manager and new Pollution Abatement Projects Manager each month as needed to assist the new Manager in becoming familiar with the accounting systems, budgetary process, intergovernmental

agreements, and other operating aspects of the Authority's Pollution Abatement Projects Program ("Services").

3. **Insurance.** During the Term of this Agreement Consultant shall provide at Consultant's sole cost the following insurance coverages:

a. **Workers' Compensation.** Consultant shall carry Workers' Compensation Insurance to cover liability under the laws of the State of Colorado in connection with the Services performed pursuant to this Agreement, or in the alternative, Consultant, if eligible to do so, Consultant may elect to opt out of the provisions of Articles 40 to 47 of Title VIII, C.R.S., pursuant to the provisions of Section 8-41-202, C.R.S. If such option is taken, Consultant shall provide Authority with a copy of the written form that is filed with the Division of Workers' Compensation in the Colorado Department of Labor and Employment. Unless otherwise agreed in writing, Consultant shall not hire or pay any other person to perform services for the Authority other than Richard G. Borchardt, Consultant's President, and agrees to indemnify the Authority from and against any and all loss or liability sustained by the Authority as a result of a breach of this provision.

b. **Commercial General Liability Insurance.** Consultant shall carry Commercial General Liability Insurance, in an aggregate amount of not less than One Million Dollars (\$1,000,000.00), which shall include blanket contractual liability coverage.

c. **Automobile Insurance.** Consultant shall carry automobile liability as required by the laws of the State of Colorado

d. **Professional Liability Insurance.** Consultant shall carry Professional Liability Insurance in an aggregate of not less than Five Hundred Thousand Dollars (\$500,000.00).

Prior to commencing any services under this Agreement, Consultant shall provide Authority a certificate of insurance, evidencing the policies required by this paragraph as well as the amounts of coverage for the respective types of coverages required. The required general liability policies shall name Authority as an additional insured for coverage only, with no premium payment obligation. Consultant shall provide certificates of insurance (and renewals thereof) in a form acceptable to the Authority identifying this Agreement and demonstrating that the required coverages have been obtained. Consultant shall not commence any work under this Agreement until all such coverages have been obtained and are in full force and effect. The coverages specified in the certificates of insurance shall not be terminated without providing at least thirty (30) days prior written notice to the Authority. If coverage is reduced for any reason, the Consultant shall immediately notify the Authority in writing of the effective date and the amount of reduction.



**4. Term of this Agreement.** Consultant shall perform Services to the Authority under this Agreement up to and including March 31, 2024. From and after that date, Authority shall have no obligation to pay for and Consultant shall have no obligation to provide Services to the Authority, unless otherwise agreed in writing by the Parties.

**5. Performance of Services.** Consultant shall devote 130-hours (approximately 10 hours per week through March 31, 2024) for the Performance of Services under this Agreement. Services shall be performed only as and when requested by the Authority's Technical Manager or other authorized representative such as a member of the Authority's Executive Committee. Nothing contained in this Agreement shall prevent Consultant from being involved in other business activities during the Term of this Agreement.

**6. Ownership of Information and Materials.** Consultant shall, monthly, and in any event upon termination of this Agreement, deliver to the Authority all written data, manuals and procedures generated by Consultant in connection with the performance of his duties under this Agreement. All such data and documents arising from the performance of this Agreement shall at all times be considered the property of the Authority.

**7. Compensation.** For the performance of the Services set forth herein, the Authority shall compensate Consultant at the rate of \$130 per hour. Consultant shall provide an invoice each month for the Services completed during the preceding month. Each invoice shall be submitted no later than the tenth day of the month following the month these Services were performed. Each invoice shall be submitted only for those Services actually performed during the period for which the invoice is submitted. Consultant shall submit with each invoice such supporting documentation as Authority may reasonably request. Unless Consultant has not properly performed the Services, invoices will be paid within thirty (30) to forty-five (45) days after receipt. Authority shall have the right to refuse to pay all or any portion of an invoice that is inconsistent with this Agreement. Authority may delay payment until it can verify the accuracy of an invoice, obtain releases or waivers with respect to Services covered in the invoice, or resolve a dispute with Consultant regarding an invoice.

**8. Term and Termination.** Unless sooner terminated pursuant to the provisions hereof, this Agreement shall remain in effect until March 31, 2024. The Authority may terminate this Agreement at any time and for any reason, or no reason, by giving Consultant at least ten (10) days advance written notice.

**9. Option to Extend.** At the option of the Authority and with the consent of Consultant, this Agreement may be renewed for a term of an additional three (3) months, or such longer period of time as the Parties may agree.

10. **Licenses**. Consultant shall, at Consultant's expense, obtain and maintain such licenses, if any, as may be required by law to perform the Services required under this Agreement.

11. **Amendment**. This Agreement is subject to amendment only by the written consent of the Parties, and such amendment shall be effective as of the date the amendment is executed by the Parties, or such other date as the Parties shall designate. Any amendment shall be approved by the Authority with the same formality as the original execution of this Agreement. No action taken or statement made by any employee or agent of the Authority shall serve to amend this Agreement unless approved or ratified by the Board of Directors of the Authority at a regular or special meeting.

12. **Compliance With Law**. In performing this Agreement, Consultant shall comply with all applicable laws, rules and regulations including, but not limited to all federal, state and local laws.

13. **Severability**. Invalidation of any of the provisions of this Agreement or any paragraph, sentence, clause, phrase or word herein, or the application thereof to any given circumstance, shall not affect the validity of the remainder of this Agreement.

14. **Waiver**. No waiver by any of the Parties to this Agreement of any covenant, term, condition or agreement contained herein shall be deemed or construed as a waiver of any other covenant, term, condition or agreement, nor shall the waiver of any breach thereof be deemed to constitute a waiver of any subsequent breach, whether of the same or of a different provision of this Agreement.

15. **Time of the Essence**. Time is of the essence in the performance of this Agreement.

16. **Assignment**. This Agreement is personal to Consultant, and Consultant shall not have the right, power or authority to assign this Agreement or any portion hereof, or to delegate any duties or obligations arising hereunder either voluntarily, involuntarily or by operation of law, without the prior written approval of the Consultant.

17. **Integration**. This Agreement embodies the entire agreement and understanding between the Parties and supersedes all prior agreements and understandings, if any, between the Parties relating to the subject matter hereof. This Agreement specifically supersedes and replaces the terms and provisions of all prior agreements, whether verbal or written entered into between Consultant and the Authority, which agreements are no longer in effect.

18. **Reports**. The Authority may, from time to time, request brief written or oral progress reports concerning the course of the performance of this contract by Consultant, which reports if oral, may be presented to Authority at a regular or special meeting of the Board of Directors.

**IN WITNESS WHEREOF**, the Parties have executed this Agreement as of the \_\_\_\_ day of \_\_\_\_\_, 2023, to be effective as of the Effective Date set forth above.

**CHERRY CREEK BASIN WATER  
QUALITY AUTHORITY**, a quasi-municipal  
corporation and political subdivision of the  
State of Colorado

By: \_\_\_\_\_  
Joshua Rivero, Chair

Attest:

\_\_\_\_\_  
John A. McCarty, Secretary/Treasurer

Approved as to Form:

\_\_\_\_\_  
Timothy J. Flynn, General Counsel  
Cherry Creek Basin Water Quality Authority

**This Agreement is Accepted By:  
CONSULTANT:  
R2R ENGINEERS, INC.**, a Colorado  
corporation

By: \_\_\_\_\_  
Richard G. Borchardt, President

By execution, signer certifies that he or she is authorized to accept and bind consultant to the terms of this agreement.

**AS NEEDED CONSULTING SERVICES AGREEMENT**

**RESPEC COMPANY, LLC**

**THIS AS NEEDED CONSULTING SERVICES AGREEMENT**

(“Agreement”) is entered into as of the 16<sup>th</sup> of November, 2023, to be effective as of January 1, 2024 between the **CHERRY CREEK BASIN WATER QUALITY AUTHORITY**, a quasi-municipal corporation and political subdivision of the State of Colorado (“Authority”), whose address is Post Office Box 3166, Centennial, Colorado 80161, and **RESPEC COMPANY, LLC**, a South Dakota corporation (“Consultant”), whose local address is 720 South Colorado Blvd., Suite 410S, Denver, Colorado 80246. Consultant and Authority may hereinafter singularly be referred to as a “Party” and collectively as the “Parties.”

**RECITALS**

**WHEREAS**, the Authority was established for the purpose of preserving, protecting and enhancing the water quality in the Cherry Creek Reservoir (“Reservoir”) and the Cherry Creek Watershed (“Watershed”); and

**WHEREAS**, Consultant pursuant to prior agreements with the Authority developed a Watershed Model and generated specific Watershed Model runs and planning scenarios for the Authority; and

**WHEREAS**, at times questions arise concerning the Watershed Model and water quality issues in the Watershed and in the Reservoir generally, as to which Consultant has expertise and knowledge; and

**WHEREAS**, Authority desires to confer with Consultant from time-to-time for the purpose of obtaining advice and information with respect to such questions and with respect to the Watershed Model, including requesting additional Watershed Model runs; and

**WHEREAS**, Consultant is willing to provide such services and consult with Authority on an as-needed basis, and Authority desires to utilize Consultant for such purposes, upon the terms and conditions hereinafter set forth.

**NOW, THEREFORE**, in consideration of the promises set forth herein, Authority and Consultant agree as follows:

1. **Scope of Services**. During calendar year 2024, Consultant agrees to make its representatives, including, but not limited to, Alan Leak, available to assist

Authority and Authority's other consultants in answering questions and providing information with respect to the Watershed and Reservoir Models and other matters that affect water quality in Cherry Creek and Cherry Creek Reservoir.

2. **Authorization to Proceed.** Consultant will perform the Services on an as needed basis, but only when requested to do so in writing by the Authority's Administrator.

3. **Compensation.** For the Services performed for Authority during calendar year 2024, Consultant will be compensated in accordance with Consultant's hourly rates and reimbursable costs, as set forth on **Exhibit A**, as attached hereto. Notwithstanding any other provision contained herein to the contrary, total compensation for Services provided by Consultant under this Agreement shall not exceed \$25,000 without the express prior written consent of the Authority's Executive Committee.

4. **Separate Agreement.** This is a separate agreement entered into between the Authority and Consultant and is in addition to any other agreements entered into between the Authority and Consultant. Services chargeable to and/or authorized under any prior agreement shall not be charged to or performed under this Agreement. Nothing contained in this Agreement shall be deemed to modify or in any way amend or supersede any existing agreements Consultant has with the Authority; provided, however, the general terms and provisions of those agreements relating to the method of payment, conflict of interest, records, audits, confidentiality of information, insurance, and indemnification, are incorporated herein by reference as if fully set forth.

5. **Binding Effect.** This Agreement shall be binding upon and inure to the benefit of the Parties hereto and their respective successors and assigns.

6. **Severability.** In the event any one of more of the provisions of this Agreement shall for any reason be held to be invalid or unenforceable, the remaining provisions of this Agreement shall be unimpaired, and shall remain in full force and effect and shall be binding upon the Parties hereto.

7. **Compliance with Laws.** In performing this Agreement, Consultant shall comply with all applicable laws, rules and regulations, including but not limited to all federal, state and local laws.

8. **Counterpart Signatures.** This Agreement can be executed in counterparts, each of which taken together shall constitute one original document.

9. **Governing Law.** This Agreement shall be governed by and construed in accordance with the laws of the State of Colorado.

**IN WITNESS WHEREOF**, the Parties have executed this Agreement in duplicate original as of the dates set forth below. This Agreement must have the signature of an authorized representative of Consultant on both original copies.

**AUTHORITY:**

**CHERRY CREEK BASIN WATER  
QUALITY AUTHORITY**, a  
quasi-municipal corporation and political  
subdivision of the State of Colorado

By: \_\_\_\_\_

\_\_\_\_\_  
Joshua Rivero, Chair

Date: \_\_\_\_\_

Approved as to Form:

\_\_\_\_\_  
Timothy J. Flynn, General Counsel  
To the Authority

**CONSULTANT:**

**RESPEC, COMPANY, LLC.**, a South Dakota  
corporation

By: \_\_\_\_\_

\_\_\_\_\_  
Alan J. Leak, Principal

Date: \_\_\_\_\_

EXHIBIT A



## 2024 BILLING RATE SCHEDULE

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Position	Hourly Rate
Principal/Senior Project Manager	\$205-235
Senior Project Manager	\$175-225
Project Manager	\$155-190
Water Rights Engineer	\$145-180
Water Resources Scientist	\$135-170
Project Engineer	\$135-170
Designer	\$105-155
Scientist	\$100-145
Engineer	\$100-145
Hydrologist	\$100-145
Engineering Technician	\$85-140
Administrative Support	\$80-105
Engineering Intern	\$65-85

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Expenses	
Mileage	Regulatory Rate
Drone Rental per Day	\$500
Postage/Courier	At Cost
Vendor Printing and Binding	At Cost
Other Expenses	At Cost

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**AGREEMENT FOR CONSULTING SERVICES**  
**FOR**  
**CHERRY CREEK BASIN WATER QUALITY AUTHORITY**

**THIS AGREEMENT FOR CONSULTING SERVICES** (“Agreement”) is entered into as of the \_\_\_ day of November, 2023 to be effective as of January 1, 2024 between the **CHERRY CREEK BASIN WATER QUALITY AUTHORITY**, a quasi-municipal corporation and political subdivision of the State of Colorado (“Authority”), whose address is P.O. Box 3166, Centennial, Colorado 80161, and **RG AND ASSOCIATES, LLC**, a Colorado limited liability company, (“Consultant”) whose address is 4885 Ward Road, Suite 100, Wheat Ridge, Colorado 80033. Authority and Consultant may hereinafter singularly be referred to as “Party” and collectively as the “Parties.”

**RECITALS**

**WHEREAS**, the Authority was established for the purpose of preserving and protecting the water quality in the Cherry Creek Reservoir and the Cherry Creek Watershed; and

**WHEREAS**, in furtherance of its purposes, the Authority has retained and continues to retain, from time to time, numerous technical consultants;

**WHEREAS**, Consultant has performed services for the Authority in the past and Authority desires to continue receiving services from Consultant during calendar year 2024 in accordance with the terms and provisions of this Agreement; and

**WHEREAS**, Consultant represents that is has the personnel and expertise necessary to perform such services for Authority in a competent and timely manner.

**NOW, THEREFORE**, in consideration of the promises set forth herein, Authority and Consultant agree as follows:

1. **Scope of Services.** Consultant, agrees to perform the services as described in the scope of services attached hereto as **Exhibit A** (consisting of four pages) and incorporated herein by this reference, and identified as Basic Tasks A, B, C, and D, and Optional Tasks A and B (“Scope of Services”), together with all labor, materials, scheduling, procurement and related work reasonably inferable from the Scope of Services and necessary to provide such liaison and consulting services as contemplated by the Scope of Services (“Services”). The Services will be performed in accordance with this Agreement. In the event of a conflict or inconsistency between the terms and provisions of the Scope of Services and the text of this Agreement, the text of this Agreement shall control.



2. **Notice to Proceed.** As of the effective date of this Agreement and subject to receipt by the Authority of the Certificates of Insurance required by paragraph 16, Consultant is hereby authorized to proceed with the Basic Tasks. The Optional Tasks shall not be performed until Consultant is authorized to perform Optional Tasks in writing by the Authority.

3. **Completion Date.** The Services shall be completed by Consultant on or before December 31, 2024 (“Completion Date”).

4. **Responsibility for Services.** The Authority shall not supervise the work of Consultant or instruct the Consultant on how to perform Services. Consultant shall be responsible for the professional quality, technical accuracy, timely completion and coordination of all work, reports and other Services rendered, whether such work is performed directly by Consultant or by any subconsultant or subcontractor hired by Consultant and approved by Authority in accordance with paragraph 12 below. Without entitling Consultant to additional compensation, and without limiting Authority’s remedies, Consultant shall promptly remedy and correct any errors, omissions, or other deficiencies in the Services. Consultant warrants that all Services provided under this Agreement shall be performed with competence, and in accordance with the standard of care of Consultant’s profession prevailing in Colorado.

5. **Compensation.** Authority shall compensate Consultant for Basic and Optional Tasks at the rate of \$160 per hour; provided, however, that the total amount of compensation to be paid Consultant during calendar year 2024 for Basic Tasks shall not exceed \$66,080 and for Optional Tasks shall not exceed \$27,920, without the prior express written consent of Authority, which may be withheld for any reason. The compensation to be paid Consultant under this Agreement is entire and complete and includes any and all reimbursable costs.

Further, as to any Task identified in the Scope of Services, the amount Consultant may receive for the performance of such Task, shall under no circumstances exceed fifteen percent (15%) of the estimated cost for such Task as set forth in the Scope of Services without Authority’s prior written consent. Authority will not compensate consultant for preparing or responding to Authority’s questions regarding Consultant’s invoices. If Consultant is requested to perform any work that is not expressly described in the Scope of Services or that will cause the estimated time to perform any work described in Scope of Services to be increased, Consultant will immediately notify the Authority in writing and will not perform such work until authorized to do so in writing by the Authority’s representative.

The compensation to paid to Consultant under this Agreement is entire and complete and includes any and all reimbursable and other costs as set forth, and only as set forth on Exhibit A. Consultant further represents and agrees that the reimbursable costs, if any, to Consultant together with any approved Subconsultant or approved

Subcontractor costs if set forth on Exhibit A, shall be at Consultant's actual cost and will not include any additional markup whatsoever. It is understood and agreed that Consultant will contract with and pay directly all approved Subcontractors or approved Subconsultants retained by Consultant for any Services or portion thereof provided under this Agreement.

6. **Method of Payment.** Consultant shall provide invoices each month for work completed through the last day of the preceding month. Consultant shall submit with each invoice such supporting documentation as Authority may reasonably request. Authority will not compensate Consultant for preparing or responding to Authority's questions regarding Consultant's invoices. Unless Consultant has not properly performed the Services, invoices will be paid within thirty (30) days after receipt. The Authority shall have the right to refuse to pay all or a portion of an invoice that is inconsistent with this Agreement. The Authority may delay payment until it can verify the accuracy of an invoice, obtain releases or waivers with respect to Services covered in the invoice, or resolve a dispute with the Consultant regarding an invoice.

7. **Conflict of Interest.** Consultant agrees that it shall not accept any employment during the term of this Agreement that creates a conflict of interest or compromises the effectiveness of the Consultant or otherwise interferes with the ability of Consultant to perform the Services required by this Agreement.

8. **Records and Audits.** The Consultant shall at all times maintain a system of accounting records in accordance with its normal billing procedures, together with supporting documentation for all work, purchases, services and billings under this Agreement. Consultant shall make available for audit and reproduction by the Authority all records, in whatever form, related to the Services. Consultant shall provide such availability during the term of this Agreement and for two (2) years after final payment. Consultant shall refund to the Authority any charges determined by an Authority's audit to be inconsistent with this Agreement.

9. **Confidentiality of Information.** Except as required by law or as is necessary for the performance of the Services, Consultant shall retain in strictest confidence all information furnished by the Authority and the results of any reports prepared, studies conducted or plan produced as a result of this Agreement, along with all supporting work papers and any other substantiating documents. Consultant shall not disclose such information to others without the prior written consent of the Authority's representative. Notwithstanding the foregoing, Consultant shall have no confidential obligation with respect to information that: (i) becomes generally available to the public other than as a result of disclosure by Consultant or its agents and employees; (ii) was available to Consultant on a non-confidential basis prior to its disclosure by Authority; and (iii) becomes available to Consultant from a third party who is not, to the knowledge of Consultant, bound to retain such information and confidence.

10. **Ownership of Work Product and Documents.** All printed material and electronic documents produced as a result of the Services performed under this Agreement shall be the sole property of Authority and may not be used, sold or disposed of in any manner without prior written consent of Authority's representative. All reports, electronic or otherwise, and any other documents identified in the Scope of Services as being deliverable to the Authority shall be delivered to and turned over to the Authority upon completion of the Services, but in no event, later than the Completion Date. Notwithstanding the foregoing, Consultant may retain a copy of all printed material, electronic or other documents prepared under this Agreement.

11. **Changes in Services.** Authority and, in particular, the Authority's manager shall have the right to order additions, deletions or changes in the Services at any time and for any reason, but especially for purposes of improving coordination between the Authority's consultants and eliminating the duplication of Services, so long as such changes are within the general Scope of Services covered by this Agreement. Requests for material changes in the Services may be made by the Authority's representative orally or in writing; provided, however, that oral requests shall be confirmed by a written request within ten (10) days after the oral request. If the Authority directs the Consultant to proceed with any material change, Consultant shall be paid for the change as agreed to by the Parties.

12. **Approval of Subconsultants.** Consultant shall not employ any subconsultant or subcontractor without the prior written approval of Authority's representative nor shall Consultant assign any rights or obligations under this Agreement in whole or in part without the Authority's prior written approval which may be withheld for any reason. Consultant shall be responsible for the coordination, accuracy and completeness of all Services in accordance with generally accepted principles and practices of Consultant's profession, regardless of whether the Services are performed by Consultant or one or more subconsultants. Consultant shall endeavor to bind each of its approved subcontractors or approved subconsultants, if any, to the terms of this Agreement. In the event that the subconsultant or subcontractor is unwilling or unable to comply with any term or provision of this Agreement, Consultant will inform Authority of the specific term or provision at issue. Authority may accept the lack of compliance to the terms of this Agreement on the part of the subconsultant or subcontractor, or may request that a different subconsultant or subcontractor be retained. This Agreement may be terminated by Authority if subcontracted or assigned, either in whole or in part, by the Consultant without the express written consent of Authority's representative.

13. **Independent Contractor.** In the performance of the Services, the Consultant shall be, for all purposes, an independent contractor and not an employee or agent of the Authority. Consultant and its employees and Subconsultants shall in no way represent themselves to third parties as agents or employees of the Authority.

14. **No Unemployment Insurance or Workers' Compensation Benefits.** Consultant is not entitled to unemployment insurance or workers' compensation benefits as a result of performance of the Services for the Authority. Consultant is required to provide workers' compensation and unemployment insurance benefits for its employees and/or subconsultants and subcontractors as required by law.

15. **Payment of Taxes.** Consultant is solely liable for any federal and state income and withholding taxes, unemployment taxes, FICA taxes and Worker's Compensation payments and premiums applicable to this Agreement or any services provided. Consultant shall indemnify the Authority for any liability resulting from nonpayment of such taxes and sums.

16. **Insurance.** Neither the Consultant nor any subconsultant, agent or employee thereof, shall continue work on any Services until the following minimum insurance coverages have been obtained:

16.1 **Workers' Compensation Insurance.** The Consultant and each subconsultant shall carry workers' compensation insurance to cover liability under the laws of the State of Colorado in connection with the Services performed pursuant to this Agreement. Consultant and each subconsultant or subcontractor shall carry separate policies.

16.2 **Commercial General Liability Insurance.** The Consultant and each subconsultant or subcontractor shall carry commercial general liability insurance, which shall include blanket contractual liability coverage. Such insurance shall be in an amount specified in the Colorado Governmental Immunity Act, § 24-10-101, *et. seq.*, C.R.S., as may be amended from time to time (currently \$427,000 per person, \$1,195,000 per occurrence for bodily injury and property damage).

16.3 **Automobile Liability Insurance.** The Consultant and each subconsultant shall carry automobile liability insurance to include owned, non-owned and hired vehicles used in the performance of Services under this Agreement. Such insurance shall be in the amounts specified in the Colorado Governmental Immunity Act § 24-10-101, *et. seq.*, C.R.S., as it may be amended from time to time (currently \$427,000 per person, \$1,195,000 per occurrence for bodily injury and property damage).

16.4 **Professional Liability Insurance.** The Consultant and each subconsultant or subcontractor shall carry professional liability insurance in the amount of \$1,000,000 per claim and aggregate limit, unless an alternate amount is agreed to in writing by the Authority.

The required commercial general liability and automobile policies shall: (1) name the Authority as an additional insured for coverage only, with no premium payment obligation; (2) provide a cross-liability/severability of interest clause; and (3) provide that

the coverage for the Authority will not be impaired by the Consultant or subconsultant's failure to comply with any of the terms or conditions of the policy.

The Consultant and each subconsultant shall provide Certificates of Insurance (and renewals thereof) identifying this Agreement and demonstrating that the required coverages have been obtained. The Consultant shall not allow any subcontractor, agent or employee to commence work until appropriate Certificates of Insurance have been obtained and approved by the Authority. The coverages specified in each Certificate of Insurance shall not be terminated, reduced, or modified without providing at least thirty (30) prior written days' notice to the Authority.

17. **Compliance with Laws.** In performing this Agreement, Consultant shall comply with all applicable laws, rules and regulations, including but not limited to all federal, state and local laws.

18. **Communications.** It is understood by Authority and Consultant that successful progress under this Agreement requires frequent, concise and documented communication between the Party's representatives. Authority hereby designates John McCarty, Bill Ruzzo and Jane Clary as the representatives, each of whom individually shall have authority to give information to and receive information from Consultant. Authority may change its designated representative or name additional representatives from time to time.

Consultant hereby names Rick Gonçalves, as its representative who will give information to and receive information from Authority. Consultant may change its designated representative only with the prior written approval of Authority.

19. **Liability.** This paragraph 19 shall survive termination of this Agreement and shall overrule any contrary provision in amendment set forth on **Exhibit A**. Consultant agrees to provide a defense and pay any damages and costs for any liability or claim of whatsoever nature arising in any way out of this Agreement, to the extent caused by any negligent or wrongful act or omission of the Consultant, or Consultant's officers, agents or employees. This paragraph 19 shall survive termination of this Agreement.

20. **Acceptance Not a Waiver.** The Authority's approval of studies, drawings, designs, plans, specifications, reports, computer programs and other work or material shall not in any way relieve Consultant of responsibility for the technical accuracy of the Services. The Authority's approval or acceptance of, or payment for, any Services shall not be construed to operate as a waiver of any rights under this Agreement, or of any cause of action arising out of the performance of this Agreement.

21. **Termination or Suspension.** The Authority reserves the exclusive right to terminate or suspend, for any reason or no reason, all or a portion of the Services under this Agreement by giving ten (10) calendar days written notice to the Consultant. If any portion of the Services shall be terminated or suspended, the Authority shall pay the

Consultant equitably for all services properly performed pursuant to this Agreement. If the work is suspended and the Consultant is not given an order to resume work within sixty (60) days from the effective date of the suspension, this Agreement will be considered terminated. Upon termination, the Consultant shall immediately deliver to the Board any documents then in existence, that have been prepared by the Consultant pursuant to this Agreement.

22. **Default.** Each and every term and condition of this Agreement shall be deemed to be a material element of this Agreement. In the event either Party shall fail or refuse to perform according to the material terms of this Agreement, such Party may be declared in default by the other Party by a written notice.

23. **Remedies.** In the event a Party has been declared in default, such defaulting Party shall be allowed a period of fifteen (15) days within which to correct, or commence correcting, the default. In the event that the default has not been corrected or begun to be corrected, or the defaulting Party has ceased to pursue the correction with due diligence, the Party declaring default may elect to (i) terminate this Agreement and seek damages; (ii) treat the Agreement as continuing and require specific performance; or (iii) avail itself of any other remedy at law or in equity. In the event Consultant fails or neglects to perform the Services in accordance with this Agreement, the Authority may elect to correct such deficiencies and charge Consultant for the full cost of the corrections.

24. **Term.** Unless sooner terminated in accordance with the provisions of paragraph 21 above, this Agreement shall remain in effect until the Services are fully performed, at which time the Agreement shall terminate and be of no further force and effect, except as to those provisions which expressly survive termination, including but not limited to paragraphs 8, 9, 10, and 12.

25. **Force Majeure.** The Parties shall not be responsible for any failure or delay in the performance of any obligations under this Agreement caused by acts of God, flood, fire, war or public enemy.

26. **Assignment.** Subject to the provisions of paragraph 12 above, this Agreement shall bind and inure to the benefit of the Parties and their respective successors and assigns. This Agreement is intended to benefit only the Parties and neither subconsultants, subcontractors nor suppliers of Consultant nor any other person or entity is intended by the Parties to be a third-party beneficiary of this Agreement.

27. **Governing Law.** This Agreement shall be governed by and construed under the laws of the State of Colorado.

28. **Notice.** All notices required or given under this Agreement shall be in writing, and shall be deemed effective: (i) when delivered personally to the other Party; or (ii) seven (7) days after being deposited in the United States mail, first-class postage

prepaid, properly addressed as follows; or (iii) when sent by facsimile transmission and receipt is confirmed by return facsimile transmission or when sent by email to the email addresses set forth below.

If to Consultant:

Rick Gonçalves  
RG and Associates, LLC  
4885 Ward Road, Suite 100  
Wheat Ridge, Colorado 80033  
rickg@rgengineers.com

If to Authority:

Manager  
Cherry Creek Basin Water Quality Authority  
P.O. Box 3166  
Centennial, Colorado 80161  
manager@ccbwwqa.org

With a copy to:

Timothy J. Flynn  
Collins Cole Flynn Winn & Ulmer, PLLC  
165 S. Union Boulevard, Suite 785  
Lakewood, Colorado 80228  
tflynn@cogovlaw.com

or such other persons or addressees as the Parties may designate in writing.

29. **Governmental Immunity.** The Parties understand and agree that the Authority is relying upon, and has not waived, the monetary limitations of \$427,000 per person, \$1,195,000 per occurrence, and all other rights, immunities and protections provided by the Colorado Governmental Immunity Act §24-10-101 *et seq.*, C.R.S., as it may be amended from time to time.

30. **Entire Agreement.** This Agreement constitutes the entire agreement between the Authority and Consultant and replaces all prior written or oral agreements and understandings. It may be altered, amended or repealed only by a duly executed written instrument.

31. **Effective Date.** This Agreement shall become effective as of January 1, 2024.

**CHERRY CREEK BASIN WATER  
QUALITY AUTHORITY**, a quasi-municipal  
corporation and political subdivision of the  
State of Colorado

By: \_\_\_\_\_  
Joshua Rivero, Chair

Attest:

\_\_\_\_\_  
John McCarty, Secretary/Treasurer

Approved as to Form:

\_\_\_\_\_  
Timothy J. Flynn, General Counsel

This Agreement is accepted by:

**CONSULTANT:  
RG AND ASSOCIATES, LLC**, a Colorado  
limited liability company

By: \_\_\_\_\_  
Rick Gonçalves, President

By execution the signor for Consultant certifies that he or she is authorized to accept and bind Consultant to the terms of this Agreement.





October 25, 2023

Bill Ruzzo, Tim Flynn  
 Cherry Creek Basin Water Quality Authority  
 tflynn@cogovlaw.com  
[Bill.Ruzzo@comcast.net](mailto:Bill.Ruzzo@comcast.net)

**RE: Scope and Budget for 2023**

Bill and Tim,

Following is my scope and budget for Water/Wastewater coordination and RDS coordination activities:

**Scope of Work and Budget**

**I. BASIC TASKS**

**A. Water/Wastewater Coordinator**

1. Act as the Authority’s engineering consultant on water and wastewater related issues and Reservoir treatment activities, including enhanced de-stratification.

48 hrs @ \$160 = \$7,680

2. Attend board meetings, TAC meetings and staff meetings and committee meetings.

130 hrs @ \$160= \$20,800

3. Review, provide comments and recommendations on all Wastewater Treatment Plant and Lift Station Site Location Applications that are referred to the authority and attend pertinent meetings related to them.

40 hrs @ \$160 = \$6,400

5. Address any other issues as directed by the manager or board.

**Yearly Budget = \$34,880**

**B. Reservoir Destratification System (RDS) Coordination Activities**

1. Assist with the management of the system and help coordinate Operation and Maintenance activities, including:

- a. Performing pre-season check of RDS.
- b. Operate RDS for season (see attached operations policy) including start-up and shutdown.

EXHIBIT A

- c. Coordinate compressor maintenance with CCBWQA's maintenance contractor (currently Ingersoll Rand).
  
- d. Coordinate annual in-lake maintenance with CCBWQA's contractor (currently Foster Dirt and Construction).
- e. Order parts needed for in-lake maintenance from suppliers (varies).
- f. Respond to system warnings, shutdowns, or repairs and coordinate CCBWQA's contractors to take action needed to get RDS operational.
- g. Review and authorize invoices for maintenance and repair by CCBWQA's contractors.
- h. Prepare annual report (see attached example).
  - i. Provide notifications and updates of system operation and repair to Colorado Parks and Wildlife and Marina vendor.
  - j. Evaluate and recommend improvements to operations, policies, and maintenance (as needed).

90 hours at \$160/hour = \$14,400

**Yearly Budget= \$14,400**

**C. Prepare Annual report and provide other services requested by CCBWQA management.**

4.5 hours at \$160/hour = \$720

**Yearly Budget= \$720**

**D. In-Park PRF Maintenance and repair Activities**

1. Inspect all In-Park PRFs at least once a year.
2. Observe and photograph PRF's and note any deficiencies or maintenance needs.
3. After one major storm event, update or amend Annual PRF Observation Report to assess damage or verify lack of damage resulting from the storm event. A major storm event is defined as having a precipitation intensity equal to or greater than 1" per hour or a storm event that results in damage as reported by CPW or the Corps.
4. Coordinate field visits with CCBWQA Technical Manager, Army Corps of Engineers (Corps), and Colorado Parks and Wildlife (CPW) Staff.

EXHIBIT A

5. Write Annual PRF Observation Report and revise as-needed based on comments from management, TAC, and Board.
6. Identify maintenance projects and prepare budgets for inclusion in CCBWQA's CIP.
7. Prepare Action Item Memo and presentation to TAC and Board to accept report.
8. Transmit accepted report to CPW staff and summarize CPW' maintenance activities according to Agreements between CCBWQA and CPW.
9. Coordinate with CCBWQA and CPW staff as-needed.
10. Organize and manage repair and maintenance contractors.
11. Manage weed control contractors

100.5 hours @ \$160/hr=	\$16,080
<b>Yearly Budget=</b>	<b>\$16,080</b>
<b>Basic Services Total Yearly Budget=</b>	<b>\$66,080</b>

**II. OPTIONAL TASKS**-These services will only be performed upon specific authorization of the Authority's Executive Committee.

**A. More Than One Storm Event-**

If more than one (1) major storm event, as defined in Section D.3. above, occurs in 2024, and if an additional inspection is recommended be performed due to possible changes to the PRF Observation Report or CIP budget, and the Authority agrees with the request for an additional storm inspection, the Consultant shall perform and report on the storm inspection at an additional cost, not to exceed \$2,000.00, after Executive Committee approval.

12.5 hours @ \$160/hr=	\$2,000
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**B. RDS Preliminary Design and Rehabilitation Management Activities-**

Specific work for this task will be identified in the future, prior to the option for this task being initiated.

162 hours @ \$160=	\$25,920
<b>Optional Tasks Total Budget=</b>	<b>\$27,920</b>

EXHIBIT A

Messrs. Ruzzo and Flynn  
October 25, 2023  
Page 4

**III. Total Budget for Basic and Optional Tasks** **\$94,000**

**IV. Tabular Summary**

<b>SUMMARY</b>	
<b>Basic Tasks Cost</b>	<b>Budget</b>
Water/Wastewater Coordinator	\$ 34,880
RDS Coordination Activities	\$ 14,400
Annual Report	\$ 720
In-Park PRF Maintenance and Repair	\$ 16,080
<b>Total Basic Tasks</b>	<b>\$ 66,080</b>
<b>Optional Tasks</b>	<b>Budget Costs</b>
More Than One Storm Inspection	\$ 2,000
RDS Preliminary Design/Rehab Management	\$ 25,920
<b>Total Optional Tasks</b>	<b>\$ 27,920</b>
<b>TOTAL ALL TASKS</b>	<b>\$ 94,000</b>

If you have any questions, please do not hesitate to call.  
Sincerely,

RG AND ASSOCIATES, LLC  
Ricardo Gonçalves, PE

**RATE SCHEDULE FOR PROFESSIONAL SERVICES**

<u>LABOR CLASSIFICATION</u>	<u>HOURLY BILLING RATE</u>
Principal	\$185.00
<b>ENGINEERING:</b>	
Senior Project Manager	\$175.00
Project Manager	\$160.00
Senior Project Engineer	\$145.00
Project Engineer	\$135.00
Senior Design Engineer	\$125.00
Design Engineer	\$120.00
Engineering Technician	\$95.00
<b>PLANNING:</b>	
Project Manager	\$125.00
Senior Planner	\$100.00
Planner	\$90.00
Planner Technician	\$85.00
<b>CONSTRUCTION ADMIN:</b>	
Senior Construction Manager	\$140.00
Certified Operator	\$140.00
Construction Manager	\$130.00
Senior Construction Observer	\$120.00
Construction Observer	\$110.00
<b>TECHNICIANS:</b>	
Senior CADD Technician	\$115.00
CADD Technician	\$105.00
Graphics/GIS Specialist	\$95.00
Office Administrator	\$85.00
Word Processor	\$75.00
Administrative Assistant	\$65.00
<b><u>DIRECT EXPENSES</u></b>	
Prints/Copies	At Cost
Mileage	\$0.57 ½/mile
Travel Time	At Cost
Sub-Consultants	Cost + 10%
Airfare/Lodging/MI&E	At Cost

**AGREEMENT  
FOR  
TECHNICAL MANAGER SERVICES**

**THIS AGREEMENT FOR TECHNICAL MANAGER SERVICES** (“Agreement”) is made and entered into this \_\_\_\_\_ day of November, 2023, to be effective as of January 1, 2024 (“Effective Date”) by and between the **CHERRY CREEK BASIN WATER QUALITY AUTHORITY**, a quasi-municipal corporation and political subdivision of the State of Colorado (“Authority”), whose address P.O. Box 3166, Centennial, Colorado 80161, and **WRIGHT WATER ENGINEERS, INC.**, a Colorado corporation (“Consultant”) whose address is 2490 West 26<sup>th</sup> Avenue, Suite 100A, Denver, Colorado 80211. Consultant and Authority may hereinafter singularly be referred to as a “Party” and collectively as the “Parties.”

**RECITALS**

**WHEREAS**, the Authority was established for the purpose of preserving and protecting the water quality in the Cherry Creek Reservoir (“Reservoir”) and the Cherry Creek Watershed (“Watershed”); and

**WHEREAS**, in furtherance of its purposes, the Authority retains numerous technical consultants; and

**WHEREAS**, effective January 1, 2023 the Authority entered into an Agreement for Technical Manager Services with Consultant; and

**WHEREAS**, Authority desires to continue utilizing Consultant to coordinate and oversee the other various technical consultants that perform work for and on behalf of the Authority; and

**WHEREAS**, Consultant represents that it has the personnel and expertise necessary to perform such coordination and oversight services for the Authority in a competent and timely manner.

**NOW, THEREFORE**, in consideration of the promises set forth herein, Authority and Consultant agree as follows:

1. **Scope of Services**. Consultant agrees to perform the services described in the Scope of Services attached hereto as **Exhibit A** (consisting of 4 pages) and incorporated herein by this reference, together with all necessary labor, materials, scheduling, procurement and related work and services, including all things reasonably inferable from the Scope of Services as may be necessary to complete the totality of the obligations imposed upon Consultant by this Agreement (“Services”). The Services have been divided into three categories consisting of: (1) Technical Manager General Responsibilities; (2) Technical Activities and Regulatory Support; (3) Additional Services. In addition, there is a Contingency of an additional two (2) hours of work per week to allow flexibility for additional support for unforeseen activities as directed by the Board.

The Services will be performed in accordance with this Agreement, including the Scope of Services; provided, however, in the event of a conflict or inconsistency between the terms and provisions of the Scope of Services, and the text of this Agreement, the text of this Agreement shall control.

2. **Notice to Proceed.** As of the Effective Date of this Agreement, Consultant is authorized to provide the Services provided Authority has received satisfactory certificates of insurance as required by paragraph 16 below. Any Services identified in the Scope of Services as requiring prior Authority approval, will not be performed by Consultant until Consultant receives specific written direction from the Authority to proceed with such Services.

3. **Completion Date.** Consultant shall give this Agreement and the Services to be performed hereunder such priority as is necessary to cause the Services to be timely and promptly performed in accordance with the time periods contemplated or expressly provided for in the Scope of Services. Unless delayed by acts or the failure to act of Authority or other causes beyond the control of Consultant, and without extending any deadline established elsewhere in this Agreement or otherwise, all Services required under this Agreement shall be entirely completed to Authority's reasonable satisfaction and all deliverables, if any, as set forth in the Scope of Services shall be delivered to Authority no later than December 31, 2024.

4. **Responsibility for Services.** The Authority shall not supervise the work of Consultant or instruct the Consultant on how to perform the Services. Consultant shall be fully responsible for the professional quality, technical accuracy, timely completion, and coordination of Services including all work and reports that are a part thereof, whether such work is performed directly by Consultant or by any subconsultant or subcontractor hired by Consultant and approved Authority in accordance with paragraph 12 below. Without additional compensation and without limiting Authority's remedies, Consultant shall promptly remedy and correct any errors, omissions, or other deficiencies in the Services. The Services provided under this Agreement shall be performed with competence and in accordance with the standard of care of Consultant's profession prevailing in Colorado.

5. **Compensation.** Authority shall compensate Consultant in accordance with Consultant's hourly rates and reimbursable costs as set forth on **Exhibit B** (consisting of 1 page) attached hereto and incorporated herein by this reference; provided, however, that the total amount of compensation that Consultant shall receive under this Agreement, including the Contingency, for calendar year 2024, shall not exceed \$232,884.00 without the prior written consent of the Authority. If Consultant is requested to perform any Services that are outside the Scope of Services as herein defined, or that will cause the estimated time to perform any Services to be increased, Consultant will immediately notify Authority in writing and will not perform such Services until authorized to do so in writing by Authority's representative.

The compensation to be paid Consultant under this Agreement is entire and complete and includes any and all reimbursable and other costs as set forth, and only as set forth on **Exhibit B**. Consultant further represents and agrees that the reimbursable costs to Authority

together with any approved subconsultant or approved subcontractor costs are at Consultant's actual cost and do not include any additional mark-up whatsoever. It is understood and agreed that Consultant will contract with and pay directly all approved subconsultants or approved subcontractors retained by Consultant for the performance of any Services or portion thereof.

5.1 **Rates and Employee Categories.** Page 4, Table 1 of the Scope of Services sets forth the estimated man hours for each of the three categories of Consultant's Scope of Services that are expected to be performed under this Agreement. Table 1 also sets forth the hourly rates for each category of Consultant's employees that will perform Services under this Agreement. Consultant agrees that all labor performed hereunder shall be performed for the hourly rate and by the category of employee as identified in **Exhibit B**, and Table 1, except that if any work is performed by an employee whose hourly rate is less than the rate described in Table 1 and **Exhibit B**, Authority shall be charged the lesser rate. Further, should any employee's job category or classification change during the term of this Agreement, that change shall not in any way affect or modify the employee's billing rate under this Agreement unless the billing rate has been reduced as a result of such job reclassification, in which case the reduced billing rate shall be applied for purposes of the invoices prepared and submitted to the Authority.

6. **Method of Payment.** Consultant shall provide an invoice each month for the Services completed through the last day of the preceding month. Each invoice shall be submitted only for those Services performed during the period for which the invoice is submitted. Consultant shall submit with each invoice such supporting documentation as Authority may reasonably request. Each invoice submitted by Consultant shall constitute a representation to Authority that the Services are completed to the point as represented in the billing invoice. Unless Consultant does not properly perform the Services, invoices will be paid within thirty (30) to forty-five (45) days after receipt. Authority shall have the right to refuse to pay all or a portion of any invoice that is inconsistent with this Agreement. Authority may delay payment until it can verify the accuracy of an invoice, obtain releases or waivers with respect to Services covered in the invoice, or resolve a dispute with Consultant regarding an invoice.

Notwithstanding the foregoing, Consultant's invoice for work performed during the month of December shall include all work performed up to and including the last day of the month or, in the alternative, Consultant may submit two invoices for December. The first invoice shall be for work performed through the 26<sup>th</sup> day of the month and the second invoice shall be for work performed for 27<sup>th</sup> day of the month through the end of the month. Invoice shall be submitted via email to [manager@ccbwwqa.org](mailto:manager@ccbwwqa.org) with copies to Bill Ruzzo at [Bill.Ruzzo@comcast.net](mailto:Bill.Ruzzo@comcast.net) and to John McCarty [JohnMcCarty1972@gmail.com](mailto:JohnMcCarty1972@gmail.com).

7. **Conflict of Interest.** Consultant agrees to notify the Authority's representatives identified in paragraph 18 or such other persons the Authority may from time to time designate, of any potential conflicts of interest that may arise on Consultant's part. After the Authority receives notification, the Parties will mutually determine if an informed consent agreement is necessary between the Parties. Consultant agrees that it shall not accept any



employment during the Term of this Agreement that creates a conflict of interest or compromises the effectiveness of Consultant or otherwise interferes with the ability of Consultant to perform the Services required by this Agreement. Consultant has entered into a separate agreement with Authority for the performance of a BMP Effectiveness Study. Said agreement and any future separate agreement that Consultant may enter into with the Authority for purposes of evaluating BMPs will not be deemed a conflict of interest for purposes of this Agreement.

8. **Records and Audits.** Consultant shall at all times maintain a system of accounting records in accordance with its normal billing procedures, together with supporting documentation for all work, purchases, Services and billings under this Agreement. Consultant shall make available for audit and reproduction by Authority all records, in whatever form, related to the Services. Consultant shall provide such availability during the term of this Agreement and for two (2) years after final payment. Consultant shall refund to Authority any charges determined by Authority's audit to be inconsistent with this Agreement.

9. **Confidentiality of Information.** Except as required by law or as is necessary for the performance of the Services, Consultant shall retain in strictest confidence all information furnished by Authority and the results of any reports or studies conducted as a result of this Agreement, along with all supporting work papers and any other substantiating documents. Consultant shall not disclose such information to others without the prior written consent of Authority's representative. Notwithstanding the foregoing, Consultant shall have no confidentiality obligation with respect to information that: (i) becomes generally available to the public other than as a result of disclosure by Consultant or its agents or employees; (ii) was available to Consultant on a nonconfidential basis prior to its disclosure by Authority; and (iii) becomes available to Consultant from a third party who is not, to the knowledge of Consultant, bound to retain such information in confidence.

10. **Ownership of Work Product and Documents.** All printed materials and electronic documents produced as a result of the Services performed under this Agreement shall become the sole property of Authority after payment to Consultant and may not be used, sold or disposed of by Consultant in any manner without prior written consent of Authority, except that Consultant may use and reproduce such materials and documents for purposes solely relating to Consultant's performances of Services under this Agreement including but not limited to Consultant's archival records.

The Authority acknowledges that the Consultant's work papers, and preliminary documents are Consultant's instruments of service. Nevertheless, the final documents prepared under this Agreement shall become the property of the Authority upon completion of the Services and payment in full of all monies due to the Consultant. The Authority agrees, to the fullest extent permitted by law but without waiving any of the protections immunities and defenses available to Authority under the Colorado Governmental Immunity Act to indemnify and hold Consultant, its officers, directors, employees and subconsultants (collectively, the Consultant) harmless from and against any damages, liabilities or costs,

including reasonable attorneys' fees, arising out of Authority's negligent or wrongful use of such materials and final documents.

Under no circumstances shall the transfer of ownership of the Consultant's drawings, specifications, electronic files, or other instruments of service be deemed a sale by the Consultant that contains any warranties, either express or implied, of merchantability and fitness for any particular purpose.

11. **Changes in Services.** The Authority acting by and through its Executive Committee shall have the right to order additions, deletions or changes in the Services at any time and for any reason, but especially for purposes of improving coordination between the Authority's consultants and eliminating the duplication of Services. Requests for material changes in the Services may be made by Authority's representative orally or in writing; provided, however, that oral requests shall be confirmed by a written request within ten (10) days after the oral request. If Authority directs Consultant to proceed with a material change, Consultant shall be paid for the change as agreed to by the Parties.

12. **Approval of Subconsultants.** Consultant shall not employ any subconsultant or subcontractor without the prior written approval of Authority's representative nor shall Consultant assign any rights or obligations under this Agreement in whole or in part without the Authority's prior written approval which may be withheld for any reason. Consultant shall be responsible for the coordination, accuracy, and completeness of all Services in accordance with generally accepted principles and practices of Consultant's profession, regardless of whether the Services are performed by Consultant or one or more subconsultants. Consultant shall endeavor to bind each of its approved subcontractors or approved subconsultants, if any, to the terms of this Agreement. In the event that a subconsultant or subcontractor is unwilling or unable to comply with any term or provision of this Agreement, Consultant will inform Authority of the specific term or provision at issue. Authority may accept the lack of compliance to the terms of this Agreement on the part of the subconsultant or subcontractor or may request that a different subconsultant or subcontractor be retained. This Agreement may be terminated by Authority if subcontracted or assigned, either in whole or in part, by the Consultant without the express written consent of Authority's representative.

13. **Independent Contractor.** In the performance of the Services, Consultant shall be, for all purposes, an independent contractor and not an employee or agent of Authority. Consultant and its employees and subconsultants shall in no way represent themselves to third parties as agents or employees of Authority.

14. **No Unemployment Insurance or Workers' Compensation Benefits.** Consultant agrees that it is not entitled to unemployment insurance or workers' compensation benefits as a result of performance of the Services for Authority. Consultant is required to provide workers' compensation and unemployment insurance benefits for its employees and/or subconsultants as required by law.

15. **Payment of Taxes.** Consultant is solely liable for any federal, state and local income and withholding taxes, unemployment taxes, FICA taxes and workers' compensation

payments and premiums applicable to the performance of the Services under this Agreement. Consultant shall indemnify Authority for any liability resulting from nonpayment of such taxes and sums.

16. **Insurance.** Neither the Consultant nor any subconsultant, agent, or employee thereof shall continue work on any Services until the following minimum insurance coverages have been obtained:

16.1 **Workers' Compensation Insurance.** The Consultant and each subconsultant and each subcontractor, if any, shall carry workers' compensation insurance to cover liability under the laws of the State of Colorado in connection with the Services performed pursuant to this Agreement. Consultant and each subconsultant or subcontractor shall carry separate policies.

16.2 **Commercial General Liability Insurance.** The Consultant and each subconsultant and subcontractor, if any, shall carry commercial general liability insurance, which shall include blanket contractual liability coverage. Such insurance shall be in an amount not less than \$1,000,000 per occurrence and having a \$1,000,000 aggregate limit for bodily injury and property damage.

16.3 **Automobile Liability Insurance.** The Consultant and each subconsultant and subcontractor, if any, shall carry automobile liability insurance to include owned, non-owned and hired vehicles used in the performance of Services under this Agreement. Such insurance shall be in an amount not less than \$1,000,000 per occurrence and having a \$1,000,000 aggregate limit for bodily injury and property damage.

16.4 **Professional Liability Insurance.** The Consultant and each subconsultant and subcontractor, if any, shall carry professional liability insurance in the amount of \$1,000,000 per claim and aggregate limit, unless an alternate amount is agreed to in writing by the Authority.

Prior to commencing any Services under this Agreement, Consultant shall provide Authority a certificate of insurance evidencing the policies required by this paragraph as well as the amounts of coverage for the respective types of coverage required. The required commercial general liability and automobile policies shall: (i) name the Authority as an additional insured for coverage only, with no premium payment obligation; (ii) provide a cross-liability/severability of interest clause; and (iii) provide that the coverage for the Authority will not be impaired by the Consultant's subconsultant's or subcontractor's failure to comply with any of the terms or conditions of the policy.

The Consultant and each subconsultant and subcontractor, if any, shall provide Certificates of Insurance (and renewals thereof) identifying this Agreement and demonstrating that the required coverages have been obtained. The Consultant shall not allow any subcontractor, agent, or employee to commence work until appropriate Certificates of Insurance have been obtained and approved by the Authority. The coverages specified in each

certificate of insurance shall not be terminated, reduced, or modified without providing at least thirty (30) prior written days' notice to the Authority.

17. **Compliance with Laws.** In performing this Agreement, Consultant shall comply with all applicable laws, rules and regulations, including but not limited to all federal, state and local laws.

18. **Communications.** It is understood by Authority and Consultant that successful progress under this Agreement requires frequent, concise, and documented communication between the Party's representatives. Authority hereby designates Board members Bill Ruzzo and/or John McCarty, or either of them, as its representatives for purposes of giving and receiving information from Consultant under this Agreement. Authority may change its designated representative or name additional representatives from time to time.

Consultant hereby designates Jane Clary, as its representative who will give information to and receive information from Authority. Consultant may change its designated representative only with the prior written approval of Authority. Each designated representative shall have full authority to not only accept and receive information but also to accept notices, give approvals and to fully represent its respective Party for all purposes under this Agreement; except that for the Consultant all contract documents must be executed by the President or Treasurer of the Consultant.

19. **Indemnification.** The Consultant agrees, to the fullest extent permitted by law, to indemnify and hold harmless the Authority, its officers, directors, and employees (collectively, the "Authority") from and against any and all damages, liabilities or costs, including reasonable attorneys' fees and defense costs, to the extent caused by the Consultant's negligent performance of Services under this Agreement and that of its subconsultants or anyone for whom the Consultant is legally liable.

Consultant assumes no liability for non-performance or negligent performance of the Authority's other contractors and consultants. Consultant's services shall not be considered supervision, in any form, of the Authority's other contractors and consultants. Therefore, Authority agrees to release and discharge Consultant from any and all claims, demands, and causes of action ("Claims") arising out of or relating to the work or Services provided by Authority or any contractor or consultant retained by Authority.

20. **Acceptance Not a Waiver.** The Authority's approval of studies, drawings, designs, plans, specifications, reports, computer programs and other work or material shall not in any way relieve Consultant of responsibility for the technical accuracy of the Services. The Authority's approval or acceptance of, or payment for, any Services shall not be construed to operate as a waiver of any rights under this Agreement, or of any cause of action arising out of the performance of this Agreement.

21. **Termination or Suspension.** The Authority reserves the exclusive right to terminate or suspend all or a portion of the Services under this Agreement for any reason or no reason by giving ten (10) calendar days written notice to the Consultant. If any portion of

the Services shall be terminated or suspended, the Authority shall pay the Consultant equitably for all services properly performed pursuant to this Agreement. If the work is suspended and the Consultant is not given an order to resume work within sixty (60) days from the effective date of the suspension, this Agreement will be considered terminated. Upon termination, the Consultant shall immediately deliver to the Board any documents then in existence, that have been prepared by the Consultant pursuant to this Agreement.

22. **Default.** Each and every term and condition of this Agreement shall be deemed to be a material element of this Agreement. In the event either Party shall fail or refuse to perform according to the material terms of this Agreement, such Party may be declared in default by the other Party by a written notice.

23. **Remedies.** In the event a Party has been declared in default, such defaulting Party shall be allowed a period of fifteen (15) days within which to correct or commence correcting the default. In the event that the default has not been corrected or begun to be corrected, or the defaulting Party has ceased to pursue the correction with due diligence, the Party declaring default may elect to (1) terminate this Agreement and seek damages; (2) treat the Agreement as continuing and require specific performance; or (3) avail itself of any other remedy at law or in equity.

24. **Term.** Unless sooner terminated in accordance with the provisions of paragraph 21 above, this Agreement shall remain in effect until December 31, 2024, at which time the Agreement shall terminate and be of no further force and effect unless the Services have not been completely performed by then. Notwithstanding the foregoing sentence, the Parties understand and agree that all terms, conditions, and covenants of this Agreement, together with any exhibits and attachments thereto, any or all of which by reasonable implication, contemplate continued performance or compliance beyond the expiration or termination of this Agreement (by expiration of the Term or otherwise) shall survive such expiration or termination and shall continue to be enforceable as provided herein. Without limiting the generality of the foregoing, paragraphs 8, 9, 10, and 19 shall survive expiration or termination of this Agreement.

25. **Force Majeure.** The Parties shall not be responsible for any failure or delay in the performance of any obligations under this Agreement caused by acts of God, flood, fire, war or public enemy or the failure of Authority to furnish timely information or to approve or disapprove Consultant's instruments of service within a reasonable period of time.

26. **Assignment.** Subject to the provisions of paragraph 12, this Agreement shall bind and inure to the benefit of the Parties and their respective successors and assigns.

27. **No Third-Party Beneficiaries.** This Agreement is intended to benefit only the Parties and neither subconsultants, subcontractors nor suppliers of Consultant nor any other person or entity is intended by the Parties to be a third-party beneficiary of this Agreement.

28. **Governing Law.** This Agreement shall be governed by and construed under the laws of the State of Colorado.

29. **Notice.** All notices required or given under this Agreement shall be in writing and shall be deemed effective: (1) when delivered personally to the other Party; or (2) seven (7) days after being deposited in the United States mail, first-class postage prepaid, properly addressed as follows; or (3) when sent by facsimile transmission and receipt is confirmed by return facsimile transmission or by email to the email addresses set forth below.

Or such other persons or addresses as the Parties may designate in writing.

If to Consultant: Jane Clary  
Wright Water Engineers, Inc.  
2490 W. 26<sup>th</sup> Ave., #100A  
Denver, Colorado 80211  
[clary@wrightwater.com](mailto:clary@wrightwater.com)

If to Authority: Bill Ruzzo and/or John McCarty  
Cherry Creek Basin Water Quality Authority  
Post Office Box 3166  
Centennial, Colorado 80161  
[Bill.Ruzzo@comcast.net](mailto:Bill.Ruzzo@comcast.net)  
[JohnMcCarty1972@gmail.com](mailto:JohnMcCarty1972@gmail.com)

With a copy to: Timothy J. Flynn  
Collins Cole Flynn Winn & Ulmer, PLLC  
165 South Union Boulevard, Suite 785  
Lakewood, Colorado 80228  
[tflynn@cogovlaw.com](mailto:tflynn@cogovlaw.com)

30. **Governmental Immunity.** The Parties understand and agree that the Authority is relying upon, and has not waived, the monetary limitations of \$424,000 per person, \$1,195,000 per occurrence, and all other rights, immunities and protections provided by the Colorado Governmental Immunity Act § 24-10-101 et. seq., C.R.S., as it may be amended from time to time.

31. **No Multiple Fiscal Year Obligations.** No provision of this Agreement shall be construed or interpreted as creating an indebtedness or a multiple fiscal year direct or indirect debt, or other multiple year financial obligation whatsoever of Authority within the meaning of any constitutional or statutory debt limitation provision, including, without limitation, Article XI, §§ 1, 2 and 6, and Article X, § 20 of the Colorado Constitution. This Agreement shall not directly or indirectly obligate the Authority to make any payments beyond the funds legally available to it for the then current fiscal year. No provision of this Agreement shall be construed to pledge or create a lien on any class or source of monies of the Authority, nor shall any provision of this Agreement restrict or limit the discretion of the Authority in the budgeting and appropriating its funds. The Authority shall notify Consultant if funds are exhausted for any fiscal year, and Consultant may, at its discretion, decide whether to continue working for the Authority during that fiscal year.

32. **Entire Agreement.** This Agreement constitutes the entire agreement between the Authority and Consultant and replaces all prior written or oral agreements and understandings. It may be altered, amended, or repealed only by a duly executed written instrument.

33. **Effective Date.** This Agreement shall become effective on the date it is signed by the appropriate representatives of the Authority.

**IN WITNESS WHEREOF**, the Parties have executed this Agreement in duplicate original as of the date set forth above. This Agreement must have the signature of an authorized person of Consultant on both original copies.

**AUTHORITY:  
CHERRY CREEK BASIN WATER  
QUALITY AUTHORITY**

By: \_\_\_\_\_  
Joshua Rivero, Chair

Attest:

\_\_\_\_\_  
John A. McCarty, Secretary

Approved as to Form:

\_\_\_\_\_  
Timothy J. Flynn, General Counsel  
Cherry Creek Basin Water Quality Authority

**CONSULTANT:  
WRIGHT WATER ENGINEERS, INC.**

By: \_\_\_\_\_  
Jane Clary, Vice President

# EXHIBIT A

## EXHIBIT A

## Exhibit A

### **CHERRY CREEK BASIN WATER QUALITY AUTHORITY TECHNICAL MANAGER SCOPE OF WORK**

November 6, 2023

The primary focus of the Technical Manager is to coordinate and oversee day-to-day operations and manage projects and personnel retained by contract<sup>1</sup> by the Cherry Creek Basin Water Quality Authority ("Authority") to facilitate implementation of the Board's ongoing projects and the Board's Mission, Vision, Goals and Objectives.

Primary responsibilities are:

1. Coordination with Legal Counsel
2. Coordination with Board of Directors and Executive Committee
3. Committees
4. Contract Management
5. Public Information & Education
6. Administration

The actual time will vary from time to time based upon the needs of the Authority, Authority's Executive Committee, and outside third parties resulting in an increase or decrease of the scope items, therefore it is understood that there is uncertainty associated with estimating time.

The Technical Manager will be assisted by the Administrative Assistant whose duties are described in the Administrative Assistant Scope of Services and will overlap to some extent with the Technical Manager's scope.

Board direction to the Technical Manager will occur at the monthly Board meetings with additional support from members of the Authority's Executive Committee.

For the purpose of organization and time estimation, the primary tasks for General Technical Manager role are divided into Routine Coordination Activities, Technical Manager Administrative Activities, Technical Activities, and Other Authority Business. The description of the scope of work follows and Table 1 provides a budget estimate for these tasks.

### **TECHNICAL MANAGER GENERAL RESPONSIBILITIES**

#### Routine Coordination Activities

1. Board meetings: one (1) per month
2. TAC meetings: one (1) per month
3. Special TAC/Board meetings: assume one (1) per year.
4. Authority Consultant Team Meetings: approximately bimonthly.
5. Preparatory calls with Board Executive Committee, one (1) per month.
6. Coordination calls with Authority Consultants
  - a. Review performance and provide feedback on direction

---

<sup>1</sup> For the purpose of this agreement, Staff shall include: LRE Water Engineers, R2R Engineers and new PAPM, Hydros Consulting, RESPEC, Inc., Cherry Creek Stewardship Partners, RG Consultants, Administrative Assistant, Accountant.



# EXHIBIT A

- b. Discuss short/long-range plans
- c. TAC agenda discussions
7. Oversee Administrative Assistant activities through regular/frequent communications

## Technical Manger Administrative Activities

1. Assist in preparation of monthly TAC meeting agenda and attachments
2. Assist in preparation of monthly Board meeting agenda and attachments
3. Review Consultant and other invoices<sup>2</sup>
4. Routine review, action and/or assignment of tasks related to email or phone requests.
5. Verify Authority Contractors and subcontractors maintain required coverages, working with the Administrative Assistant

## Technical Activities (routine)

1. Review agreements (IGA, construction contracts, other)
2. Review and participate in regulatory proceedings and processes
3. Regularly review Authority Consultants' activities, schedules, and assignments for contract compliance
4. Prepare annual budget in coordination with the Board Executive Committee and Authority's accounting and legal firms
5. Review and comment on Authority Consultants' Action Item Memos (AIM), technical reports prepared as part of their scopes of service
6. Provide direction during PAP planning and construction projects
7. Prepare for and attend other Board appointed committees and assist Administrative Assistant in preparing agendas, minutes, and follow up assignments from the Board

## Other Authority Business<sup>3</sup>

1. Reaching out to and coordinating with Authority members and water quality related agencies that address issues relevant to Authority's Mission
2. If directed by the Board, conduct outreach regarding the Authority's work with? Colorado State Representatives and Senators whose districts include land within the Authority's boundaries.
3. Support technical agenda and planning for Cherry Creek Annual Conference.
4. Miscellaneous services from time to time at the Board's direction.

## **TECHNICAL MANAGER TECHNICAL ACTIVITIES AND REGULATORY SUPPORT**

1. Regulation 72 Dewatering Issue Hearing in February 2024: Lead CCBWQA's participation in rulemaking hearing process, which began in 2023. (limited effort in 2024)
2. Regulation 38 Issues Scoping Hearing and Site Specific Standard Development: Coordination with Hydros and CDPHE on development of site-specific nutrient standards for Cherry Creek Reservoir for November 2024 hearing. (limited effort in 2024)
3. Special Projects Support: Provide support to CCBWQA during transition to a new Pollution Abatement Project Manager.
4. Strategic Planning/Work Planning: Participate in strategic planning and multi-year project planning.
5. Model Activities: Coordinate and direct modeling team on modeling efforts directed by the Board, as needed.
6. Watershed Plan Update: Work with staff team to update watershed plan in 2024.

<sup>2</sup> See Invoice Processing Policy dated 2/22/22.

<sup>3</sup> Authority business and interest examples that may occur from time to time as directed by the Board.

# EXHIBIT A

## **ADDITIONAL SERVICES**

1. **WWE Additional Staff Support:** As needed, engage senior WWE staff in peer review of technical work product as issues arise.
2. **Land Use Referrals:** Provide support for the CCBWQA's revised land use referral review process with support from subconsultant Loewen Engineers. These reviews are anticipated for CDOT projects and other multi-jurisdictional MS4 permit conditions. (consistent with 2023 approach)

## **CONTINGENCY**

A contingency of an additional two hours per week is included for the Technical Manager to allow flexibility for additional support for unforeseen activities, as directed by the Board.

## **OTHER SERVICES RELATED TO PAPM TRANSITION**

At the time that this scope of work was prepared, significant uncertainty remained regarding timing of hiring a new PAPM for the CCBWQA. In the event that CCBWQA requests that WWE provide services for a portion of the PAPM role that goes beyond the hours scoped in this proposal, then a separate scope and budget to support a contract amendment will be prepared by WWE.

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# EXHIBIT A

**Table 1. Wright Water Engineers 2024 Scope of Services**

Role	Rate	Task Description	Hours/Event	# of Events	Hours	Estimate
<b>Technical Manager General Responsibilities</b>	\$ 250	Staff Coordination	1.5	40	60	\$ 15,000
	\$ 250	TAC Meetings	3	12	36	\$ 9,000
	\$ 250	Board Meetings	3	12	36	\$ 9,000
	\$ 250	Routine Project & Staff Coordination (Phone Calls/Email/Misc. Reviews/Input)	5	50	250	\$ 62,500
	\$ 250	Peer Review	8	12	96	\$ 24,000
	\$ 250	Annual Budget Planning	24	1	24	\$ 6,000
	\$ 250	Annual Conference/Other Outreach	24	1	24	\$ 6,000
	<b>Subtotal</b>				<b>526</b>	<b>\$ 131,500</b>
<b>Technical Manager Technical Activities and Regulatory Support</b>	\$ 250	Regulatory Support (Technical Oversight for Site-specific Standard Process; Reg. 72 Dewatering/PWSD; 10 yr Roadmap; misc)	1	1	60	\$ 15,000
	\$ 250	Special Projects Support (related to R2R Transition)	1	1	40	\$ 10,000
	\$ 250	Technical Projects (Watershed Plan Update, Strategic Planning/Work Planning, Model Scenarios, Other)	138	1	138	\$ 34,500
		<b>Subtotal</b>				<b>238</b>
<b>Technical Manager Subtotal</b>					<b>764</b>	<b>\$ 191,000</b>
WWE Additional Staff Support	\$ 262	Additional Peer Review by Subject Matter Experts at WWE			32	\$ 8,384
Land Use Reviews (See note)	\$ 250	On special projects, if needed			32	\$ 8,000
Other Direct Cost Allowance (e.g., mileage, photocopies, etc.)						\$ 500
	<b>Subtotal</b>				<b>64</b>	<b>\$ 16,884</b>
<b>WWE Subtotal (Pre-Contingency)</b>					<b>64</b>	<b>\$ 207,884</b>
Contingency	\$ 250	Additional level of effort for other tasks, as approved by the Board	2	50	100	\$ 25,000
<b>Total</b>	<b>WWE Total With Contingency</b>				<b>928</b>	<b>\$ 232,884</b>

**Senior Principal Advisors and Subject Matter Experts**

Jonathan Jones, P.E.	Multiple Topics, Organizational Feedback/Opportunities
Andrew Earles, Ph.D., P.E.	Stormwater, BMPs, Stream Restoration, Modeling
Wayne Lorenz, P.E.	Wastewater, In-Reservoir Treatment
Rachel Pittinger, P.E.	Water Rights
Eric Strecker, P.E.	Stormwater BMPs (adjunct scientist)
Rod Lammers, P.E., Ph.D.	Geomorphology (adjunct scientist)
Dr. William Lewis (WWE Adjunct Scientist)	Limnology (adjunct scientist)

**Staff Support (when appropriate, according to WWE Hourly Rate Schedule)**

Matthew Howard, EIT	General Technical Support, Event Support, Outreach (as needed)
Missy Waters	Administrative Assistant (will rely primarily on Authority Admin.)

**Additional Support included in Land Use Reviews (as needed basis)**

Loewen Consultant Rate Schedule attached separately. During 2023 a limited number of land use reviews were needed.

**Notes**

Special Projects Support (related to R2R Transition): these remain undefined at the time of the 2024 budget and may require a budget amendment or use of contingency if longer period of transition is needed.

Construction-related tasks described in scope **exclude** construction oversight and formal engineering field observation.

Water rights related services include general consultation, but in-depth water rights work would need to be scoped separately.

Assumes detailed event-planning responsibilities primarily the responsibility of the Administrative Assistant.

"Other Authority Business" may require additional scopes of work for tasks not included in this scope, depending on level of effort.

Revised: 10/30/2023

EXHIBIT B

Exhibit B

WRIGHT WATER ENGINEERS, INC.  
2024 SCHEDULE OF HOURLY  
RATES

PERSONNEL	RATE PER HOUR
SENIOR PRINCIPAL/CONSULTANT	\$262
PRINCIPAL/CONSULTANT	\$250
SENIOR PROJECT ENGINEER/CONSULTANT	\$225
SENIOR ENGINEER/SCIENTIST CONSULTANT	\$200
ENGINEERING/SCIENTIST PROFESSIONAL I	\$185
ENGINEERING SPECIALIST/CONSULTANT	\$172
ENGINEERING/SCIENTIST PROFESSIONAL II	\$155
ENGINEERING DESIGNER/PROFESSIONAL III	\$142
ENGINEERING TECHNICIAN I	\$126
ENGINEERING TECHNICIAN II	\$105
ENGINEERING TECHNICIAN III	\$109
ENGINEERING TECHNICIAN IV	\$106
♦ Automobile at 60 cents per mile	♦ GIS computer at 20 dollars per hour.
♦ Four-wheel drive/Pick-up truck vehicle at 70 cents per mile	♦ Info water® at 20 dollars per hour.
♦ AutoCAD computer at 15 dollars per hour.	♦ Civil 3D at 25 dollars per hour.
<i>Ten percent (10%) will be added to all reimbursable expenses to cover administration for special consultants, independent laboratory tests, direct printing costs, telephone, supplies, lodging and subsistence, and all in-house computer, auto, postage, fax, and travel.</i>	

**TERMS OF PAYMENT:** It is agreed that this account will be billed every month. Unless otherwise approved by the Company, payment is due upon receipt of the invoice. Mail payment to the main office of the Company at 2490 West 26th Avenue, Suite 100A, Denver, Colorado 80211.

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**CHERRY CREEK BASIN WATER QUALITY AUTHORITY**  
**ANNUAL BUDGET**  
**FOR THE YEAR ENDING DECEMBER 31, 2024**

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY  
SUMMARY  
2024 BUDGET  
WITH 2022 ACTUAL AND 2023 ESTIMATED  
For the Years Ended and Ending December 31,**

11/10/23

	ACTUAL 2022	BUDGET 2023	ACTUAL 6/30/2023	ESTIMATED 2023	BUDGET 2024
BEGINNING FUND BALANCES	\$ 5,758,590	\$ 4,635,823	\$ 5,814,599	\$ 5,814,599	\$ 5,852,704
REVENUES					
Property taxes	2,644,574	2,784,685	2,723,978	2,784,685	2,846,479
Specific ownership taxes	210,405	215,204	114,391	215,204	222,803
Recreation Fees	193,937	300,000	123,383	209,000	213,000
Building Permit Fees	268,283	250,000	62,925	230,000	234,000
Wastewater Fees	119,734	111,000	80,264	161,000	164,000
Interest income	118,845	76,000	155,188	340,300	266,800
Other revenue	5,520	5,000	-	50	9,500
Total revenues	<u>3,561,298</u>	<u>3,741,889</u>	<u>3,260,129</u>	<u>3,940,239</u>	<u>3,956,582</u>
TRANSFERS IN	<u>2,132,922</u>	<u>2,737,333</u>	<u>1,955,269</u>	<u>2,362,463</u>	<u>2,869,269</u>
Total funds available	<u>11,452,810</u>	<u>11,115,045</u>	<u>11,029,997</u>	<u>12,117,301</u>	<u>12,678,554</u>
EXPENDITURES					
General Fund	932,337	1,209,300	470,044	1,010,507	1,135,097
Special Revenue Fund	2,351,559	3,872,400	953,888	2,683,262	3,734,100
Enterprise Fund	221,393	391,000	63,628	208,365	540,000
Total expenditures	<u>3,505,289</u>	<u>5,472,700</u>	<u>1,487,560</u>	<u>3,902,134</u>	<u>5,409,197</u>
TRANSFERS OUT	<u>2,132,922</u>	<u>2,737,333</u>	<u>1,955,269</u>	<u>2,362,463</u>	<u>2,869,269</u>
Total expenditures and transfers out requiring appropriation	<u>5,638,211</u>	<u>8,210,033</u>	<u>3,442,829</u>	<u>6,264,597</u>	<u>8,278,466</u>
ENDING FUND BALANCES	<u>\$ 5,814,599</u>	<u>\$ 2,905,012</u>	<u>\$ 7,587,168</u>	<u>\$ 5,852,704</u>	<u>\$ 4,400,088</u>
EMERGENCY RESERVE	\$ 88,600	\$ 91,800	\$ 88,900	\$ 98,300	\$ 98,200
RESERVOIR DEST. SERV PLAN RESERVE	70,393	43,372	60,574	43,993	16,593
FACILITIES MAINTENANCE RESERVE	100,000	100,000	100,000	100,000	100,000
CAPITAL RESERVE	750,000	750,000	750,000	750,000	750,000
TOTAL RESERVE	<u>\$ 1,008,993</u>	<u>\$ 985,172</u>	<u>\$ 999,474</u>	<u>\$ 992,293</u>	<u>\$ 964,793</u>

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY  
PROPERTY TAX SUMMARY INFORMATION  
2024 BUDGET  
WITH 2022 ACTUAL AND 2023 ESTIMATED  
For the Years Ended and Ending December 31,**

11/10/23

	ACTUAL 2022	BUDGET 2023	ACTUAL 6/30/2023	ESTIMATED 2023	BUDGET 2024
<b>ASSESSED VALUATION - ARAPAHOE</b>					
Residential	\$ 1,199,207,306	\$ 1,037,127,617	\$ 1,037,127,617	\$ 1,037,127,617	\$ 1,411,730,051
Residential - Multi Family	-	136,788,751	136,788,751	136,788,751	158,503,470
Commercial	1,001,435,625	999,003,626	999,003,626	999,003,626	1,274,805,629
Industrial	6,461,200	6,461,200	6,461,200	6,461,200	6,741,198
Agricultural	365,898	359,723	359,723	359,723	74,828
Other Ag	-	-	-	-	571,358
Natural Resources	-	-	-	-	13,089
State assessed	2,529,200	3,026,620	3,026,620	3,026,620	3,003,980
Vacant land	37,768,626	34,036,588	34,036,588	34,036,588	40,713,550
Personal property	151,299,748	144,405,973	144,405,973	144,405,973	156,571,302
Other	13,587	13,588	13,588	13,588	-
<b>Certified Assessed Value</b>	<b>\$ 2,399,081,190</b>	<b>\$ 2,361,223,686</b>	<b>\$ 2,361,223,686</b>	<b>\$ 2,361,223,686</b>	<b>\$ 3,052,728,455</b>
<b>MILL LEVY</b>					
General	0.500	0.500	0.500	0.500	0.500
Temporary Mill Levy Reduction	(0.021)	0.000	0.000	0.000	(0.108)
<b>Total mill levy</b>	<b>0.479</b>	<b>0.500</b>	<b>0.500</b>	<b>0.500</b>	<b>0.392</b>
<b>PROPERTY TAXES</b>					
General	\$ 1,199,541	\$ 1,180,612	\$ 1,180,612	\$ 1,180,612	\$ 1,526,364
Temporary Mill Levy Reduction	(50,381)	-	-	-	(329,695)
Levied property taxes	1,149,160	1,180,612	1,180,612	1,180,612	1,196,669
Adjustments to actual/rounding	-	-	(19,827)	-	-
Refunds and abatements	(13,832)	-	1,960	-	-
<b>Budgeted property taxes</b>	<b>\$ 1,135,328</b>	<b>\$ 1,180,612</b>	<b>\$ 1,162,745</b>	<b>\$ 1,180,612</b>	<b>\$ 1,196,669</b>
<b>ASSESSED VALUATION - DOUGLAS</b>					
Residential	\$ 2,039,108,800	\$ 2,075,018,450	\$ 2,075,018,450	\$ 2,075,018,450	\$ 2,708,465,000
Residential - Multi Family	-	-	-	-	173,462,960
Commercial	600,191,990	618,323,350	618,323,350	618,323,350	700,540,300
Industrial	163,237,070	169,097,570	169,097,570	169,097,570	214,950,680
Agricultural	11,494,050	10,800,380	10,800,380	10,800,380	10,972,300
Other Ag	-	-	-	-	2,634,300
Natural Resources	-	-	-	-	87,900
State assessed	3,260,900	4,954,100	4,954,100	4,954,100	4,983,700
Vacant land	192,875,070	175,740,950	175,740,950	175,740,950	216,755,120
Personal property	200,763,990	210,085,220	210,085,220	210,085,220	247,236,320
Renewable PP	-	-	-	-	24,750
Other	160,790	166,030	166,030	166,030	-
	3,211,092,660	3,264,186,050	3,264,186,050	3,264,186,050	4,280,113,330
Adjustments	(55,922,571)	(56,039,622)	(56,039,622)	(56,039,622)	(71,412,480)
<b>Certified Assessed Value</b>	<b>\$ 3,155,170,089</b>	<b>\$ 3,208,146,428</b>	<b>\$ 3,208,146,428</b>	<b>\$ 3,208,146,428</b>	<b>\$ 4,208,700,850</b>
<b>MILL LEVY</b>					
General	0.500	0.500	0.500	0.500	0.500
Temporary Mill Levy Reduction	(0.021)	0.000	0.000	0.000	(0.108)
<b>Total mill levy</b>	<b>0.479</b>	<b>0.500</b>	<b>0.500</b>	<b>0.500</b>	<b>0.392</b>
<b>PROPERTY TAXES</b>					
General	\$ 1,577,635	\$ 1,604,073	\$ 1,604,073	\$ 1,604,073	\$ 2,104,350
Temporary Mill Levy Reduction	(66,261)	-	-	-	(454,540)
Levied property taxes	1,511,374	1,604,073	1,604,073	1,604,073	1,649,810
Adjustments to actual/rounding	-	-	(15,136)	-	-
Refunds and abatements	(2,128)	-	(4,538)	-	-
<b>Budgeted property taxes</b>	<b>\$ 1,509,246</b>	<b>\$ 1,604,073</b>	<b>\$ 1,584,399</b>	<b>\$ 1,604,073</b>	<b>\$ 1,649,810</b>
<b>BUDGETED PROPERTY TAXES</b>					
<b>General</b>	<b>\$ 2,644,574</b>	<b>\$ 2,784,685</b>	<b>\$ 2,747,144</b>	<b>\$ 2,784,685</b>	<b>\$ 2,846,479</b>
	<b>\$ 2,644,574</b>	<b>\$ 2,784,685</b>	<b>\$ 2,747,144</b>	<b>\$ 2,784,685</b>	<b>\$ 2,846,479</b>

No assurance provided. See summary of significant assumptions.

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY  
GENERAL FUND  
2024 BUDGET  
WITH 2022 ACTUAL AND 2023 ESTIMATED  
For the Years Ended and Ending December 31,**

11/10/23

	ACTUAL 2022	BUDGET 2023	ACTUAL 6/30/2023	ESTIMATED 2023	BUDGET 2024
BEGINNING FUND BALANCES	\$ 1,417,208	\$ 1,566,706	\$ 1,665,524	\$ 1,665,524	\$ 1,964,993
REVENUES					
Property taxes	2,644,574	2,784,685	2,723,978	2,784,685	2,846,479
Specific ownership taxes	210,405	215,204	114,391	215,204	222,803
Interest income	96,626	60,000	123,254	275,000	200,000
Other revenue	27	-	-	50	1,500
Total revenues	<u>2,951,632</u>	<u>3,059,889</u>	<u>2,961,623</u>	<u>3,274,939</u>	<u>3,270,782</u>
TRANSFERS IN					
Total funds available	<u>4,368,840</u>	<u>4,626,595</u>	<u>4,627,147</u>	<u>4,940,463</u>	<u>5,235,774</u>
EXPENDITURES					
General and administrative					
Accounting	55,161	70,000	29,263	65,000	70,000
Administrative Assistant	57,435	86,300	29,100	69,000	86,500
Auditing	7,200	7,500	8,000	8,000	8,000
County Treasurer's fee	39,694	39,900	40,896	41,770	42,697
CC Stewardship Partners	31,000	35,000	14,000	35,000	35,000
Dues and membership	1,238	2,000	1,238	1,500	2,000
Information & Education Coordination	2,550	-	-	-	12,000
Insurance	6,863	10,000	6,037	6,037	6,500
Legal	125,217	100,000	53,140	110,000	115,000
Management/Administration	-	69,000	37,245	69,000	68,700
Office/Miscellaneous Expense	9,451	7,400	7,259	9,400	11,500
TAC Coordination	23,410	20,800	8,279	20,800	20,800
WQCC regulation hearings	76,501	228,000	44,266	161,000	75,000
Website	8,643	10,000	200	10,000	3,000
	<u>444,363</u>	<u>685,900</u>	<u>278,923</u>	<u>606,507</u>	<u>556,697</u>
Watershed Management					
Annual Report	25,689	32,000	37,249	40,000	34,000
Data Management	46,659	45,000	22,609	45,000	50,000
General Watershed Management	139,841	125,000	23,812	50,000	177,000
Site Application Review	4,032	6,400	771	2,000	6,400
	<u>216,221</u>	<u>208,400</u>	<u>84,441</u>	<u>137,000</u>	<u>267,400</u>
Monitoring and Reporting					
General Technical Support	56,091	55,000	28,641	56,000	40,000
Monitoring - Reservoir	75,704	36,000	15,493	31,000	40,000
Monitoring - Watershed	115,340	48,000	29,193	60,000	53,000
Monitoring - Laboratory	-	120,000	33,353	100,000	120,000
WQ Data Reporting	24,618	56,000	-	20,000	58,000
	<u>271,753</u>	<u>315,000</u>	<u>106,680</u>	<u>267,000</u>	<u>311,000</u>
Total expenditures	<u>932,337</u>	<u>1,209,300</u>	<u>470,044</u>	<u>1,010,507</u>	<u>1,135,097</u>
TRANSFERS OUT					
Transfers to Pollution Abatement Fund	1,770,979	1,835,933	1,776,974	1,835,933	1,962,469
Supplemental Transfers	-	500,000	-	129,030	500,000
	<u>1,770,979</u>	<u>2,335,933</u>	<u>1,776,974</u>	<u>1,964,963</u>	<u>2,462,469</u>
Total expenditures and transfers out requiring appropriation	<u>2,703,316</u>	<u>3,545,233</u>	<u>2,247,018</u>	<u>2,975,470</u>	<u>3,597,566</u>
ENDING FUND BALANCES	<u>\$ 1,665,524</u>	<u>\$ 1,081,362</u>	<u>\$ 2,380,129</u>	<u>\$ 1,964,993</u>	<u>\$ 1,638,208</u>
EMERGENCY RESERVE	\$ 88,600	\$ 91,800	\$ 88,900	\$ 98,300	\$ 98,200
TOTAL RESERVE	<u>\$ 88,600</u>	<u>\$ 91,800</u>	<u>\$ 88,900</u>	<u>\$ 98,300</u>	<u>\$ 98,200</u>

No assurance provided. See summary of significant assumptions.



**CHERRY CREEK BASIN WATER QUALITY AUTHORITY  
POLLUTION ABATEMENT FUND  
2024 BUDGET  
WITH 2022 ACTUAL AND 2023 ESTIMATED  
For the Years Ended and Ending December 31,**

11/10/23

	ACTUAL 2022	BUDGET 2023	ACTUAL 6/30/2023	ESTIMATED 2023	BUDGET 2024
BEGINNING FUND BALANCES	\$ 2,441,170	\$ 1,853,205	\$ 2,226,105	\$ 2,226,105	\$ 1,908,106
REVENUES					
Interest income	934	8,000	1,346	2,800	2,800
Other revenue	2,638	5,000	-	-	5,000
Total revenues	<u>3,572</u>	<u>13,000</u>	<u>1,346</u>	<u>2,800</u>	<u>7,800</u>
TRANSFERS IN					
Transfers from General Fund	1,770,979	1,835,933	1,776,974	1,835,933	1,962,469
Transfers from Enterprise Fund	309,595	401,400	178,295	397,500	406,800
Supplemental Transfers from other funds	52,348	500,000	-	129,030	500,000
Total Transfers In	<u>2,132,922</u>	<u>2,737,333</u>	<u>1,955,269</u>	<u>2,362,463</u>	<u>2,869,269</u>
Total funds available	<u>4,577,664</u>	<u>4,603,538</u>	<u>4,182,720</u>	<u>4,591,368</u>	<u>4,785,175</u>
EXPENDITURES					
General and administrative					
Management/Administration	434,311	396,100	173,195	358,100	433,400
PAPS - Undesignated	5,356	-	-	-	-
Repairs and maintenance	-	-	2,434	10,000	-
Contingency	-	10,000	-	-	10,000
	<u>439,667</u>	<u>406,100</u>	<u>175,629</u>	<u>368,100</u>	<u>443,400</u>
Pollution Reduction Facilities - O&M					
PRF Routine	21,755	10,000	-	10,000	10,000
PRF Repairs and Maintenance	2,972	111,200	-	111,200	158,300
PRF Restoration	154,368	40,000	-	35,000	10,000
PRF Reservoir Destratification Service Plan	10,379	26,400	9,819	26,400	27,400
Meteorological Station Service	-	3,000	-	3,000	3,000
Weed Control	-	10,000	-	10,000	15,500
Wetlands Harvesting	-	108,000	1,075	108,000	108,000
Utilities - Reservoir Destratification	63,586	65,000	15,533	65,000	71,500
Contingency	-	25,000	-	-	25,000
	<u>253,060</u>	<u>398,600</u>	<u>26,427</u>	<u>368,600</u>	<u>428,700</u>
Reservoir Projects					
RDS Rehabilitation	13,262	47,700	1,470	14,700	48,000
Shoreline Stabilization					
RSS East Shade Shelter	76,989	599,000	13,946	99,000	658,000
Contingency	-	50,000	-	-	50,000
	<u>90,251</u>	<u>696,700</u>	<u>15,416</u>	<u>113,700</u>	<u>756,000</u>
Stream Reclamation Projects					
SR - CC Arapahoe (R 3-4)	170,000	605,000	-	300,000	300,000
SR - CC 12-Mile Park	352,452	-	18,862	18,862	-
SR - CC Dransfeldt Extension	170,000	170,000	570,000	570,000	-
SR - Dove Creek - Otero to Chambers	75,000	138,000	138,000	138,000	-
SR - Happy Canyon - Jordan to Broncos Pk	68,000	88,000	-	88,000	50,000
SR - McMurdo Gulch	170,129	907,000	-	-	869,000
SR - Piney Creek (Reach 1-2)	38,000	63,000	-	63,000	39,000
SR - Reservoir to LV Road	-	200,000	9,554	115,000	341,000
SR - Preservation Acquisition Lease	-	100,000	-	-	100,000
SR - CC Scott Road	275,000	-	-	-	-
SR - Happy Canyon - I-25 Upstream	250,000	-	-	-	-
SR - Lone Tree Creek	-	-	-	-	112,000
SR - Lone Tree Creek (downstream pond)	-	-	-	-	120,000
SR - Dove Creek - Pond D1 to Otero	-	-	-	540,000	-
SR - Piney Creek (Reach 4-5)	-	-	-	-	75,000
RDS Distribution Analysis	-	-	-	-	-
Contingency	-	100,000	-	-	100,000
	<u>1,568,581</u>	<u>2,371,000</u>	<u>736,416</u>	<u>1,832,862</u>	<u>2,106,000</u>
Total expenditures	<u>2,351,559</u>	<u>3,872,400</u>	<u>953,888</u>	<u>2,683,262</u>	<u>3,734,100</u>
Total expenditures and transfers out requiring appropriation	<u>2,351,559</u>	<u>3,872,400</u>	<u>953,888</u>	<u>2,683,262</u>	<u>3,734,100</u>
ENDING FUND BALANCES	<u>\$ 2,226,105</u>	<u>\$ 731,138</u>	<u>\$ 3,228,832</u>	<u>\$ 1,908,106</u>	<u>\$ 1,051,075</u>
RESERVOIR DEST. SERV PLAN RESERVE	<u>\$ 70,393</u>	<u>\$ 43,372</u>	<u>\$ 60,574</u>	<u>\$ 43,993</u>	<u>\$ 16,593</u>
TOTAL RESERVE	<u>\$ 70,393</u>	<u>\$ 43,372</u>	<u>\$ 60,574</u>	<u>\$ 43,993</u>	<u>\$ 16,593</u>

No assurance provided. See summary of significant assumptions.

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY  
ENTERPRISE FUND  
2024 BUDGET  
WITH 2022 ACTUAL AND 2023 ESTIMATED  
For the Years Ended and Ending December 31,**

11/10/23

	ACTUAL 2022	BUDGET 2023	ACTUAL 6/30/2023	ESTIMATED 2023	BUDGET 2024
BEGINNING FUNDS AVAILABLE	\$ 1,900,212	\$ 1,215,912	\$ 1,922,970	\$ 1,922,970	\$ 1,979,605
REVENUES					
Recreation Fees	193,937	300,000	123,383	209,000	213,000
Building Permit Fees	268,283	250,000	62,925	230,000	234,000
Wastewater Fees	119,734	111,000	80,264	161,000	164,000
Interest income	21,285	8,000	30,588	62,500	64,000
Other revenue	2,855	-	-	-	3,000
Total revenues	<u>606,094</u>	<u>669,000</u>	<u>297,160</u>	<u>662,500</u>	<u>678,000</u>
Total funds available	<u>2,506,306</u>	<u>1,884,912</u>	<u>2,220,130</u>	<u>2,585,470</u>	<u>2,657,605</u>
EXPENDITURES					
General and administrative					
Management/Administration	-	21,000	-	21,000	45,000
Equipment	7,413	65,000	11,144	15,000	65,000
Contingency	6,916	15,000	-	-	15,000
Planning					
CCBQWA Planning	17,823	105,000	7,705	95,000	10,000
Tributary Planning	41,022	-	-	-	60,000
Reservoir to 12-Mile Park Study	55,366	5,000	32,365	32,365	5,000
Special Studies/Projects					
SSP Bow Tie	2,468	-	-	-	-
SSP BMP Effectiveness	12,365	75,000	12,414	45,000	35,000
SSP PRF/PAP WQ Benefits	-	5,000	-	-	5,000
SSP Reservoir Nutrient mitigation	-	50,000	-	-	50,000
SSP Emerging SCM	78,020	-	-	-	-
SSP Watershed Master Plan	-	50,000	-	-	50,000
Reservoir Model	-	-	-	-	50,000
RDS Distribution Analysis	-	-	-	-	150,000
Total expenditures	<u>221,393</u>	<u>391,000</u>	<u>63,628</u>	<u>208,365</u>	<u>540,000</u>
TRANSFERS OUT					
Transfers to Pollution Abatement Fund	<u>361,943</u>	<u>401,400</u>	<u>178,295</u>	<u>397,500</u>	<u>406,800</u>
Total expenditures and transfers out requiring appropriation	<u>583,336</u>	<u>792,400</u>	<u>241,923</u>	<u>605,865</u>	<u>946,800</u>
ENDING FUNDS AVAILABLE	<u>\$ 1,922,970</u>	<u>\$ 1,092,512</u>	<u>\$ 1,978,207</u>	<u>\$ 1,979,605</u>	<u>\$ 1,710,805</u>
FACILITIES MAINTENANCE RESERVE	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000
CAPITAL RESERVE	750,000	750,000	750,000	750,000	750,000
TOTAL DESIGNATED RESERVE	<u>\$ 850,000</u>	<u>\$ 850,000</u>	<u>\$ 850,000</u>	<u>\$ 850,000</u>	<u>\$ 850,000</u>

No assurance provided. See summary of significant assumptions.

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY  
2024 BUDGET  
SUMMARY OF SIGNIFICANT ASSUMPTIONS**

**Services Provided**

Cherry Creek Basin Water Quality Authority (the Authority) is a quasi-municipal corporation and political sub-division of the State of Colorado. Formed on June 16, 1988, the Authority was created by Colorado HB1029 to monitor the water quality in the Cherry Creek Basin and to construct facilities to control the accumulation of pollutants.

The District has no employees, and some operations and administrative functions are contracted.

The District prepares its budget on the modified accrual basis of accounting in accordance with the requirements of Colorado Revised Statutes C.R.S. 29-1-105 using its best estimates as of the date of the budget hearing. These estimates are based on expected conditions and its expected course of actions. The assumptions disclosed herein are those that the Authority believes are significant to the budget. There will usually be differences between the budget and actual results because events and circumstances frequently do not occur as expected, and those differences may be material. For financial statement reporting under generally accepted accounting principles (GAAP), the Authority uses the full accrual basis of difference from GAAP accounting for Fund Balance. Funds Available represents each fund's current assets less its current liabilities except for the current portion of long-term debt. In addition, the budget separates individual funds which are included as one entity in the GAAP presentation.

Colorado Revised Statute 25-8.5-111(3), as amended by Senate Bill 01-066 in 2001, states that the Authority must spend a minimum of 60% of revenues (collected from fees, tolls, and property tax) on the construction and maintenance of pollution abatement projects in the Cherry Creek Basin or on payments due on debt incurred entirely for such projects. The minimum pollution abatement expenditure requirement is not restricted by fund but is applied to the Authority as a whole.

**Revenues**

**Property Taxes**

The primary source of revenue is property taxes. Property taxes are levied by the Authority's Board of Directors. The levy is based on assessed valuations determined by the County Assessor generally as of January 1 of each year. The levy is normally set by December 15 by certification to the County Commissioners to put the tax lien on the individual properties as of January 1 of the following year. The County Treasurer collects the determined taxes during the ensuing calendar year. The taxes are payable by April or, if in equal installments, at the taxpayer's election, in February and June. Delinquent taxpayers are notified in August and generally sales of the tax liens on delinquent properties are held in November or December. The County Treasurer remits the taxes collected monthly to the Authority.

The calculation of the taxes levied is displayed on the Property Tax Summary Information page of the budget.

Senate Bill 21-293 among other things, designates multi-family residential real property (defined generally, as property that is a multi-structure of four or more units) as a new subclass of residential real property. For tax collection year 2023, the assessment rate for single family residential property decreases to 6.95% from 7.15%. The rate for multifamily residential property, the newly created subclass, decreases to 6.80% from 7.15%. Agricultural and renewable energy production property decreases to 26.4% from 29.0%. Producing oil and gas remains at 87.5%. All other nonresidential property stays at 29%.

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY  
2024 BUDGET  
SUMMARY OF SIGNIFICANT ASSUMPTIONS**

**Revenues - (continued)**

**Specific Ownership Taxes**

Specific ownership taxes are set by the State and collected by the County Treasurer, primarily on vehicle licensing within the County as a whole. The specific ownership taxes are allocated by the County Treasurer to all taxing entities within the County. The budget assumes that the Authority's share will be equal to approximately 7% of the property taxes collected from Arapahoe County and 8% of the property taxes from Douglas County.

**Net Investment Income**

Interest earned on the Authority's available funds has been estimated based on historical interest earnings.

**Fees**

The Authority receives recreation fees from the State of Colorado. These fees are a portion of the entry fees to Cherry Creek State Park. The fees are remitted to the Authority on a monthly basis.

The Authority receives building permit fees from various governmental entities that reside within the Authority's borders. These fees are typically remitted on a quarterly basis.

The Authority receives wastewater surcharges from the surrounding water and sanitation districts that operate wastewater treatment facilities and discharge into the Cherry Creek Basin. These surcharges are remitted to the Authority on a quarterly basis by each District.

**Expenditures**

**Administrative and Operating Expenditures**

Operating expenditures include the estimated services necessary to maintain the Authority administrative viability such as legal, management, accounting, insurance, banking, meeting expense and other administrative expenses. Estimated expenditures related to water quality management were also included in the General Fund budget.

**County Treasurer's Fees**

County Treasurer's fees have been computed at 1.50% of property tax collections.

**Capital Projects**

Anticipated expenditures for capital projects are detailed on the Pollution Abatement Fund page of the budget.

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY  
2024 BUDGET  
SUMMARY OF SIGNIFICANT ASSUMPTIONS**

**Debt and Leases**

The Authority has no bond indebtedness or any operating or capital leases.

**Reserves**

**Emergency Reserve**

The Authority has provided for an Emergency Reserve equal to at least 3% of fiscal year spending as defined under the TABOR Amendment.

**Reservoir Destratification Service Plan Reserve**

The Authority has provided for a reservoir destratification service plan reserve of \$50,393 for use in subsequent year destratification service plan expenditures.

**Facilities Maintenance Reserve**

The Authority has provided for a facilities maintenance reserve of \$100,000 for use in subsequent year capital maintenance projects.

**Capital Reserve**

The Authority has provided for a total capital reserve of \$750,000 for use in subsequent year capital replacement projects.

**This information is an integral part of the accompanying budget.**

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY**

**RESOLUTION 2023-11-01**

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**A RESOLUTION ESTABLISHING THE RATES, FEES AND CHARGES OF THE CHERRY CREEK BASIN WATER QUALITY AUTHORITY FOR CALENDAR YEAR 2024**

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**WHEREAS**, the Board of Directors of the Cherry Creek Basin Water Quality Authority has, pursuant to §25-8.5-111(n) and (o), C.R.S., and §25-8.5-101(3), C.R.S., established rates, fees and charges to recover a portion of the cost of water quality preservation services and facilities furnished by the Authority from those persons and activities that benefit from such services and facilities; and

**WHEREAS**, the Board has published notice of and conducted a public hearing on the Authority’s proposed 2024 budget; and

**WHEREAS**, prior to adopting the 2024 budget and before levying any tax for collection during the 2024 budget year, the Authority must establish its rates, fees and charges for 2024.

**NOW THEREFORE, BE IT RESOLVED** that the Board of Directors of the Cherry Creek Basin Water Quality Authority of Arapahoe and Douglas Counties, Colorado as follows:

**Section 1. Building Permit Fee.** For calendar year 2024 the Building Permit Fee shall remain the same and shall continue to be assessed as follows:

- (a) Single Family Residence \$60.00
- (b) The building “footprint” of all buildings (excluding any single-family residence), regardless of use or purpose, including but not limited to multi-family, commercial, office, recreational, religious, educational and industrial buildings \$.04\sq. ft.

**Section 2. Cherry Creek Reservoir User Fee.** For calendar year 2024 the Cherry Creek Reservoir User Fee shall remain the same and shall continue to be assessed as follows:

- (a) Annual State Parks Pass, Cherry Creek Basin add-on \$3.00
- (b) One Day State Parks Pass, Cherry Creek Basin add-on \$1.00

**Section 3. Disturbed Lands Fee.** For calendar year 2024 the Disturbed Lands Fee shall be as follows:

- (a) \$280 per acre

**Section 4. Wastewater Effluent Fee.** For calendar year 2024 the Wastewater Effluent Fee shall remain the same and shall continue to be assessed at the rate of \$0.05 per thousand gallons of wastewater effluent discharged within the boundaries of the Cherry Creek Basin Water Quality Authority.

**Section 5. Effective Date.** The rates, fees and charges as hereby reaffirmed and adopted by this Resolution shall be in effect as of January 1, 2024 and shall remain in effect until further action of the Authority's Board of Directors.

**Section 6. Delegation of Collection Authority.** The Authority desires that each municipality and county having territory within Authority boundaries assist the Authority in the collection of its Building Permit Fee. Accordingly, the Authority hereby delegates to each such municipality and county full power and authority to collect on the Authority's behalf or assist the Authority with the collection of the Authority's Building Permit Fee attributable to new construction and development located within that portion of each such entities boundaries that overlap the boundaries of the Authority.

**Section 7. Public Health and Necessity.** The Authority Board hereby determines and finds that the adoption of this Resolution is necessary for and promotes the public health welfare and safety of the inhabitants and property within the Cherry Creek Basin Water Quality Authority.

ADOPTED AND EXECUTED this 16<sup>th</sup> day of November, 2023.

**CHERRY CREEK BASIN WATER  
QUALITY AUTHORITY**

By \_\_\_\_\_  
Joshua Rivero, Chair

**Attest:**

\_\_\_\_\_  
John A. McCarty, Secretary/Treasurer

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY**

**RESOLUTION 2023-11-02**

**ARAPAHOE AND DOUGLAS COUNTIES, COLORADO**

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**A RESOLUTION SUMMARIZING EXPENDITURES AND REVENUES FOR EACH FUND AND ADOPTING A BUDGET FOR THE CHERRY CREEK BASIN WATER QUALITY AUTHORITY, ARAPAHOE AND DOUGLAS COUNTIES, COLORADO, FOR THE CALENDAR YEAR BEGINNING ON THE FIRST DAY OF JANUARY, 2024, AND ENDING ON THE LAST DAY OF DECEMBER, 2024**

---

**WHEREAS**, the Board of Directors of the Cherry Creek Basin Water Quality Authority (“Authority”) authorized CliftonLarsonAllen, LLP to prepare and submit a proposed budget to said governing body no later than October 15, 2023 in accordance with the local government budget law; and

**WHEREAS**, a proposed budget was submitted to the Board of Directors of the Authority for its consideration on or before said date; and

**WHEREAS**, said proposed budget was available for inspection by the public at the offices of CliftonLarsonAllen, LLP, located at 8390 E. Crescent Parkway, Suite 300, Greenwood Village, Colorado, and interested electors of the Authority were given the opportunity to file or register any objections to the proposed budget; and

**WHEREAS**, following due and proper notice published in accordance with law, a public hearing on the proposed budget was held on November 16, 2023, at 9:00 a.m. at SEMSWA, 7437 S. Fairplay Street, Centennial, CO 80112; and

**WHEREAS**, the proposed budget has been prepared to comply with all terms, limitations and exemptions, including, but not limited to reserve, transfer and expenditure exemptions under Article X, Section 20 of the Colorado Constitution and other laws which are applicable to or binding upon the Authority; and

**WHEREAS**, whatever increases may have been made in the expenditures, like increases were added to the revenues so that the budget remains in balance, as required by law.

**NOW, THEREFORE, BE IT RESOLVED BY** the Board of Directors of the Cherry Creek Basin Water Quality Authority, Arapahoe and Douglas Counties, Colorado:



**Section 1.** That the estimated expenditures and transfers out for each of the Authority’s funds for the calendar year beginning on the first day of January, 2024 and ending on the last day of December 2024 are as follows:

<b>General Fund</b>	\$3,597,566
<b>Enterprise Fund</b>	\$ 946,800
<b>Pollution Abatement Fund</b>	<u>\$3,734,100</u>
<b>Total Expenditures and Transfers</b>	<b>\$8,278,466</b>

**Section 2.** That the estimated revenues and transfers in for each of the Authority’s funds for the calendar year beginning on the first day of January, 2024 and ending on the last day of December 2024 are as follows:

<b>General Fund</b>	
From 2023 estimated year-end fund balance	\$1,964,993
From sources other than general property tax revenue	\$ 424,303
From general property tax revenue	<u>\$2,846,479</u>
<b>Total General Funds Revenue</b>	<b>\$5,235,775</b>

<b>Enterprise Fund</b>	
From 2023 estimated year-end fund balance	\$1,979,605
From sources other than general property tax revenue	\$ 678,000
From general property tax revenue	<u>\$ 0</u>
<b>Total Enterprise Funds Revenue</b>	<b>\$2,657,605</b>

<b>Pollution Abatement Fund</b>	
From 2023 estimated year-end fund balance	\$1,908,106
From general property tax revenue – transfer from General Fund	\$1,962,469
From sources other than transfers	\$ 7,800
From sources other than general property tax revenue – transfer from Enterprise Fund and Supplemental	<u>\$ 906,800</u>
<b>Total Pollution Abatement Funds Revenue and Transfers In</b>	<b>\$4,785,175</b>

<b>Total General Fund, Enterprise and Pollution Abatement Funds Revenue Including Transfers</b>	<b>\$12,678,555</b>
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**Section 3.** That the budget, as submitted, amended, herein summarized by fund and attached hereto as Exhibit A, is hereby approved and adopted as the budget for the

Cherry Creek Basin Water Quality Authority for the calendar year beginning on the first day of January, 2024, and ending on the last day of December 2024, subject to whatever property tax revenue adjustments are necessary based upon the District's final assessed valuation as calculated by the County Assessors.

**Section 4.** That the budget, is hereby approved, adopted, and adjusted as necessary, shall be certified by the Manager, the Chair, Secretary or other officer of the Authority, to all appropriate agencies, and is made a part of the public records of the Authority.

ADOPTED on the 16<sup>th</sup> day of November, 2023.

CHERRY CREEK BASIN WATER  
QUALITY AUTHORITY

By: \_\_\_\_\_  
Joshua Rivero, Chair

Attest:

\_\_\_\_\_  
John A. McCarty, Secretary/Treasurer

SEAL

**EXHIBIT A**

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY**

**2024 BUDGET AND BUDGET MESSAGE**

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY**

**RESOLUTION 2023-11-03**

**ARAPAHOE AND DOUGLAS COUNTIES, COLORADO**

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**A RESOLUTION APPROPRIATING SUMS OF MONEY TO THE VARIOUS FUNDS IN THE AMOUNT AND FOR THE PURPOSE AS SET FORTH BELOW, FOR THE CHERRY CREEK BASIN WATER QUALITY AUTHORITY, ARAPAHOE AND DOUGLAS COUNTIES, COLORADO, FOR THE 2024 BUDGET YEAR**

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**WHEREAS**, the Board of Directors of Cherry Creek Basin Water Quality Authority (the “Authority”) adopted its annual budget for 2024 in accordance with the Local Government Budget Law, on November 16, 2023; and

**WHEREAS**, the Board of Directors of the Authority has made provision therein for revenues in an amount equal to or greater than the total proposed expenditures as set forth in said budget; and

**WHEREAS**, it is not only required by law, but also necessary to appropriate the revenues and reserves or fund balances provided in the budget to and for the purposes described below, thereby establishing a limitation on expenditures for the operations of the Authority;

**NOW, THEREFORE, BE IT RESOLVED** by the Board of Directors of the Cherry Creek Basin Water Quality Authority, Arapahoe and Douglas Counties, Colorado, as follows:

**Section 1.** That the following sums are hereby appropriated from the revenue of each fund, to each fund, for the purposes stated:

<b>General Fund</b>	<b>\$3,597,566</b>
<b>Enterprise Fund</b>	<b>\$ 946,800</b>
<b>Pollution Abatement Fund</b>	<b><u>\$3,734,100</u></b>
<b>Total Sums Appropriated</b>	<b><u>\$8,278,466</u></b>

ADOPTED on the 16<sup>th</sup> day of November, 2023.

CHERRY CREEK BASIN WATER  
QUALITY AUTHORITY

By: \_\_\_\_\_  
Joshua Rivero, Chair

Attest:

\_\_\_\_\_  
John A. McCarty, Secretary/Treasurer

SEAL

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY**

**RESOLUTION 2023-11-04**

**ARAPAHOE AND DOUGLAS COUNTIES, COLORADO**

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**A RESOLUTION LEVYING PROPERTY TAXES FOR YEAR 2023 FOR COLLECTION IN 2024, TO HELP DEFRAY THE COSTS OF GOVERNMENT FOR THE CHERRY CREEK BASIN WATER QUALITY AUTHORITY ARAPAHOE AND DOUGLAS COUNTIES, COLORADO, FOR THE 2024 BUDGET YEAR**

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**WHEREAS**, the Board of Directors of the Cherry Creek Basin Water Quality Authority (“Authority”) adopted its annual budget for 2024, in accordance with the Local Government Budget Law on November 16, 2023; and

**WHEREAS**, the 2023 valuation for assessment for the Authority, as certified by the Arapahoe County Assessor is \$2,930,049,754; and as certified by the Douglas County Assessor is \$4,052,319,120; and

**WHEREAS**, the amount of money necessary to balance the budget for general operating purposes from property tax revenue is \$2,737,090; and

**WHEREAS**, the Authority has no outstanding bonded indebtedness; and

**WHEREAS**, the public was provided an opportunity to present oral testimony at an open meeting on November 16, 2023.

**NOW, THEREFORE, BE IT RESOLVED** by the Board of Directors of the Cherry Creek Basin Water Quality Authority, Arapahoe and Douglas Counties, Colorado:

**Section 1.** That for the purpose of meeting all general operating expenses of the Authority during the 2024 budget year, there is hereby levied a tax of 0.392 mills (0.500, less a temporary mill levy reduction of 0.108 mills) upon each dollar of the total valuation for assessment of all taxable property within the Authority to raise \$2,737,090 in revenue.

**Section 2.** That since the Authority has no outstanding bonds, no tax is being levied for debt service purposes.

**Section 3.** That the Authority’s Manager or General Counsel or the Authority’s Chair, Secretary or Treasurer is hereby authorized and directed to certify to the Board of County Commissioners of Arapahoe and Douglas Counties, State of Colorado (the “Board of County Commissioners”), the mill levies for the Authority as hereinabove determined and set, but as recalculated as necessary based upon the final (December) certification of valuation for Arapahoe and Douglas Counties in order to comply with any applicable revenue and other budgetary limits.

ADOPTED on the 16<sup>th</sup> day of November, 2023.

CHERRY CREEK BASIN WATER  
QUALITY AUTHORITY

By: \_\_\_\_\_  
Joshua Rivero, Chair

Attest:

\_\_\_\_\_  
John A. McCarty, Secretary/Treasurer



## ACTION ITEM MEMORANDUM

To: CCBWQA Board of Directors  
From: Jane Clary, Technical Manager  
Date: November 10, 2023  
Subject: Payment of End-of-Year Invoices

**Request:** That the CCBWQA Board of Directors authorize the Executive Committee to pay year-end invoices that are within CCBWQA's authorized 2023 budget.

**Issue:** The CCBWQA will not be holding a December 2023 Board meeting where it would normally approve payment of invoices received from CCBWQA contractors and other expenses.

**Budget:** No additional budget is needed for this task.

**Motion:** I move to authorize the Executive Committee to approve payment of invoices received through December 31, 2023, provided that the invoices are within previously authorized budgets.





## ACTION ITEM MEMORANDUM

To: CCBWQA Board

From: Jane Clary, Technical Manager

Date: November 10, 2023

Subject: Regulation 72 Dewatering Limits for Total Phosphorus

**Request:** That the CCBWQA Board provide direction regarding participation in the upcoming Regulation 72 rulemaking hearing and determine a position on the proposed revisions to Regulation 72 Construction Dewatering requirements.

**Issue:** In this limited scope rulemaking, Parker Water and Sanitation District (PWSD) and the Town of Castle Rock are proposing revisions to Regulation 72 to clarify that construction dewatering is not subject to a 0.05 mg/L total phosphorus limit, provided that certain best management practices are implemented. The City of Aurora, City of Lone Tree, Town of Parker, City of Castle Pines, Cottonwood Water and Sanitation District, Inverness Water and Sanitation District, Pinery Water and Wastewater District, and Stonegate Village Metropolitan District are supporting this proposal. See Attachment 1 for the hearing timeline and Attachment 2 for a narrative summary of the proposal prepared by PWSD. See Attachment 3 for a full redline of Regulation 72 prepared by the proponents.

At the Board meeting, Rebecca Tejada will present a summary of the revised proposal and various technical issues that can be considered by the Board on this issue. This issue has also been discussed in various TAC and Board meeting over the past two years. Consensus has not been reached on this issue in prior Board meetings.

Changes to the proponents' original proposal have been made in response to series of stakeholder meetings that included various entities such as Colorado Parks and Wildlife, CDPHE, and CCBWQA staff. The proposal now includes changes provided in Attachment 3, also shown below for ease of reference. Additionally, PWSD has communicated that it will add a monitoring requirement to its Proponent's Prehearing Statement in response to a request from the CCBWQA Technical Manager.

Based on recent communication with the Water Quality Control Division and Colorado Parks and Wildlife, neither organization currently anticipates opposing PWSD's revised

proposal for 72.4, although some additional comments and suggestions may be provided.

#### 72.4 POINT SOURCE EFFLUENT LIMITATIONS

1. The Division shall not issue industrial process wastewater and wastewater facility discharge permits (pursuant to Regulation #61) or notices of authorizations for use of reclaimed water (pursuant to Regulation #84) to any point source discharges, including new point sources, that allow effluent limitations (permitted phosphorus concentration) exceeding 0.05 mg/l total phosphorus. The 0.05 mg/l total phosphorus limitation set forth in this section 72.4 shall not apply where discharges consist of construction dewatering, so long as no phosphorus or nitrogen is added to the groundwater being discharged. Construction dewatering shall be subject to the following practice-based effluent limits, to the extent feasible:

  - (a) Route dewatering water through a sediment control (e.g., sediment trap or basin, pumped water filter bag) designed to prevent discharges with visual turbidity;
  - (b) Use well-vegetated (e.g., grassy or wooded), upland areas of the site to infiltrate dewatering water;
  - (c) Maintain pre-existing vegetation or equivalent control measures for areas within 50 horizontal feet of receiving waters; and
  - ~~(a)~~(d) To prevent dewatering-related erosion and related sediment discharges: use stable, erosion-resistant surfaces (e.g., lined or piped structures, well-vegetated grassy areas, clean filter stone, geotextile underlayment) to discharge from dewatering controls; do not place dewatering controls, such as pumped water filter bags, on steep slopes; and control discharges to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points.

**Budget:** Preparation of the Party Status letter and Responsive Prehearing Statement (of limited length) is within the CCBWQA's Regulatory Budget.

**TAC Recommendation:** At its October meeting, the TAC recommended that the Board file party status and file a Responsive Prehearing Statement that "does not oppose" the revised Regulation 72.4 proposal from PWSD.

**Motion:** I move that the Board authorize the Technical Manager to file Party Status for CCBWQA in the Regulation 72 rulemaking hearing by December 5, 2023. Additionally, I recommend that CCBWQA authorize the Technical Manager to prepare and file a brief Responsive Prehearing Statement by December 19, 2023 stating one of the following positions regarding PWSD's proposal: [select one of these options]:

1. That CCBWQA takes no position in the Regulation 72 dewatering rulemaking hearing.
2. That CCBWQA does not oppose PWSD's proposal in the Regulation 72 dewatering rulemaking hearing based on the technical merits of the proposal discussed at the November 2, 2023 TAC meeting, including required protections to water quality added during the stakeholder process.
3. That CCBWQA oppose PWSD's proposal in the Regulation 72 dewatering rulemaking hearing based on concerns related to water quality protection discussed at the November 2, 2023 TAC meeting.

**Attachments:** Hearing timeline, PWSD’s summary of the proposal, and PWSD’s [redline of Regulation 72](#)

## Attachment 1. Timeline

### SCHEDULE OF IMPORTANT DATES

Proponent's prehearing statement due	11/21/2023	Additional information below.
Party Status requests due	12/5/2023	Additional information below.
Responsive prehearing statements due	12/19/2023	Additional information below.
Rebuttal statements due	1/16/2024	Additional information below.
Last date for submittal of motions	1/22/2024	Additional information below.
<b>Prehearing Conference</b> (mandatory for parties)	1/24/2024 1:00 pm	Remote <a href="#">Via Zoom</a>
<b>Rulemaking Hearing</b>	2/12/2024 9:00 am	Sabin Cleere Conference Room Department of Public Health and Environment 4300 Cherry Creek Drive South Denver, CO 80246  Or <a href="#">Remote Via Zoom</a>

## **Attachment 2. Parker Water and Sanitation’s Description of the Issue and Summary of Proposal (provided by Rebecca Tejada, PWSD)**

The Water Quality Control Commission’s (the “Commission’s”) Cherry Creek Reservoir Control Regulation, 5 C.C.R. § 1002-72 (“Regulation 72”), seeks to manage phosphorus loading into Cherry Creek Reservoir. Among other requirements, the regulation imposes two numeric total phosphorus limits: 0.2 mg/L for drinking water treatment facilities, and 0.05 mg/L for domestic wastewater treatment facilities and “industrial process wastewater sources.” Certain types of activities are defined as “industrial process wastewater sources” (e.g., construction dewatering, sand and gravel mining) and are therefore subject to the 0.05 mg/L total phosphorus limit, while other activities are excluded from the definition and do not require a 0.05 mg/L limit (e.g., hydrostatic testing operations, hydrant flushing, water main repairs, drinking water treatment facilities, dewatering or foundation draining, and swimming pool drainage). Regulation 72 thus selectively applies the 0.05 mg/L total phosphorus limit to point source discharges in the Cherry Creek basin. In contrast, the statewide Nutrients Management Control Regulation (Regulation 85) exempts construction dewatering from any total phosphorus limit. And there is only one other control regulation in the state that requires a total phosphorus limit for construction dewatering (Chatfield Reservoir Control Regulation, Regulation 73), but it is 20 times higher than that of Regulation 72.

In this limited scope rulemaking, the proposed revisions seek to clarify that construction dewatering is not subject to a 0.05 mg/L total phosphorus limit. Currently, this proposal is being advanced by two proponents (Parker Water and Sanitation District and the Town of Castle Rock) and is supported by at least eight additional entities (City of Aurora, City of Lone Tree, Town of Parker, City of Castle Pines, Cottonwood Water and Sanitation District, Inverness Water and Sanitation District, Pinery Water and Wastewater District, Stonegate Village Metropolitan District).

The proposed changes will clarify that a 0.05 mg/L total phosphorus limit will not apply where the discharges consist solely of ground water that is pumped for the purpose of dewatering a construction site, so long as no phosphorus or nitrogen is added to the ground water being discharged. Rather, construction dewatering will be subject to practice-based effluent limits where feasible. These changes will have several benefits that support Regulation 72:

- Prevent introduction of secondary pollutants necessary to treat total phosphorus to very low levels—including iron, sulfate, and chloride—and conserve energy associated with total phosphorus treatment.
- More closely align regulatory requirements and associated costs with total phosphorus loading.
- Increase consistency between Regulation 72 and the statewide Nutrients Management Control Regulation (Regulation 85).
- Simplify implementation of and compliance with Regulation 72.
- Prevent waste of ratepayer and taxpayer funds and enable allocation of resources more efficiently.
- Protect water quality through practice-based effluent limits where feasible.



## ACTION ITEM MEMORANDUM

To: CCBWQA Board of Directors  
From: Jane Clary, Technical Manager  
Date: November 10, 2023  
Subject: Letter of Support for CU-Boulder Landscape Conversion Study

**Request:** That the CCBWQA Board of Directors authorize the Technical Manager to prepare a letter of support for a Landscape Conversion Study being submitted by CU Boulder researchers to the Colorado Water Conservation Board

**Issue:** As a result of the CCBWQA's on-going BMP Effectiveness Study, Wright Water Engineers has identified a data gap regarding quantitative water quality benefits of turf conversion to various types of low-water landscapes. In an effort to find recent research in Colorado, I reached out to several researchers on this topic, including Dr. Aditi Bhaskar at the University of Colorado Boulder. Additional conversations followed with Colorado Water Conservation Board staff, Mile High Flood District staff, Denver Water staff and others, who concurred that additional research is needed in this area.

Dr. Bhaskar will be submitting a proposal to the CWCB on December 1 for a study to help address this topic and has requested a letter of support from CCBWQA. The letter can simply express support, provide matching funds or provide a cash match for the project. A 1-page description of the project is provided; however, the proposal itself is still under development.

CCBWQA's support and participation in the project can help shape the project's direction and provide data useful to CCBWQA in terms of valuing nutrient reduction benefits of various types of landscape conversions, as well as information on unintended negative consequences of certain types of landscape conversions (e.g., increased imperviousness and heat island effects of hardscape).

**Budget:** No additional budget is requested for this task and is within the range of the Technical Manager's scope of services for 2024.

**Motion:** I move to authorize the Technical Manager to prepare a letter of support from CCBWQA expressing support for Dr. Aditi Bhaskar's proposed study. Additionally, the Board authorizes the Technical Manager to serve on the study's Advisory Panel on behalf of the CCBWQA.

**Attachment:** Letter of Support Template and 1-Page Overview

<Insert letter head>

<Insert date>

Aditi Bhaskar, PhD  
University of Colorado Boulder  
4001 Discovery Drive #607 UCB  
Boulder, Colorado 80303

Subject: 2023 Colorado Water Conservation Board Water Plan Grant Application

Dear Dr. Bhaskar:

The <Organization> is pleased to support the project proposed by University of Colorado Boulder for a Colorado Water Conservation Board Water Plan Grant in 2023. Data and analysis on the effects of landscape transformations on urban heat and water quality are important to develop scientifically sound and pragmatic guidance on landscape transformation programs and their effects across Colorado. As a participating partner, we anticipate providing in-kind staff time as outlined below.

Our involvement will consist principally of:

- Participating in and providing feedback to two half-day stakeholder engagement sessions, near the beginning and end of the project.
- <insert sentence about sharing data or any other involvement if appropriate>

The approximate monetary value of this in-kind contribution is \$1,500. <completely optional sentence>

We look forward to participating in this important project. If you have any questions regarding <organization>'s participation, please contact us.

Sincerely,

<name>

<title>

<affiliation>

**Effects of Landscape Transformations on Urban Heat and Water Quality**  
**Application to the Colorado Water Conservation Board (CWCB) Water Plan Grant**  
**Due December 1, 2023**

Application by:

- Aditi Bhaskar (aditi.bhaskar@colorado.edu), Associate Professor, Department of Civil, Environmental, and Architectural Engineering, University of Colorado Boulder
- Isabella Oleksy, Assistant Professor, Department of Ecology and Evolutionary Biology, University of Colorado Boulder

Existing Partners:

- Denver Water
- Metro Water Recovery
- Wright Water Engineers
- Mile High Flood District
- LRE Water
- USGS
- City and County of Denver
- Dominion Water and Sanitation District

Landscape transformations are ramping up in Colorado. Water providers are starting or expanding turfgrass replacement programs with CWCB support. Furthermore, in 2022, Denver Water joined an MOU with other Colorado River Basin water providers to reduce non-functional turfgrass by 30%. Because of environmental linkages, landscape transformations will affect not just water use but also urban heat and water quality, which both of are already under pressure. Urban heat in the metro area is under pressure from climate change. Water quality in the metro area is under pressure with the increasing requirements for nutrient reductions for MS4 and TMDLs, as well as basin control regulations. To address these effects, this application proposes two objectives:

Objective 1: Quantify the effects of landscape transformations on urban heat in the Denver metropolitan area.

This objective will be achieved by:

- Analyzing remotely-sensed (Landsat at 30 m resolution) temperature changes before and after landscape transformations have happened using Denver Water’s mapping.
- Deployment of low-cost sensors that measure hourly air temperature and relative humidity placed on trees in areas where landscape transformations have occurred or will be occurring (for example, on Denver Water campus).

Objective 2: Quantify the effects of landscape transformations on water quality in the Denver metropolitan area.

This objective will be achieved by:

- Monitoring nutrients in streamflow from a watershed in Sterling Ranch’s low-water use landscape, developed with entirely turfgrass alternatives.
- Comparison of nutrients in streamflow from other watersheds with conventional turfgrass landscapes.



CHERRY CREEK BASIN WATER QUALITY  
AUTHORITY

***2024-2033 CAPITAL IMPROVEMENT  
PROGRAM  
SUPPORTING DATA***

TAC Draft – October 5, 2023

TAC Recommendation – November 2, 2023

Board Review Version – October 19, 2023

Board Final Version – November 16, 2023

## 2024-2033 CAPITAL IMPROVEMENT PROGRAM

This document presents the details of the 2024-2033 Capital Improvement Program (2024-2033 CIP), as reviewed by the Board with the 2024 funding included in the Budget that is adopted by the Board, and it includes the following information.

### Table 1 – Summary of Potential Pollutant Reduction Facilities, Revision for 2024-2033 CIP.

This table lists all the Pollutant Reduction Facilities (PRFs) that have been considered for implementation by the Authority since 2000 and shows their status. The “blue” font represents completed projects, the “green” font represents projects that are included in the 2024-2033 CIP, and projects in “black” font have been considered but haven’t been included in the CIP.

Prior to 2010, Cherry Creek Reservoir was under a total maximum annual load (TMAL) limitation for phosphorus. Since PRFs originally focused on reduction of phosphorus loads discharged into the reservoir, Table 1 was developed to provide a brief summary of the design basis, projected loads and treatment, estimated PRF costs, and costs per pound of phosphorus immobilized. Currently there is no TMAL; instead, the control strategy identified in Regulation No. 72 is to minimize nutrient (phosphorus and nitrogen) concentrations. Therefore, PRFs are still evaluated, in part, on their costs per pound of phosphorus for consistency between all potential PRFs. Additional information on how PRFs are evaluated, particularly stream reclamation type projects, is presented in the Authority’s report dated June 17, 2011 titled *Stream Reclamation Water Quality Benefit Evaluation Interim Status Report*.

The Cottonwood Creek Cattail Harvesting Pilot Project (CCB-13.3.1 A and B) included phosphorus reduction and removed (59-60 pounds per year) from the system based on 2020 Cattail Harvesting Pilot Project Memo for a unit cost \$1,000-1,017 per pound of phosphorus removed.

New for the 2024-2033 CIP, ten of the completed projects (see blue text) were selected based on the best available accounting information on total project costs of design, construction, and permit clearance. Other information such as stream length and project participation were adjusted based on best available information, with the source included in comments which can be viewed in the spreadsheet itself. The Stream Reclamation O&M costs were adjusted to be similar to a cost baseline of \$6,000 per mile with a minimum of \$1,000 for projects within Cherry Creek State Park (higher cost accounts for higher public use in the park) and \$2,000 per mile with a minimum of \$1,000 for remaining stream reclamation projects. The original project information was retained, and the updated and revised project information was delineated by adding an asterisk (\*) in the project designation and both were highlighted to facilitate comparison between the two.

New for the 2024-2033 CIP, the projects included in the CIP (see green text) the budget estimates of project costs were updated, based on similar projects that were bid in 2023 or updated engineer’s opinions of construction costs, in an effort to capture inflationary pressures and current market conditions.

### Table 2 – Summary of Recommended Pollutant Reduction Facilities 2024 – 2033 CIP

This table lists the PRFs that are in the current 10-year CIP with more detail provided for the projects in the current budget year. Since the Authority partners with other governmental agencies to design and construct some of the PRFs, the Authority's portion of total project costs is also shown. The total cost is included along with the Authority's portion. Previous funding contributed by the Authority is deducted from the Authority's portion to get the Residual PRF Costs for the Authority, the Residual PRF Costs for the Authority are then budgeted through the 10-year CIP, since most projects take several years from concept through construction.

Some highlights of the projects included in the 2024 Budget are described below.

The East Shade Shelter Shoreline Stabilization Phase III (CCB-17.5.1) project includes funding participation from the latest Engineer's opinion of probable cost of 86% Authority and 14% is CPW to cover their participation in amenities. The actual costs and participation split will need to be determined through final design and construction and further coordination between parties.

The Tower Loop Shoreline Stabilization Phase II (CCB-17.7) project has been moved back to final design in 2032 and construction in 2033 based on value engineering effort done in 2023. The actual costs and schedule will need to be monitored and evaluated with future CIP updates.

The Cherry Creek Stream Reclamation at Arapahoe Rd., Reaches 3 and 4 (CCB-5.14C) project includes CCBWQA's funding at 16% (not the typical 25% partner project) to match the average of \$1,016 per pound of phosphorus immobilized from Table 3. Project costs and participation may be better defined through the upcoming design and evaluated further with future CIP updates.

The Cherry Creek – Reservoir to Lake View Drive Alternatives Analysis and Development of Preferred Alternative (CCB-5.16A) project includes CCBWQA's funding of 100%.

The Cherry Creek all Reached in CCSP (CCB-5.16A, B, C) line includes CCBWQA funding \$7,650,000 over 10-years. It represents a funding stream that can be applied to projects as their costs and priorities and further identified and refined through current and upcoming design efforts. Currently, the Cherry Creek – Reservoir to Lake View Drive is considered the top priority; after the development of the preferred alternative and its associated costs will determine how far this funding will go. Additional project partners and funding from others will likely be needed in order to complete all of the stream reclamation on Cherry Creek within Cherry Creek State Park (CCSP).

The Piney Creek Reaches 1 to 2 (CCB-6.5) project includes CCBWQA's funding at 23% (not the typical 25% partner project) to match the average of \$1,016 per pound of phosphorus immobilized from Table 3. Project costs and participation may be better defined through upcoming design and evaluated further with future CIP updates.

The Piney Creek Reaches 4 to 5 (CCB-6.6) project includes CCBWQA's funding at 23% (not the typical 25% partner project) to match the average of \$1,016 per pound of phosphorus immobilized from Table 3. Project costs and participation may be better defined through upcoming design and evaluated further with future CIP updates.

The McMurdo Gulch Reclamation (CCB-7.4) includes CCBWQA’s funding of 25% as it is a partner project and is for priority 3 stream reclamation. As requested by Castle Rock, it includes \$1,121,000 of CCBWQA for 2024, of which \$869,000 is new funding included in CCBWQA’s 2024 budget, and \$252,000 of CCBWQA’s unspent funding that was left over after the completion of priorities 1 and 2 stream reclamation. This information will need to be evaluated by CCBWQA when drafting the Intergovernmental Agreement between the parties, and when it is considered for action by CCBWQA’s Board.

The Lone Tree Creek in CCSP downstream of Pond, CCBWQA only (CCB-21.1) project includes CCBWQA funding of 100%. This funding is only for the stream reclamation portion downstream of the pond and embankment only. The scope and cost of the project will need to be reevaluated based on completion of the Major Drainageway Planning Study that is currently underway. Additional improvements and partner funding may be needed as a result of this study.

The Lone Tree Creek in CCSP upstream of Pond, Centennial Trail Portion (CCB-21.3) project is done in conjunction with Centennial Trail Project. CCBWQA’s funding is at 25% (not the typical 100% for projects within CCSP) and is for the stream reclamation portion of the larger trail project. The trail portion advanced the stream reclamation portion ahead of its water quality priority, limiting the funds available for the project. CCBWQA’s Board has previously taken action to confirm the \$112k commitment to Centennial so it has been included in the 2024 Budget.

CCBWQA’s funding on Happy Canyon Creek at Jordan Rd/ (CCB-22.1) is at 25% and continues the funding that was previously requested by SEMSWA.

CCBWQA’s funding on PRF Preservation, Acquisition, Lease of Land or Water is budgeted for \$100k and CCBWQA’s percentage is not known as no project and costs have been identified.

All other projects listed in the CIP were coordinated with project partners and adjusted based on input and direction received. Further evaluation and adjustments will likely be needed in future CIP updates when projects get closer to the current budget year.

## **2024 Operations and Maintenance Budget**

The projects and costs from 2023 Annual Inspection of PRFs at CCSP Task Memorandum by RG and Associates were included in the CIP for 2024. The RDS Utilities Costs were increased from \$65,000 to \$72,000, PRF Reseeding of \$5,000, PRF Mowing of \$5,000, Tree/Shrub Planting of \$2,000, and Fence Repair of \$8,000 were included at the direction of the Technical Manager and to match the 2024 Budget.

## **Table 3 – Summary of 10 Completed Pollutant Reduction Facilities for Consideration in 2024 – 2033 CIP**

From Table 2, the ten completed projects with the updated and revised project information, delineated by adding an asterisk (\*) in the project designation, were adjusted to 2023 costs using ENR’s Building Cost Index. Three unit costs were developed for the stream reclamation cost per mile and the cost per pound of phosphorus immobilized (without or with cost sharing from

partners). Figure 1 shows the stream reclamation cost per mile and Figure 2 shows the cost per pound of phosphorus immobilized (without or with cost sharing from partners).

Summary statistics are included at the bottom of Table 2 of CIP and below. The mean of \$4,064 per pound of phosphorus (without cost sharing) or \$1,016 per pound of phosphorus (with cost sharing of 75% partner participation and 25% CCBWQA participation) were used to evaluate projects included in the 10-year CIP (see green text) in Table 1. When the calculated cost per pound of phosphorus exceeded these means then a more detailed method was used to calculate it, delineated with a pound sign (#) in the project designation, or CCBWQA’s participation was adjusted down to get the cost per pound in alignment with the mean. As the projects move forward and more detailed costs and engineering information is available the projects that were adjusted can be further evaluated, to see whether additional funding from CCBWQA is warranted, and updated as needed in future CIPs.

Statistic	Stream Reclamation Cost per mile	\$/pound of phosphorus (w/o cost sharing)	\$/pound of phosphorus (w/ CCBWQA participation at historical limit of 25%)
Minimum =	\$ 3,145	\$ 1,890	\$ 472
Maximum =	\$ 13,840	\$ 8,292	\$ 2,073
Mean =	\$ 6,771	\$ 4,064	\$ 1,016
Median =	\$ 6,759	\$ 4,053	\$ 1,013
Standard Deviation =	\$ 3,581	\$ 2,137	\$ 534



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	
1	<b>CHERRY CREEK BASIN WATER QUALITY AUTHORITY</b>																														
2	<b>TABLE 1 - SUMMARY OF POTENTIAL POLLUTANT REDUCTION FACILITIES</b>																														
3	<b>REVISIONS FOR 2024 - 2033 CIP</b>																														
4			<b>Date:</b>	<b>November 2, 2023</b>																											
5			<b>Color Code:</b>	<b>Blue:</b>	<b>Project Completed</b>																										
6				<b>Green:</b>	<b>Planned for design/construction within 10-year CIP (see Table 2)</b>																										
7				*	<b>Project updated based on best available information. Projects have best accounting information that includes total project costs of design, construction, construction management, and permit clearance. Other information such as stream length was adjusted based on information noted in comments on spreadsheet. O&amp;M costs were adjusted to be similar cost baseline. Projects that were bid/constructed in phases, were separated into those phases to facilitate adjustment to 2023 costs on PRFs for WQ Analysis.</b>																										
8				#	<b>Site specific analysis used for project to support CCBWQA's funding level</b>																										
9					<b>Projects highlighted so that original project information compared with updated project information (denoted with *).</b>																										
45	CCB-7.3	McMurdo Gulch Reclamation (Castle Rock) 20/21/22 Project	Design in 2020, Construction 2021	Stream Reclamation (L = 3,700 lf)	0.70	mi			100	lbs/mi	70	lbs/yr	Storm Flow	90%	63	lbs/year	\$ 2,460	\$ -	\$ -	\$ -	\$ 25	\$ 156	25%	\$615	\$ 2,480	\$ 620					2, 3
46	CCB-7.3 *	McMurdo Gulch Reclamation (Castle Rock) 20/21/22 Project	Design in 2020, Construction 2021	Stream Reclamation (L = 3,700 lf)	0.70	mi			100	lbs/mi	70	lbs/yr	Storm Flow	90%	63	lbs/year	\$ 1,940	\$ -	\$ -	\$ -	\$ 1	\$ 105	24%	\$466	\$ 1,664	\$ 400					2, 3, 7
47	CCB-12	Bowtie Property PRF	Purchase completed 2003	Stabilize confluence (Ph 1) and construct sediment pond (Ph 2)	22	sq mi	2-year flood	300 af	500	mg/l/ton	85	lbs/yr	base flow and minor flood	70% pond 65% wetlands	235	lbs/year	\$ 826	\$ 300	\$ 63	\$ 1.8	\$ 6	\$ 70	100%	\$826	\$ 299	\$ 299					2
48	CCB-13.1	Cottonwood/Peoria Wetlands Pond	Completed 2003. Restorative maintenance required in 2009	Joint funded project with UDFCD, GWV, Arapahoe County	8.30	sq mi							base and flood flows	measured	363	lbs/year	\$ 1,636	\$ -	\$ -	\$ -	\$ 5	\$ 93	12%	\$196	\$ 255	\$ 31					2
49	CCB-13.2	Cottonwood Stream Reclamation in CCSP	Phase I completed in 2004. Phase II completed June 2008 (Ref 2)	11,600 lf of stream reclamation from Peoria to Perimeter Rd. Pond	2.20	mi			100	lbs/mi	220	lbs/yr	base and flood flows	see separate cales	730	lbs/year	\$ 2,200	\$ -	\$ -	\$ -	\$ 55	\$ 173	100%	\$2,200	\$ 237	\$ 237					2
50	CCB-13.3	Cottonwood Creek Stream Stabilization at Easter Avenue	Authority contributed \$338,000 for construction in 2010.	2,600 lf of stream reclamation from Easter Ave to Briarwood Ave	0.49	mi			100	lbs/mi	49	lbs/yr	Storm Flow	90%	44	lbs/year	\$ 1,350	\$ -	\$ -	\$ -	\$ 1	\$ 73	25%	\$338	\$ 1,655	\$ 414					2
51	CCB-13.4	Peoria Trib B/Airport East and West Pond (Outfall C-1)	Cottonwood Creek Master Planned Improvements. Ponds combined into one.	Combined existing detention ponds and provided EURV	0.35	sq mi			400	lbs/sq mi	140	lbs/yr	Base and storm flow	40%	56	lbs/yr	\$ 523	\$ -	\$ -	\$ -	\$ -	\$ 28	25%	\$131	\$ 500	\$ 125					
52	CCB-17.2	Reservoir Shoreline Stabilization Mountain Loop Trail	Scheduled for construction beginning in 2012	CCSP Recreation sites: Mountain, Lake and Cottonwood Creek Loops (2,300 ft of shoreline)											54	lbs/yr	\$ 1,131	\$ -	\$ -	\$ -	\$ 5	\$ 66	100%	\$1,131	\$ 1,215	\$ 1,215					1, 16
53	CCB-17.3	West Boat Ramp Parking Lot WQ Improvements	Final design completed in 2012	Provide water quality treatment of parking lot runoff.	3.43	ac prkg lot					3	lbs/yr	parking lot	70%	2	lbs/yr	\$ 330	\$ -	\$ -	\$ -	\$ 1	\$ 19	100%	\$330	\$ 8,903	\$ 8,903					1
54	CCB-17.4	East Boat Ramp Shoreline Stabilization Phase II	Identified during 2012 annual PRF inspection	105 lf of bank stabilization	105	lf	0.1 cy/yr/ft		0.14	lbs/lf	14.7	lbs/yr	bank erosion	80%	12	lbs/yr	\$ 91	\$ -	\$ -	\$ -	\$ 2	\$ 7	100%	\$91	\$ 585	\$ 585					1, 16
55	CCB-17.5	East Shade Shelter Shoreline Stabilization Phase II	Identified during 2012 annual PRF inspection	20 lf of bank stabilization	20	lf	0.1 cy/yr/ft		0.14	lbs/lf	2.8	lbs/yr	bank erosion	80%	2	lbs/yr	\$ 18	\$ -	\$ -	\$ -	\$ -	\$ 1	100%	\$18	\$ 431	\$ 431					1, 16
56	CCB-20.1	Detention Pond Retrofit Program - McMurdo Gulch	Phase 1 - McMurdo Gulch	Modify existing ponds to meet current standards for WQ	1	Each			0.40	lbs/Trib Acre	0.4	lbs/yr	Residential		9	lbs/pond/yr	\$ 60	\$ -	\$ -	\$ -	\$ 0	\$ 4	100%	\$60	\$ 396	\$ 396					1, 17
57	CCB-22..2	Happy Canyon Creek Upstream of I-25 (MHFD)	Requested in 2020	3000 lf of stream reclamation	0.57	mi			100	lbs/mi	57	lbs/yr	Storm Flow	90%	51	lbs/year	\$ 5,441	\$ -	\$ -	\$ -	\$ 54	\$ 346	9%	\$500	\$ 6,765	\$ 622					2, 3
58	CCB-22..2*	Happy Canyon Creek Upstream of I-25 (MHFD)	Requested in 2020	3000 lf of stream reclamation	0.57	mi			100	lbs/mi	57	lbs/yr	Storm Flow	90%	51	lbs/year	\$ 4,021	\$ -	\$ -	\$ -	\$ 1	\$ 216	9%	\$362	\$ 4,232	\$ 381					2, 3, 7





A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD		
<b>CHERRY CREEK BASIN WATER QUALITY AUTHORITY</b>																															
<b>TABLE 1 - SUMMARY OF POTENTIAL POLLUTANT REDUCTION FACILITIES</b>																															
<b>REVISIONS FOR 2024 - 2033 CIP</b>																															
<p><b>Date:</b> November 2, 2023</p> <p><b>Color Code:</b> Blue: Project Completed</p> <p>Green: Planned for design/construction within 10-year CIP (see Table 2)</p> <p>* Project updated based on best available information. Projects have best accounting information that includes total project costs of design, construction, construction management, and permit clearance. Other information such as stream length was adjusted based on information noted in comments on spreadsheet. O&amp;M costs were adjusted to be similar cost baseline. Projects that were bid/constructed in phases, were separated into those phases to facilitate adjustment to 2023 costs on PRFs for WQ Analysis.</p> <p># Site specific analysis used for project to support CCBWQA's funding level</p> <p>Projects highlighted so that original project information compared with updated project information (denoted with *).</p>																															
88	Proj. Designation	Project Title	Status	Description	Design Basis				Projected Loads			Projected Treatment			Cost Estimate (1000\$)							Unit Cost (\$/pound)		Note							
89				PRF Type	Quantity	Unit	Rate	Volume	Rate	Total	Source	Removal	lbs Remo ved		Capital	Land Acquisition	Water Augment <sup>8</sup>	Capital Replace <sup>9</sup>	O&M	Annual Cost @ 4%	CCBWQA Share (%)	CCBWQA Share (\$)	w/o cost sharing	w/cost sharing							
90	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)							
<b>The projects listed below are older and will likely need to be further evaluated and have costs updated in with future CIP efforts.</b>																															
92	CCB-8	Limestone Filter Enhancement	Specific project not identified	Construct limestone filter bed downstream of retention pond	1.0	sq mi	n/a	10.7 af/year/sq mile	427	lbs/sq mi	427	lbs/yr	Base and storm flow	20%	85	lbs/year/mi <sup>2</sup>	\$ 943		\$ -	\$ 595	\$ 1	\$ 83	43%	\$405	\$ 977	\$ 420					
93	CCB-11	Advanced Water Treatment Plant	Conceptual design prepared	Construct 2 MGD AWT plant on Cottonwood Creek to treat Cherry Creek and Cottonwood Creek flows (0.21-mg/ influent, 0.03 mg/l disch)	3	cfs	2-MGD	2260	0.21	mg/l	1272	lbs/yr	Base flow and groundwater	90%	1145	lbs/year	\$ 4,593	unknown	unknown	\$ 69		100%	\$4,593	\$ -	\$ -	11					
94	CCB-17.4.1	East Boat Ramp Shoreline Stabilization Phase III	Identified during 2012 annual PRF inspection	400 lf of bank stabilization	400	lf	0.1 cy/yr/ft		0.14	lbs/lf	56.0	lbs/yr	bank erosion	80%	44.8	lbs/yr	\$ 350	\$ -	\$ -	\$ -	\$ 4	\$ 23	100%	\$350	\$ 508	\$ 508	1, 16				
95	CCB-17.6	West Shade Shelter Shoreline Stabilization PRF <sup>14</sup>	Identified initially in 2006. UCD Student Project w/WPR in 2013	1,400 lf of bank stabilization	1400	lf	0.1 cy/yr/ft		0.14	lbs/lf	196.0	lbs/yr	bank erosion	80%	179	lbs/yr	\$ 704	\$ -	\$ -	\$ -	\$ 2	\$ 40	65%	\$458	\$ 222	\$ 144	21, 22				
96	CCB-17.8	Dixon Grove Shoreline Stabilization Phase II	Identified during 2019 annual PRF inspection	200 lf of bank stabilization	200	lf	0.1 cy/yr/ft		0.14	lbs/lf	28.0	lbs/yr	bank erosion	80%	22.4	lbs/yr	\$ 235	\$ -	\$ -	\$ -	\$ 1	\$ 14	100%	\$235	\$ 607	\$ 607	1, 16, 22				
97	CCB-18	OWTS Sewer Service	No action to date	Provide Sewer Service for OWTS Areas			To Be Determined				To Be Determined			To Be Determined								100%	\$0		To Be Determined	1					
98	CCB-19	Non-point Pollutant Management	No action to date	Assist agricultural contributors to water quality impact			To Be Determined				To Be Determined			To Be Determined	\$ 100	\$ -	\$ -	\$ -	\$ -	\$ 5	100%	\$100		To Be Determined	1						
<b>BASIS FOR ANALYSIS:</b>																															
(A) Unit cost of phosphorus removal based on annualized cost of completed project over 35 years at 4% interest rate. <b>CRF = 0.053577</b>																															
(B) All projects identified provide for additional phosphorus immobilization beyond minimum requirements, unless noted otherwise.																															
<b>2024 CIP NOTES:</b>																															
1. Assumed that augmentation for consumptive use not required																															
2. Augmentation for naturally established wetlands not required (assumption)																															
3. Phosphorus Estimated based on Interim Stream Reclamation Paper																															
4. See 2020 Cattail Harvesting Pilot Project Memo. Phosphorus estimated based on SEMSWA 2020 Data.																															
5. Pond updates to bring up to current standards and to facilitate maintenance. No phosphorus calculation provided, since ponds already exist.																															
6. Updated O&M Cost to \$6k per mile (increased cost to account for higher public use for projects in CCSP)with a minimum of \$1k.																															
7. Updated O&M Cost to \$2k per mile with a minimum of \$1k																															
8. Water costs at \$ 6,500 per acre foot																															
9. Present worth of capital replacement																															
10. Benefit listed in Muller's Cherry Creek Stream and Water Quality Assessment, Reservoir to State Park Boundary, November 2022																															
11. Land acquisition and water augmentation not defined. CWSW/ACWWA JWPP project influenced scope of project.																															
12. Total Phosphorus loading derived from laboratory sediment samples & Stantec Geomorphic Study BANCS analysis.																															
16. Benefit approximated based on other shoreline projects and estimates																															
17. Loads and performance based on calculations for 3 McMurdo Gulch ponds.																															
19. Approach was shifted to focus on stream reclamation (CCB-5,14) and reduction of sediment and nutrient sources from erosion.																															
20. Joint project with CCSP. Integrate design with Dog Park uses and improvements.																															
21. Phosphorus: Shoreline 177 lbs/yr + Parking Lot 2 lbs/yr =179 lbs/yr																															
22. Updated O&M Cost to \$2k per 1000' with a minimum of \$1k																															
<b>REFERENCES</b>																															
1. Muller Eng 2003. <i>Feasibility Evaluation for Cherry Creek State Park Wetlands Project</i>																															
2. Muller Eng 2003. <i>Feasibility Evaluation for Cottonwood Creek Stream Stabilization Project</i>																															
3. AMEC 2005. <i>Draft Feasibility Report Cherry Creek Reservoir Destratification</i>																															
4. AMEC 2006. <i>Recommendations for Prepurchase of Jamor Equipment for Cherry Creek Reservoir Destratification Project.</i>																															
5. Tetra Tech August 2006. <i>Phosphorus Estimates in Cherry Creek and Cost for Removal via Sediment Trap.</i>																															
6. WERF 2000. <i>Phosphorus Credit Trading in the Cherry Creek Basin: An Innovative Approach to Achieving Water Quality Benefits.</i>																															
7. Ruzzo, WP September 5, 2003. <i>Cherry Creek Corridor Master Plan-Estimate of Phosphorus Reduction from Stream Reclamation</i>																															
8. Ruzzo, W. P. September 21, 2006. <i>Cottonwood Creek Reclamation - Water Rights Augmentation Requirements.</i>																															
9. TetraTech December 2006. <i>Design of Cherry Creek Sediment Basin and Stream Stabilization.</i>																															
10. Brown and Caldwell Feb 2007. <i>Shop Creek Wetlands Pollutant Reduction Facility Wetland Assessment</i>																															
11. PBSJ October 2006. <i>Draft McMurdo Gulch Major Drainageway Master Plan</i>																															
12. Brown and Caldwell 2010. <i>Cherry Creek Stream Reclamation at Shop Creek Trail.</i>																															
13. CCBWQA TAC June 16, 2011. <i>Stream Reclamation Water Quality Benefit Evaluation Interim Status Report</i>																															
14. Ruzzo Memo, September 4, 2013, <i>West Shade Shelter Shoreline Stabilization PRF - Water Quality Analysis.</i>																															

	A	B	C	D	E	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	
1	<b>CHERRY CREEK BASIN WATER QUALITY AUTHORITY</b>																				
2	<b>TABLE 2 - SUMMARY OF RECOMMENDED POLLUTANT REDUCTION FACILITIES</b>																				
3	<b>2024 - 2033 BUDGET PROJECTIONS (1000\$)</b>																				
4																					
5	<b>Color Code:</b>	First year in 10-year CIP																			
6																					
7		<b>November 2, 2023</b>				<b>Residual PRF Costs</b>	<b>Proposed 2024 Budget</b>				<b>Proposed 2025 Budget</b>	<b>Proposed 2026 Budget</b>	<b>Proposed 2027 Budget</b>	<b>Proposed 2028 Budget</b>	<b>Proposed 2029 Budget</b>	<b>Proposed 2030 Budget</b>	<b>Proposed 2031 Budget</b>	<b>Proposed 2032 Budget</b>	<b>Proposed 2033 Budget</b>	<b>2024-2033 Total</b>	
8	<b>Project No.</b>	<b>Project Title</b>	<b>Total</b>	<b>Authority Portion</b>	<b>Authority Portion</b>		<b>Design</b>	<b>Capital</b>	<b>Land</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	
9	<b>Budget Category - General</b>																				
10	<b>Budget Category - Reservoir Projects</b>																				
11	CCB-17.5.1	East Shade Shelter Shoreline Stabilization Phase III	\$ 975	\$ 842	86%	\$ 658	\$ -	\$ 658	\$ -	\$ 658	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 658
12	CCB-17.7	Tower Loop Shoreline Stabilization Phase II	\$ 1,035	\$ 1,035	100%	\$ 1,035	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 155	\$ 880	\$ 1,035	
13	<b>Budget Category - Stream Reclamation Projects</b>																				
14	CCB-5.4	Cherry Creek Stream Reclamation at Main Street (Parker)	\$ 5,600	\$ 1,280	23%	\$ 1,280	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 700	\$ 580	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,280
15	CCB-5.6	Cherry Creek Stream Stabilization at Lincoln Avenue (Parker)	\$ 3,290	\$ 755	23%	\$ 755	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 411	\$ 344	\$ -	\$ -	\$ -	\$ 755
16	CCB-5.14C	Cherry Creek Stream Reclamation at Arapahoe Rd. - Valley Country Club to Soccer Fields, Reaches 3 to 4	\$ 10,600	\$ 1,655	16%	\$ 1,104	\$ -	\$ 300	\$ -	\$ 300	\$ 340	\$ 340	\$ 124	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,104
17	CCB-5.16A	Cherry Creek - Reservoir to Lake View Drive Alternatives Analysis and Development of Preferred Alternative	\$ 438	\$ 438	100%	\$ 181	\$ 181	\$ -	\$ -	\$ 181	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 181
18	CCB-5.16A, B, C	Cherry Creek all Reaches in CCSP	\$ 30,488	\$ -	0%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 770	\$ 1,110	\$ 225	\$ 195	\$ 1,280	\$ 500	\$ 1,190	\$ 1,470	\$ 910	\$ 7,650	
19	CCB-6.5	Piney Creek - Cherry Creek to Parker Road, Reaches 1 to 2 (SEMSWA)	\$ 4,060	\$ 930	23%	\$ 829	\$ 39	\$ -	\$ -	\$ 39	\$ 25	\$ 75	\$ 150	\$ 125	\$ 125	\$ 125	\$ 125	\$ 40	\$ -	\$ 829	
20	CCB-6.6	Piney Creek south of Orchard Rd., Reaches 4 to 5 (SEMSWA)	\$ 5,320	\$ 1,220	23%	\$ 1,220	\$ -	\$ 75	\$ -	\$ 75	\$ 150	\$ 235	\$ 250	\$ 250	\$ 260	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,220
21	CCB-7.4	McMurdo Gulch Reclamation (Castle Rock)	\$ 5,162	\$ 1,292	25%	\$ 1,121	\$ -	\$ -	\$ 1,121	\$ 1,121	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,121
22	CCB-13.5.3	Cottonwood Creek Tributary - Shooting Area Tributary (CCSP)	\$ 720	\$ 180	25%	\$ 180	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 180	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 180
23	CCB-13.5.4	Cottonwood Creek and Tributary C (IWSD)	\$ 2,496	\$ 624	25%	\$ 624	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 624	\$ -	\$ -	\$ -	\$ -	\$ 624
24	CCB-21.1	Lone Tree Creek in CCSP downstream of Pond (CCBWQA Only)	\$ 600	\$ 600	100%	\$ 600	\$ 120	\$ -	\$ -	\$ 120	\$ 480	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 600
25	CCB-21.3	Lone Tree Creek in CCSP upstream of Pond (Centennial Trail Portion)	\$ 448	\$ 112	25%	\$ 112	\$ -	\$ 112	\$ -	\$ 112	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 112
26	CCB-22.1	Happy Canyon Creek at Jordan Road (SEMSWA)	\$ 6,300	\$ 1,445	23%	\$ 1,264	\$ -	\$ 50	\$ -	\$ 50	\$ 75	\$ 75	\$ 171	\$ 170	\$ 170	\$ 170	\$ 170	\$ 170	\$ 43	\$ 1,264	
27	<b>Budget Category - PRF Water Quality/Wetland Ponds</b>																				
28	<b>Budget Category - PRF Preservation, Acquisition, Lease</b>																				
29	CCB-16	PRF Preservation, Acquisition, Lease of Land or Water	\$ 1,000	\$ 1,000	100%	\$ 1,000	\$ -	\$ 100	\$ -	\$ 100	\$ 100	\$ 100	\$ 100	\$ 100	\$ 100	\$ 100	\$ 100	\$ 100	\$ 100	\$ 100	\$ 1,000
30	<b>SUB-TOTALS</b>									\$ 2,756	\$ 1,940	\$ 1,935	\$ 1,720	\$ 1,600	\$ 1,935	\$ 1,930	\$ 1,929	\$ 1,935	\$ 1,933	\$ 19,613	
31																					

	A	B	C	D	E	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE
1	<b>CHERRY CREEK BASIN WATER QUALITY AUTHORITY</b>																			
2	<b>TABLE 2 - SUMMARY OF RECOMMENDED POLLUTANT REDUCTION FACILITIES</b>																			
3	<b>2024 - 2033 BUDGET PROJECTIONS (1000\$)</b>																			
4																				
5	Color Code:		First year in 10-year CIP																	
6																				
7		<b>November 2, 2023</b>				<b>Residual PRF Costs</b>	<b>Proposed 2024 Budget</b>				<b>Proposed 2025 Budget</b>	<b>Proposed 2026 Budget</b>	<b>Proposed 2027 Budget</b>	<b>Proposed 2028 Budget</b>	<b>Proposed 2029 Budget</b>	<b>Proposed 2030 Budget</b>	<b>Proposed 2031 Budget</b>	<b>Proposed 2032 Budget</b>	<b>Proposed 2033 Budget</b>	<b>2024-2033 Total</b>
8	<b>Project No.</b>	<b>Project Title</b>	<b>Total</b>	<b>Authority Portion</b>	<b>Authority Portion</b>		<b>Design</b>	<b>Capital</b>	<b>Land</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>	<b>Total</b>
32	<b>OPERATIONS AND MAINTENANCE</b>																			
33	<b>Routine Category</b>																			
34	OM-7	Reservoir Destratification	\$ 400	\$ 400	100%					\$ 40	\$ 40	\$ 40	\$ 40	\$ 40	\$ 40	\$ 40	\$ 40	\$ 40	\$ 40	\$ 40
35	OM-14.1	PRF Weed Control	\$ 103	\$ 103	100%					\$ 13	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10
36	OM-14.2	PRF Reseeding at CCSP	\$ 45	\$ 45	100%					\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5
37	OM-14.3	PRF Mowing	\$ 50	\$ 45	100%					\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5
38		<b>SUB-TOTAL</b>	\$ 598	\$ 593						\$ 63	\$ 60	\$ 60	\$ 60	\$ 60	\$ 60	\$ 60	\$ 60	\$ 60	\$ 60	\$ 60
39	<b>Operations Category</b>																			
40	O - 1	RDS Utilities	\$ 720	\$ 720	100%					\$ 72	\$ 72	\$ 72	\$ 72	\$ 72	\$ 72	\$ 72	\$ 72	\$ 72	\$ 72	\$ 72
41	O - 2	RDS Service Plan	\$ 172	\$ 172	100%					\$ 13	\$ 14	\$ 15	\$ 16	\$ 17	\$ 18	\$ 19	\$ 20	\$ 20	\$ 20	\$ 20
42	O - 3	PRF Emergency Repairs	\$ -	\$ -	100%					\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
43	O - 4	Meteorological Station	\$ 30	\$ 30	100%					\$ 3	\$ 3	\$ 3	\$ 3	\$ 3	\$ 3	\$ 3	\$ 3	\$ 3	\$ 3	\$ 3
44		<b>SUB-TOTAL</b>	\$ 922	\$ 922						\$ 88	\$ 89	\$ 90	\$ 91	\$ 92	\$ 93	\$ 94	\$ 95	\$ 95	\$ 95	\$ 95
45	<b>Restorative Category</b>																			
46	OM -	Tree/Shrub Planting	\$ 18	\$ 18	100%					\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2	\$ 2
47	OM -	Fence Repair	\$ 72	\$ 72	100%					\$ 8	\$ 8	\$ 8	\$ 8	\$ 8	\$ 8	\$ 8	\$ 8	\$ 8	\$ 8	\$ 8
48	OM -	Shoreline / Bank Restoration																		\$ -
49		Average Annual Cost	\$ 1,755	\$ 1,755	100%					\$ -	\$ 195	\$ 195	\$ 195	\$ 195	\$ 195	\$ 195	\$ 195	\$ 195	\$ 195	\$ 195
50		Shop Creek	\$ 17	\$ 17	100%					\$ 17										\$ 17
51		Cottonwood Wetlands	\$ 31	\$ 31	100%					\$ 31										\$ 31
52		Tower Loop	\$ 3	\$ 3	100%					\$ 3										\$ 3
53		East Shade Shelter	\$ 3	\$ 3	100%					\$ 3										\$ 3
54		East Boat Ramp	\$ 16	\$ 16	100%					\$ 16										\$ 16
55		Mountain/Lake Loop Shoreline	\$ 65	\$ 65	100%					\$ 65										\$ 65
56		Cherry Creek 12-mile	\$ 8	\$ 8	100%					\$ 8										\$ 8
57	OM -	Wetland Harvesting	\$ 900	\$ 900	100%					\$ 90	\$ 90	\$ 90	\$ 90	\$ 90	\$ 90	\$ 90	\$ 90	\$ 90	\$ 90	\$ 90
58		<b>SUB-TOTAL</b>	\$ 2,888	\$ 2,888						\$ 243	\$ 295	\$ 295	\$ 295	\$ 295	\$ 295	\$ 295	\$ 295	\$ 295	\$ 295	\$ 295
59	<b>Rehabilitation Category</b>																			
60	OM -				100%															
61		<b>SUB-TOTAL</b>	\$ -	\$ -						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
62																				
63		<b>SUB-TOTAL O&amp;M</b>								\$ 394	\$ 444	\$ 445	\$ 446	\$ 447	\$ 448	\$ 449	\$ 450	\$ 450	\$ 450	\$ 450
64		<b>GRAND TOTAL</b>								\$ 3,150	\$ 2,384	\$ 2,380	\$ 2,166	\$ 2,047	\$ 2,383	\$ 2,379	\$ 2,379	\$ 2,385	\$ 2,383	\$ 24,036

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY**  
**TABLE 3 - SUMMARY OF 10 COMPLETED POLLUTANT REDUCTION FACILITIES**  
**FOR CONSIDERATION IN 2024 - 2033 CIP**

**Date:** November 2, 2023  
**Color Code:** Blue: Project Completed  
 \* Corrected to reflect final project information, see comments for details

Projects taken from Table 1. Project updated based on best available information. Projects have best accounting information that includes total project costs of design, construction, construction management, and permit clearance. Other information such as stream length was adjusted based on information noted in comments on spreadsheet. O&M costs were adjusted to be similar cost baseline. Projects that were bid/constructed in phases, were separated into those phases to facilitate adjustment to 2023 costs on PRFs for WQ Analysis.

Proj. Designation	Project Title	Status	Description	Design Basis				Projected Loads	Total	Source	Projected Treatment			Cost Estimate (1000\$)							WQ Unit Cost (\$/pound)		Adjusted to 2023 \$ (1000\$)				2023 WQ Unit Cost (\$/pound)		Note				
				PRF Type	Quantity	Unit	Rate				Volume	Rate	Removal	lbs Removed	Capital	Land Acquisition	Water Augment <sup>8</sup>	Capital Replace <sup>9</sup>	O&M	Annual Cost @ 4%	CCBWQA Share (%)	CCBWQA Share (\$)	w/o cost sharing	w/cost sharing	Bid Date/Construction Date	ENR Factor	Construction Cost	Cost per mile		w/o cost sharing	w/cost sharing		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14a)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)							(24)				
CCB-5.7*	Cherry Creek Stream Stabilization at Eco-Park (SEMSWA)	IGA w/SEMSWA for design in 2010 and construction in 2011/2012	Local stream stabilization (L = 4850 ft)	0.92	mi		100	lbs/mi	92	lbs/yr	Storm Flow	90%	83	lbs/year	\$ 4,756	\$ -	\$ -	\$ -	\$ 2	\$ 257	19%	\$905	\$ 3,106	\$ 591	August 2012	1.58	\$ 7,531	\$ 8,199	\$ 4,919	\$ 936	1, 2		
CCB-5.11*	Cherry Creek Stream Stabilization at Norton Farms (Parker)	Conceptual design by UDFCD identified priority 3	Local stream stabilization (L = 2500 ft)	0.47	mi		100	lbs/mi	47	lbs/yr	Storm Flow	90%	43	lbs/year	\$ 1,103	\$ -	\$ -	\$ -	\$ 1	\$ 60	23%	\$255	\$ 1,410	\$ 326	January 2016	1.48	\$ 1,634	\$ 3,452	\$ 2,090	\$ 483	1, 2		
CCB-5.15*	Cherry Creek Stream Reclamation at Country Meadows (Hess Rd)	Project by Town of Parker and Douglas County	Local stream stabilization (L = 4200 ft)	0.80	mi		100	lbs/mi	80	lbs/yr	Storm Flow	90%	72	lbs/year	\$ 2,788	\$ -	\$ -	\$ -	\$ 2	\$ 151	25%	\$695	\$ 2,114	\$ 527	October 2014	1.51	\$ 4,222	\$ 5,307	\$ 3,202	\$ 798	1, 2		
CCB-5.17.1A*	Cherry Creek Stream Reclamation at KOA	Preliminary design completed 2019, Extension Requested by UDFCD and Parker in 2019	Local stream stabilization (L =1400 ft original, L=2000 ft with 600 ft extension)	0.38	mi		100	lbs/mi	38	lbs/yr	Storm Flow	90%	34	lbs/year	\$ 1,806	\$ -	\$ -	\$ -	\$ 1	\$ 98	18%	\$333	\$ 2,868	\$ 529	July 2020	1.32	\$ 2,378	\$ 6,278	\$ 3,776	\$ 696	1, 2		
CCB-6.4A *	Piney Creek Stream Reclamation - Reach 7	Request from UDFCD in 2014	Local stream stabilization (L = 2,340 ft)	0.44	mi		100	lbs/mi	44	lbs/yr	Storm Flow	90%	40	lbs/year	\$ 3,765	\$ -	\$ -	\$ -	\$ 1	\$ 203	14%	\$512	\$ 5,082	\$ 691	December 2016	1.44	\$ 5,422	\$ 12,234	\$ 7,319	\$ 995	1, 2		
CCB-6.4B.1 *	Piney Creek Stream Reclamation - Reach 6 upstream of Caley	Request from UDFCD in 2014	Local stream stabilization (L = 1,600 ft)	0.30	mi		100	lbs/mi	30	lbs/yr	Storm Flow	90%	27	lbs/year	\$ 2,896	\$ -	\$ -	\$ -	\$ 1	\$ 156	14%	\$394	\$ 5,726	\$ 779	November 2016	1.45	\$ 4,194	\$ 13,840	\$ 8,292	\$ 1,128	1, 2		
CCB-6.4B.2 *	Piney Creek Stream Reclamation - Reach 6 Phase 2	Request from UDFCD in 2014	Local stream stabilization (L = 2,580 ft)	0.49	mi		100	lbs/mi	49	lbs/yr	Storm Flow	90%	44	lbs/year	\$ 2,659	\$ -	\$ -	\$ -	\$ 1	\$ 143	14%	\$361	\$ 3,262	\$ 443	November 2017	1.40	\$ 3,712	\$ 7,597	\$ 4,554	\$ 618	1, 2		
CCB-7.2 *	McMurdo Gulch Reclamation (Castle Rock) 19/20 Project	Design in 2019, Construction in 2020	Stream Reclamation (L = 2,000 lf)	0.38	mi		100	lbs/mi	38	lbs/yr	Storm Flow	90%	34	lbs/year	\$ 1,156	\$ -	\$ -	\$ -	\$ 1	\$ 63	25%	\$289	\$ 1,846	\$ 462	February 2020	1.33	\$ 1,532	\$ 4,045	\$ 2,447	\$ 612	1, 2		
CCB-7.3 *	McMurdo Gulch Reclamation (Castle Rock) 20/21/22 Project	Design in 2020, Construction 2021	Stream Reclamation (L = 3,700 lf)	0.70	mi		100	lbs/mi	70	lbs/yr	Storm Flow	90%	63	lbs/year	\$ 1,940	\$ -	\$ -	\$ -	\$ 1	\$ 105	24%	\$466	\$ 1,664	\$ 400	November 2021	1.14	\$ 2,204	\$ 3,145	\$ 1,890	\$ 454	1, 2		
CCB-22..2*	Happy Canyon Creek Upstream of I-25 (MHFD)	Requested in 2020	3000 lf of stream reclamation	0.57	mi		100	lbs/mi	57	lbs/yr	Storm Flow	90%	51	lbs/year	\$ 4,021	\$ -	\$ -	\$ -	\$ 1	\$ 216	9%	\$362	\$ 4,232	\$ 381	May 2023	1.02	\$ 4,114	\$ 7,240	\$ 4,330	\$ 390	1, 2		
																						\$ 1,410		\$ 353		\$ 1,532		\$ 3,145		\$ 1,890		\$ 472	
																						\$ 5,726		\$ 1,431		\$ 7,531		\$ 13,840		\$ 8,292		\$ 2,073	
																						\$ 2,975		\$ 744		\$ 3,498		\$ 6,771		\$ 4,064		\$ 1,016	
																						\$ 2,987		\$ 747		\$ 3,913		\$ 6,759		\$ 4,053		\$ 1,013	
																						\$ 1,477		\$ 369		\$ 1,864		\$ 3,581		\$ 2,137		\$ 534	
<b>MINIMUM = 0.30</b>																																	
<b>MAXIMUM = 0.92</b>																																	
<b>MEAN = 0.52</b>																																	
<b>MEDIAN = 0.48</b>																																	
<b>STANDARD DEVIATION = 0.20</b>																																	
<b>BASIS FOR ANALYSIS:</b>																																	
(A) Unit cost of phosphorus removal based on annualized cost of completed project over 35 years at 4% interest rate. <b>CRF = 0.053577</b>																																	
(B) All projects identified provide for additional phosphorus immobilization beyond minimum requirements, unless noted otherwise.																																	
<b>2023 CIP NOTES:</b>																																	
1. Corrected project information as noted in comments in spreadsheet.																																	
2. Updated O&M Cost to \$2k per mile with a minimum of \$1k for projects outside of CCSP																																	

Figure 1 - Stream Reclamation outside of CCSP

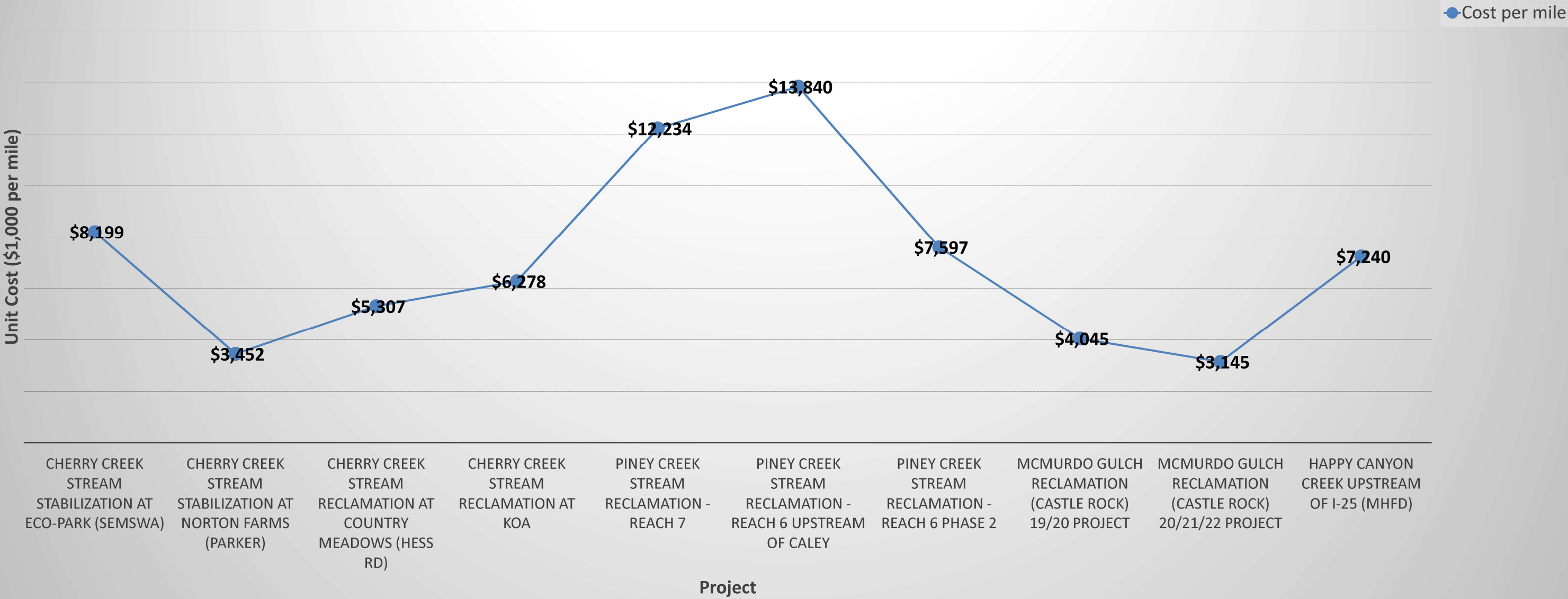
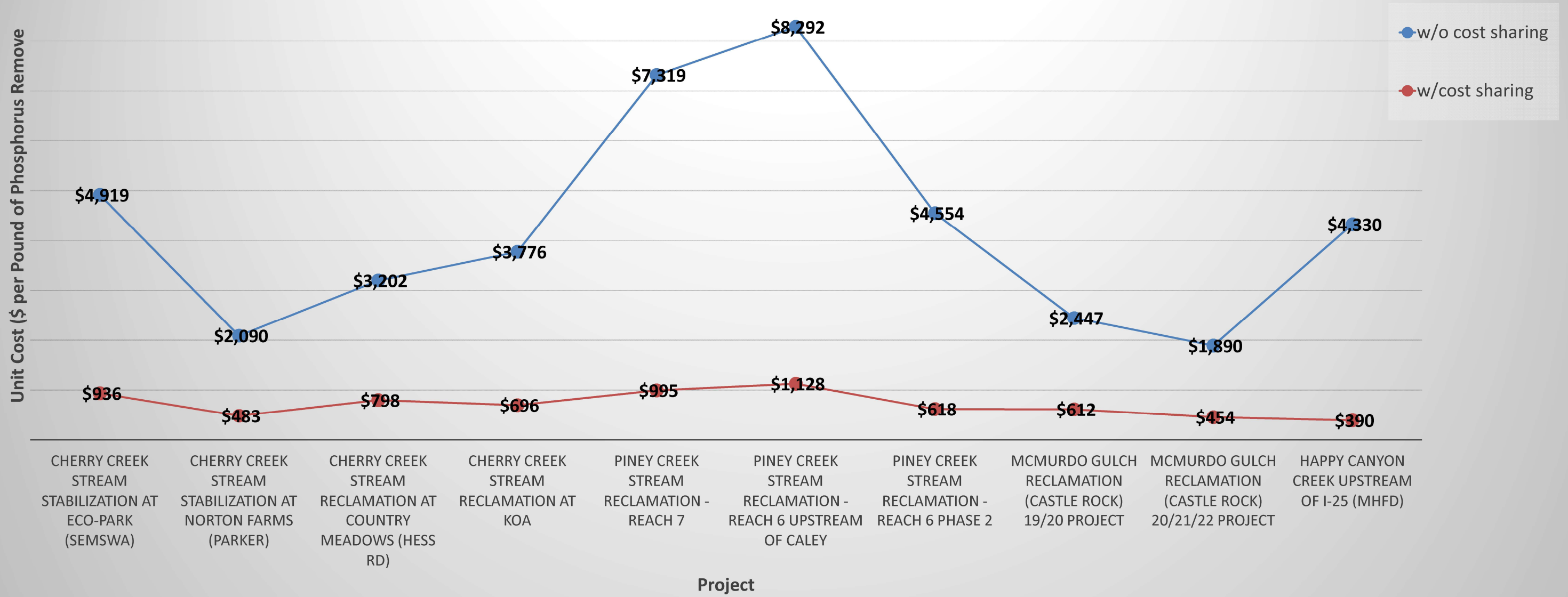


Figure 2 - Stream Reclamation outside of CCSP



## TASK MEMORANDUM

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**DATE:** November 4, 2023

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**TO:** TAC and Board of Directors, CCBWQA  
Jane Clary, Wright Water Engineers, CCBWQA Technical Manager

**CC:** Cherry Creek State Park (CCSP) Park Manager

**FROM:** Ricardo Gonçalves, PE

**SUBJECT:** 2023 Annual Inspection of Pollution Reduction Facilities (PRFs) at CCSP

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### Introduction

The CCBWQA has a contractual agreement with RG and Associates, LLC to perform a Field Observation annually of the PRFs constructed by the CCBWQA at CCSP, and to perform observations on those PRFs after a storm event of more than 1" per hour of intensity or reported visible damage to PRF facilities in the CCSP.

The purpose of the annual Field Observation is to assess whether the PRFs are functioning as designed and to identify routine restorative and rehabilitative maintenance requirements. The TAC of the CCBWQA will use this report to provide recommendations to the board for the following fiscal year's budgeting of maintenance activities. Restorative and rehabilitative maintenance are the responsibility of the CCBWQA. Routine maintenance is the responsibility of the CCSP. Other items, such as educational/interpretive sign replacement and weed control, as outlined in the Agreement are shared 50/50 by CCSP and CCBWQA. The West Boat Ramp PRF's routine, restorative and rehabilitative maintenance responsibility is 100% the responsibility of the CCSP and/or the Marina.

As defined in the Agreement, the term "Restorative and Rehabilitative Maintenance" shall mean all maintenance and repair reasonably necessary to keep the structural and other essential components or portions of a PRF in good working order and functioning as designed, including but not limited to the repair of walls, embankments, pipes, gates, monitoring facilities, erosion and riprap, the removal of sediment, and the replacement of vegetation within the disturbed area of a PRF as needed to maintain or restore the PRFs function."Routine Maintenance" shall mean any and all maintenance that is necessary (other than Restorative and Rehabilitative Maintenance) to keep a PRF in a clean, visually appealing and safe condition, free from

## 2023 Annual Inspection of PRFs at CCSP

Page 2

debris and rubbish, and protected from vandalism and malicious mischief to the same extent as any other public facility located within the CCSP.

The PRFs that are part of the Stream and Drainage System are observed at least annually and after storm events since they are more likely to have changes in their condition. The PRFs that are Shoreline Stabilization are observed on an as needed basis, or as the CCBWQA, CCSP and or United States Army Corps of Engineers personnel identify issues or concerns during the year. This year, because of the unusual flooding that occurred in May and June, the Shoreline Stabilization PRFs were inspected for maintenance and repair needs.

A map of the park from the CCSP brochure is shown on the following page to show the general vicinity of the In-Park PRFs.

The following facilities are included in the In-Park PRFs:

### **Stream and Drainage System**

Shop Creek

Cherry Creek 12 mile Park (All Phases)

Cottonwood Wetlands

Cottonwood Stream Reclamation

Quincy Drainage

West Boat Ramp

### **Shoreline Stabilization**

Tower Loop

Dixon Grove

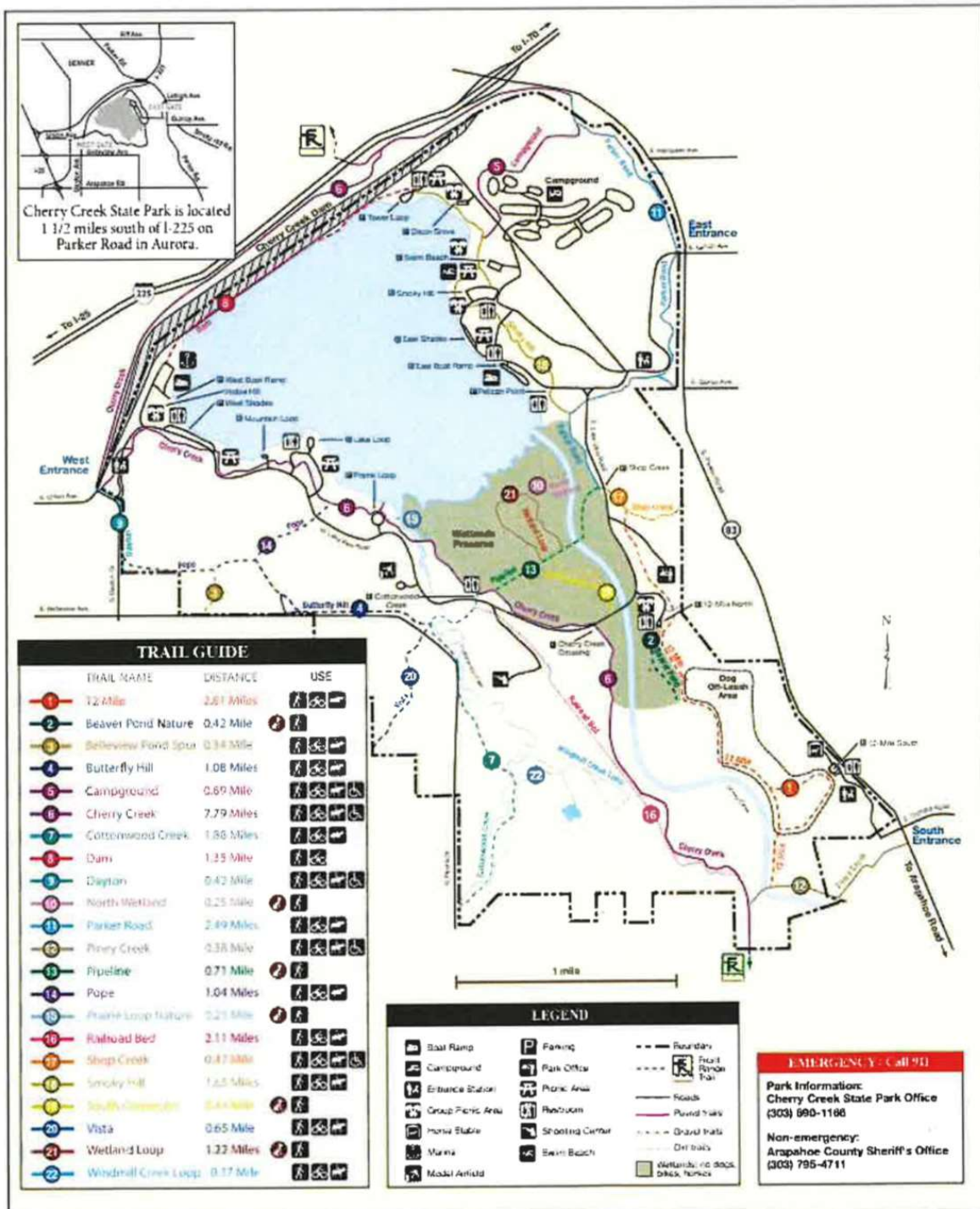
East Shade Shelters

East Boat Ramp

Mountain and Lake Loop

All the PRFs were observed. The field observation was conducted on September 26, 27, 28, 29 and October 3<sup>rd</sup>. Parks officials did not accompany the inspections as they were too busy and requested a walkthrough later in the fall.





CCSP Brochure Map

## General Assessments

The general assessments for the Annual Field Observation and photos are provided on the following pages.

**Cottonwood Wetlands:** Some aquatic vegetation and cattail debris was observed on the surface of the water. The water level was down significantly from the month before, but still high enough that water was overflowing the access trail. The educational signs were in good shape and did not appear to have been damaged in any way by the storm. Compaction from last year's harvesting activities was observed, but otherwise, there was no plant stress observed from this year's floods. Some compaction was noticed from this year's harvesting activities. Maintenance for consideration is decompaction and reseeding of the area along the trail and cleaning out of the outlet structure grate.



Outlet structure



**Compaction from last year's harvesting activities**



**Compaction and wheel-tracking from this year's harvesting activities**

**Cottonwood Creek Stream Reclamation:** This PRF is highly functional, with the vegetation thriving all the way to the water's edge, and the riffle drops operating well. Evidence of high-water debris was observed, and the only apparent damage from the May and June storms was to the approach slab of the bridge on Lakeview Dr. No other damage was observed at any of the drop structures or crossing structures. Over-bank flooding only caused one minor eroded area in the fields, indicating that the low design velocities were successful in retaining the floodplain vegetation. Damage from the recent floods was observed to the gravel trails and access roads by the over-bank flooding. Some noxious weeds in the form of Russian Olives and Common Reed were observed and two active beaver dams were noted. Evidence of this year's harvesting activities was noted with some wheel-tracking compaction evident. No maintenance activities were

specifically identified, however, monitoring and coordination with CCSP staff regarding noxious weeds is recommended. Monitoring of the wheel-tracking should be done next spring to determine to what extent any decompaction and re-seeding might be required. Also, CCSP will need to do some significant trail maintenance.



**Thriving vegetation**



**Thriving vegetation**



**Erosion on access road**



**Riffle structure at lower trail crossing**



**Riffle structure near old Cottonwood alignment and shooting center**



**Riffle structure near confluence of Lone Tree Creek**



**Crossing east of S Cherry Creek Drive and Peoria St.**



**Beaver Dam north of above crossing**



**High-water debris but little plant stress and no evidence of erosion was typical**



**Cherry Creek 12-mile Park-All Phases:**

All three phases of the project were examined from upstream to downstream, beginning at the first access point. Overall, the storms this last May and June accelerated the erosion from behind the boulder edging and washed out some of the boulder edging. Backfill in some of the erosion areas at the base of the access stairs would classify as needing maintenance attention, for pedestrian safety, the height from the bottom timber step to the ground surface being greater than the height from timber step to timber step. This would be a CCSP cost. The erosion behind the boulder edging where the concrete trail abuts the boulder edging is severe enough that the trail undercut areas should be grouted to protect the trail. The rest of the damage will need to



**Behind-the-boulder edging erosion at third access point**

be rectified in near-future stabilization projects. The displacement of the “breakout” area is, perhaps, the most significant area needing stabilization attention, as well as the lost boulder edging downstream of Access Number 4. The entire area upstream of the grade control structure has suffered extreme bed erosion to such an extent that tree islands 2-3 feet high have been created. It also appears that the main channel has deviated from previous years. Of additional concern is whether stabilization of the east bank of Cherry Creek with the boulder edging is actually creating an off-set destabilization of the stream bottom and even of the west bank. All of this indicates that a serious re-evaluation of the original design concepts should be done to determine their functionality and applicability to stabilizing or reclaiming a stream that is constantly changing its course and if some alterations of those original design concepts should be effected prior to simply repairing the damaged areas back to the way they were before. Also, what should be addressed is the appropriateness of the design storms that should be utilized in examining the hydraulic design of the stream system. Due to the re-evaluation, no repairs are recommended, and CCSP will have some maintenance on the access stairways. All of the repair work should be part of a Capital Improvements Project, once a direction is established. It recommended that an outside consultant should be contracted to perform the re-evaluation.



**Behind the boulder edging erosion**



**Behind-the-boulder edging erosion at the Fourth Access Point**



**Boulder edging erosion just below Fourth Access Point**



**Boulder edging erosion below Access 4. Also note in-stream sediment deposition almost to the level of the original boulders.**



**Boulder erosion at Access 6**



**Tree islands caused by extreme bed scour**



**Beginning of beach area- severe erosion behind the boulder edging and of the beach itself, starting a second channel behind the boulder edging**



**Severe erosion behind boulder edging just before the beach area.**



**The boulder edging is now a spine, away from the water and the high point of the bank, with beach on both sides, not an “edge” of anything.**



**Erosion behind boulders undercutting trail.**



**Erosion behind boulders undercutting trail.**



**Grade control structure continued to work well**



**Severe erosion at breakout area**



**Severe erosion at breakout area**

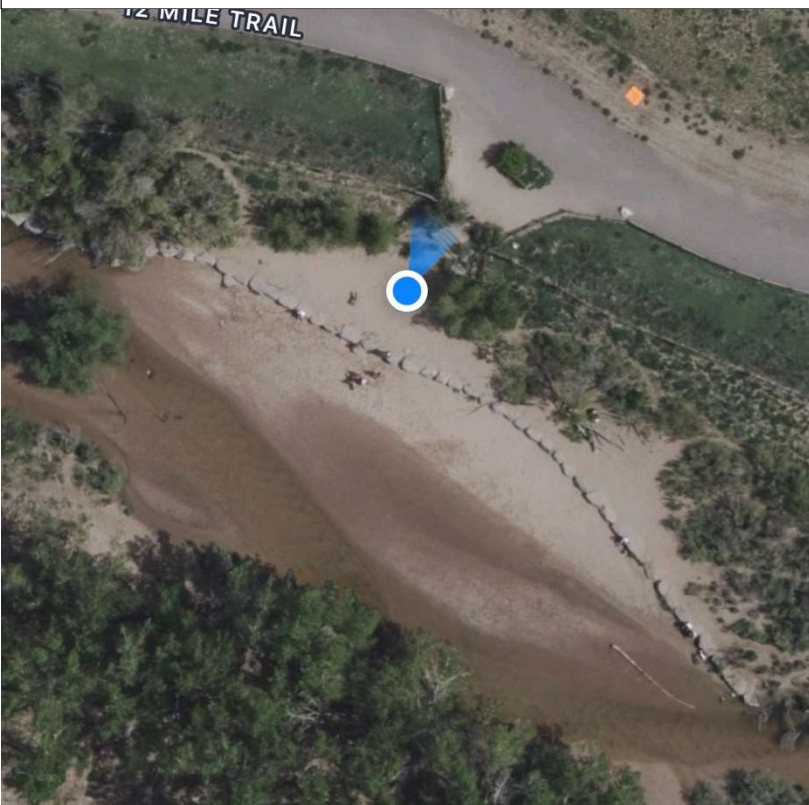


**Severe bank and bed erosion downstream of the breakout area**





**Downstream of the breakout area**



**Satellite photo of DOLA beach showing how the creek doesn't follow the path that was used for the boulder edging design.**

**Shop Creek:** There are 5 drop structures within CCSP numbered 1 through 5 from upstream to downstream, and an additional drop structure outside of the CCSP Boundary. All of the drops have the same basic problems with spalling concrete along their crests, seepage between layers of roller-compacted concrete on some, vegetation growing on downstream faces, and severe erosion and spalling around their outlet structures. The recent floods did not appear to have created any of the damage, most of it being created through general wear and tear. Repair of the concrete around the outlet structures, herbicide application, one tree removal is

recommended for maintenance and repair. The information signs were in good repair and not in any need of attention.



**Drop No.1**



**Drop No. 1 outlet structure overtopped and clogged with weeds**



**Drop No. 2**



**Drop No. 2 Outlet**



**Drop No.3**



**Drop No. 3 Outlet**



**Drop No. 4**



**Drop No. 4 Outlet**



**Drop No.5**



**Drop No. 5 Outlet**



**Shop Creek Informational Sign**



**Shop Creek Informational Sign**

**Quincy Drainage:** Debris clogging was observed at the outlet structure, as were numerous plants growing in the energy dissipators of the outlet structure at the Lakeview Dr. crossing. These plants may need to be eradicated in the next couple of years. CCSP staff will take care of debris removal. At this time, no maintenance or repair needs were identified, except for weed control, although a capital project for stream reclamation may be needed in the future.



**Debris clogging of the outlet structure**



**Outlet of the outlet structure**





**Outlet at Lakeview Dr. becoming clogged with plants**



**Outlet at Lakeview Dr. becoming clogged with plants.**

**Tower Loop:** Reservoir elevation on this day September 27, was 5550.04. This PRF consists of boulders and riprap stabilization of the shoreline. While there was some minor subsidence of the boulders due to the floods, and the minor loss of some backfill behind the boulders, the only maintenance and repair item identified was minor backfill of the boulder edging. The floods created some bank erosion areas above the normal reservoir operating level and away from the older boulder stabilization area that could be included in a current capital stabilization project that is being designed. Some boulders were displaced but probably by human hands for seating purposes. The informational sign was in good shape and in no need of attention.



**Informational sign in good condition**



**Human-displaced boulders**



**Boulder backfill material washed away from sidewalk**



**Eroded material from behind the grout at the fishing points**



**Backfill behind boulders washed away**



**Backfill washed away**

**Dixon Grove:** Reservoir elevation this day, September 27, 2023, was 5550.04. Boulders and riprap serve as protection of shoreline for this PRF. There is a water quality capture area that treats runoff from the parking lot. No maintenance needs were identified. An area of shoreline south of the west shoreline stabilization area could be a good candidate for a future shoreline stabilization capital project. Various dead trees and debris from the floods was identified for CCSP maintenance.



**East Shore of Stabilized area**



**Vibrant water quality capture area**



**Area south as candidate for future Shore Stabilization CIP project**



**Area south as candidate for future Shore Stabilization CIP project**

**East Shade Shelters:** Reservoir elevation at the time of inspection, September 28, 2023 was 5550.05 feet. The north section was not inspected as it is currently part of a capital project to stabilize the shoreline. The south section inspection showed some shifting of the boulders, some trail undermining and bank erosion above the 5552-elevation due to the high flood elevations. As these erosive areas are above the shore stabilization levels they would be good candidates for CCSP reseeding and stabilization projects. A discussion should be held to decide whether the Shore Stabilization philosophy should extend to shore stabilization above the normal reservoir operating level that the current projects are designed for. Maintenance needs are only minor boulder edging backfill and some weed control. The shoreline generally appeared to be stable from earlier stabilization projects, even with the minor boulder displacement and some erosion areas. A separate planning effort should be done, that would identify more specifically the work needed, priority and costs.



**Flood caused above stabilization level erosion**



**Bank erosion above operating level caused by flood not previously riprapped.**



Above flood level bank erosion



**Vertical bank erosion caused by flood overtopping curb and fisherman access.**





**Trail edge erosion**



**Old riprap displacement judging from moss-laden riprap rocks in the water.**

**East Boat Ramp:** Reservoir water level on this day of inspection, September 28, 2023 was 5550.05. Boulders and riprap serve as protection of the shoreline. The maintenance identified for this area is revegetation of the maintenance project that was completed in October of last year, where the seeding and mulch were washed out of the riprap by the flood, and for weed control.



**Reseed and mulch 2022 maintenance project, eroded by the floods of 2023-Remove weeds from observation deck.**



**Reseed and mulch 2022 maintenance project.**

**Mountain and Lake Loops:** Reservoir water surface elevation on this inspection date, September 28, 2023 was 5550.05. Boulders and riprap serve as protection of the shoreline for these facilities. About 100 feet of shoreline has been eroding up to and is exposing the tree roots. As such, there is a maintenance project in place to stabilize this portion of shoreline. Bank erosion above the normal high-water line and trail material erosion was caused by overland flow from the floods running to the reservoir. The bank erosion should be monitored and CCSP should regrade the trails. No maintenance needs were identified.



**100-foot eroding shoreline that will be stabilized by current maintenance project.**



**Access steps need CCSP maintenance**



**Current condition of shoreline stabilization**

**West Boat Ramp:** All maintenance for this PRF is the responsibility of the CCSP. Maintenance identified for CCSP was cutting and clearing of all the vegetation inside the bounds of the pond, especially at the outlet.



**Outlet clogged with plant material**



**Plant-clogged inlet**



**Total facility clogged with plants**

**Conclusions:**

1. All the In-Park PRFs appear to be performing their functions well, with the exception of, possibly, the 12-mile Park projects.
2. The field observation general assessments include thoughts on maintenance, monitoring and planning efforts for future capital projects.
3. The summary of the maintenance work identified for consideration and budget estimates is shown in Appendix A of this report. The operations and maintenance costs developed from this 2023 Annual Field Inspection are \$143,296 for Restorative and Rehabilitation work, and 12,500 for weed control.
4. Concerns and issues that were located outside limits of the original PRF or require additional analysis and study beyond the engineering already done on the original PRF were suggested as planning efforts. These planning efforts should include identification of the capital project, the priority, identification of the water quality benefits, and estimated costs. The identified planning efforts include:
  - a. Cherry Creek 12 Mile Park-continued planning on Cherry Creek from Lakeview Dr. to CCSP Boundary, and an analysis of the goals and objectives of the original design concepts of the 12-mile park area as to the functionality and applicability of stabilizing and reclaiming a stream that is constantly changing its course in spite of all the control measures that have been applied to it, all to determine how restorative and rehabilitative measures should be applied.
  - b. Dixon Grove and all shoreline stabilization projects- a planning effort to address new areas for shore stabilization, like the one to the south of the existing stabilized area at Dixon Grove, and all other areas from and including Tower Loop to Mountain and Lake Loops, and the appropriateness of the original design concepts, and how those concepts might need to change, especially in light of the effects of the two floods that occurred this year and what restorative and rehabilitative measures should be taken.
  - c. Quincy Drainage-Planning for stream reclamation on Quincy Drainage from Lake View Dr. to the PRF.

## **Appendix A**

Cherry Creek Basin Water Quality Authority  
**Summary of 2024 Operation & Maintenance (O&M) Costs**  
 Prepared / Updated: October 24, 2022

Project	Quantity			CCSP Work	CCBWQA Purchases Seed with CCSP Installation	CCBWQA Work					Comments
	Each	Hours	Acres	Herbicide Application <sup>1</sup>	Tractor Reseeding (Seed Cost Only) <sup>2</sup>	Weed Control <sup>1</sup>	Tree Planting <sup>3</sup>	Shrub Planting <sup>3</sup>	Misc.	Restorative / Rehabilitation work <sup>4</sup>	
Shop Creek	1					\$ 3,000					Herbicide treatment of vegetation growing on faces of drops at 100% CCBWQA, since it isn't weed control related.
	1									\$ 17,244	Project carryover from 2023 to 2024, Concrete Repair at Crests of 3 drop structures.
Cottonwood Wetlands	1			\$ 1,000		\$ 1,000				\$ 30,550	PRF Routine, Decompaction and revegetation of access along embankment. Cleaning of outlet grate.
Cottonwood Stream Reclamation				\$ 2,000		\$ 2,000				\$ -	
Tower Loop				\$ 1,000		\$ 1,000				\$ 2,950	
Dixon Grove				\$ 1,000		\$ 1,000					
East Shade Shelter				\$ 1,000		\$ 1,000				\$ 2,950	
East Boat Ramp				\$ 500		\$ 500				\$ 15,970	
Mountain/Lake Loop Shoreline	1			\$ 1,000		\$ 1,000				\$ 65,282	Project carryover from 2023 to 2024, stabilize shoreline area.
Cherry Creek 12-mile All Phases	1			\$ 2,000		\$ 2,000				\$ 8,350	Weed Control for noxious weeds at 100% CCBWQA, since within 5 years of PRF construction.

Subtotal \$ 9,500 \$ - \$ 12,500 \$ - \$ - \$ - \$ - \$ 143,296

**Totals**  
 CCSP = \$ 9,500  
 CCBWQA = \$ 155,796  
 Combined = \$ 165,296

- Note 1. CCBWQA performs weed control (mechanical until native grasses mature, then herbicide) for first 5 years after PRF construction; afterwards 50/50 split between CCBWQA and CCSP.  
 Note 2. Reseeding Rate = \$3,250/acre. CCBWQA purchases seed CCSP installs it with their tractor and the seed attachment purchased by CCBWQA.  
 Note 3. Tree Replacement = \$1,300/ea. Shrub Replacement = \$65/ea.. CCBWQA Participation @ 100%.  
 Note 4. PRF Function Repair/Maintenance. Project Specific Estimate. CCBWQA Participation @ 100%.



**2023 PRF Inspection**

**Cherry Creek 12-Mile Park 2024 Repair**

Date: 10/24/2023

No.	Item	Quantity	Unit	Unit Price	Extension
1	Mobilization	1	EA	\$ 500.00	\$ 500.00
2	Boulder edging backfill/grout	10	CY	\$ 250.00	\$ 2,500.00
3	Material removal from operating pool	10	CY	\$ 250.00	\$ 2,500.00

Subtotal		\$	5,500.00
Contingency	20%	\$	1,100.00
Subtotal		\$	6,600.00
Surveying			
Engineering, Permitting & Const Svs	30%	\$	1,750.00
<b>Total Estimated Construction Cost</b>		<b>\$</b>	<b>8,350.00</b>

USACOE permit

## 2023 PRF Field Observation

### Cottonwood Wetlands 2024 Repair

Date: 10/24/2023

No.	Item	Quantity	Unit	Unit Price	Extension
1	Mobilization	1	LS	\$ 500.00	\$ 500.00
2	Decompaction	0.2	AC	\$ 6,500.00	\$ 1,300.00
3	Reseeding and Mulch	0.2	AC	\$ 6,500.00	\$ 1,300.00
4	Clean out Outlet Structure	1	LS	\$ 650.00	\$ 650.00
5	Remove material from flood storage pool per USACOE	81	CY	\$250	\$ 20,250.00
				Subtotal	\$ 24,000.00
				Contingency 20%	\$ 4,800.00
				Subtotal	\$ 28,800.00
				Surveying	
				Engineering, Permitting & Const Svs	\$ 1,750.00
				<b>Total Estimated Construction Cost</b>	<b>\$ 30,550.00</b>

**2022 PRF Inspection  
East Boat Ramp 2024 Repair**

Date: 10/24/2023

No.	Item	Quantity	Unit	Unit Price	Extension
1	Mobilization	1	EA	\$ 1,200.00	\$ 1,200.00
3	Seed	0.1	AC	\$ 3,250.00	\$ 325.00
4	Mulch	0.1	AC	\$ 3,250.00	\$ 325.00
5	Remove material from flood storage pool per USACOE	40	CY	\$ 250.00	\$ 10,000.00

Subtotal	\$	11,850.00	
Contingency	20% \$	2,370.00	
Subtotal	\$	14,220.00	
Surveying			
Engineering, Permitting & Const Svs	30% \$	1,750.00	USACOE Permit
<b>Total Estimated Construction Cost</b>	<b>\$</b>	<b>15,970.00</b>	

# 2023 PRF Inspection East Shade Shelter 2024 Repair

Date: 10/24/2023

No.	Item	Quantity	Unit	Unit Price	Extension
1	Mobilization	1	EA	\$ 500.00	\$ 500.00
2	Boulder Edging Backfill	1	CY	\$ 250.00	\$ 250.00
3	Remove material from flood storage pool per USACOE	1	CY	\$ 250.00	\$ 250.00

Subtotal		\$	1,000.00
Contingency	20%	\$	200.00
Subtotal		\$	1,200.00
Surveying			
Engineering, Permitting & Const Svs	30%	\$	1,750.00
<b>Total Estimated Construction Cost</b>		<b>\$</b>	<b>2,950.00</b>

# 2023 PRF Inspection

## Mountain and Lake Loop 2024 Repair

Date: 10/24/2023

No.	Item	Quantity	Unit	Unit Price	Extension
1	Mobilization	1	EA	\$ 1,560.00	\$ 1,560.00
2	Construction Fence	800	LF	\$ 5.85	\$ 4,680.00
3	Erosion Control Log	80	LF	\$ 3.90	\$ 312.00
4	Type M Soil Riprap	85	CY	\$ 250.00	\$ 21,250.00
5	Seed	0.5	AC	\$ 3,250.00	\$ 1,625.00
6	Mulch	0.5	AC	\$ 3,250.00	\$ 1,625.00
7	Remove and Reset Fence for Access	50	LF	\$ 42.00	\$ 2,100.00
8	Remove material from flood storage pool per USACOE	85	CY	\$ 250.00	\$ 21,250.00
				Subtotal	\$ 54,402.00
				Contingency	20% \$ 10,880.40
				Subtotal	\$ 65,282.40
				Surveying	
				Engineering, Permitting & Const Svs	30%
<b>Total Estimated Construction Cost</b>				<b>\$</b>	<b>65,282.40</b>

Permitting will be done in 2023

# 2023 PRF Field Observation

## Shop Creek 2024 Repair

Date: 10/24/2023

No.	Item	Quantity	Unit	Unit Price	Extension
1	Mobilization	1	LS	\$ 1,000.00	\$ 1,000.00
2	Concrete Repair at Crests	1	LS	\$ 6,500.00	\$ 6,500.00
3	Water Control	1	LS	\$ 1,300.00	\$ 1,300.00
4	Concrete Washout	1	EA	\$ 975.00	\$ 975.00
5	Tree Removal	1	LS	\$ 1,137.00	\$ 1,137.00
6	Remove material from flood storage pool per USACOE	2	CY	\$ 1,000.00	\$ 2,000.00
				Subtotal	\$ 12,912.00
				Contingency 20%	\$ 2,582.40
				Subtotal	\$ 15,494.40
				Surveying	
				Engineering, Permitting & Const Svs	\$ 1,750.00
				<b>Total Estimated Construction Cost</b>	<b>\$ 17,244.40</b>

# 2023 PRF Inspection Tower Loop 2024 Repair

Date: 10/24/2023

No.	Item	Quantity	Unit	Unit Price	Extension
1	Mobilization	1	EA	\$ 500.00	\$ 500.00
2	Boulder void backfill	1	CY	\$ 250.00	\$ 250.00
3	Remove material from flood storage pool per USACOE	1	CY	\$ 250.00	\$ 250.00

Subtotal		\$	1,000.00
Contingency	20%	\$	200.00
Subtotal		\$	1,200.00
Surveying			
Engineering, Permitting & Const Svs	30%	\$	1,750.00
<b>Total Estimated Construction Cost</b>		<b>\$</b>	<b>2,950.00</b>

## TECHNICAL MEMORANDUM

**Date:** November 10, 2023

**To:** Cherry Creek Basin Water Quality Authority Board  
Jane Clary, CCBWQA Technical Manager

**From:** Erin Stewart, LRE Water

**Subject:** WY 2023 Monitoring Report Considerations and Schedule

---

### **Background**

Due to factors beyond our control, some of the flow and biological monitoring information that is used for water balance calculations and the evaluation of plankton dynamics analyses will not be available for a few months. This information will not be available until late 2023 or early 2024, which will restrict the completion of certain portions of the draft of the WY 2023 Monitoring Report by the typical deadline.

The 2023 floods caused damage and incorrect readings to the CCBWQA monitoring sites that collect inflow information. As an alternative, the water balance will be completed using a relative inflow approach which requires storage information from the USACE that is not available due to an equipment calibration problem on their end. The USACE is completing a survey in mid-late November which should allow storage calculations to be provided; their goal is the end of January.

In addition, due to an unexpected loss of the main analyst at the laboratory that analyzes our plankton samples, the results from the last two months of WY 2023 have been delayed as an alternative laboratory is evaluated and the analyses can be completed.

### **Recommendation**

LRE Water recommends completing the report based on the available information by the December deadline as scheduled. The presentation of findings and review process can also be completed as scheduled. In early-mid 2024, the rest of the report will be completed and submitted in a final format once the additional information and data have been provided and analyzed.

The delay will not affect regulatory requirements or Regulation 72 reporting which includes the assessment of the seasonal chl-*a* concentration and attainment of the Reg 38 Class I Warm Water Aquatic Life classification standards. This information will be included and linked in the CCBWQA Annual Report and the other supplementary sections can be added when they become available. The timeline should allow for the additional sections before the presentation to the WQCC which normally occurs in August or September of the following year.

### **Budget Impact**

There may be some minor budget implications due to 2023-2024 timing. The remaining funds from LRE's 2023 Contract for Task 4/Monitoring Report may need to be moved to 2024 to account for the schedule change.





## Cherry Creek Basin Water Quality Authority

cherrycreekbasin.org  
303.968.9098  
manager@ccbwwqa.org

Abe Laydon  
Douglas County

Bahman Hatami  
Governor's Appointee

Bill Ruzzo - Assistant Secretary  
Governor's Appointee

Christopher Lewis - Vice Chair  
Governor's Appointee

John McCarty - Secretary  
Governor's Appointee

John Woodling  
Governor's Appointee

Joshua Rivero - Chair  
Town of Parker

Leslie Summey  
Arapahoe County

Luis Tovar  
Special District Representative

Max Brooks  
Town of Castle Rock

Margaret Medellin  
Governor's Appointee

Mike Anderson  
City of Lone Tree

Roger Hudson  
City of Castle Pines

Stephanie Piko  
City of Centennial

Steve Sundberg  
City of Aurora

Tom Downing  
Governor's Appointee

Tom Stahl  
City of Greenwood Village

October 25, 2023

Via Email: [cdphe.wqcc@state.co.us](mailto:cdphe.wqcc@state.co.us)

Ms. Jojo La  
Colorado Water Quality Control Commission  
4300 Cherry Creek Drive S.  
Denver, CO 80246-1530

**Re: Issues Scoping Hearing for the Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin, Regulation #38 (5 CCR 1002-38)**

Dear Ms. La:

The Cherry Creek Basin Water Quality Authority (CCBWQA) is providing this letter to notify the Water Quality Control Commission (Commission) that it may propose site-specific total phosphorus and total nitrogen standards for Cherry Creek Reservoir (COSPCH02) at the June 2025 Regulation 38 Rulemaking Hearing with a delayed effective date after 12/31/2027.

### Background

In Regulation 38, Cherry Creek Reservoir (COSPCH02) has an assigned chlorophyll *a* standard of 18 ug/L. The seasonal mean concentration is measured in the upper three meters of the water column for the months of July through September with an allowed exceedance frequency of once in five years. Additionally, Cherry Creek Reservoir is regulated under Regulation 72, which includes stringent phosphorus control requirements in the basin such as a 0.05 mg/L total phosphorus limit for wastewater treatment plant discharges.

CCBWQA was a party to the April 10, 2023 Rulemaking regarding adoption of Lakes Nutrient Criteria and expressed significant concerns about the applicability of proposed statewide standards to Cherry Creek Reservoir. In this rulemaking, the Commission decided to delay adoption of total phosphorus and total nitrogen standards adopted in Regulation 31.17 (Table V) into basin standards for many lakes, including Cherry Creek Reservoir, until after 12/31/2027. In Section 33.106 (B)(3)(a) Statement of Basis and Purpose of Regulation 38 (5 CCR 1002-38), the Commission stated its intent to consider site-specific nutrient standards for Cherry Creek Reservoir as follows:

*The commission may also consider site-specific nutrients standards for the following lake and reservoir segments that have existing nutrient control regulations in future rulemaking hearings if information to support appropriate and protective revisions is developed:*

*Upper South Platte River: 6b (COSBUS06b; Chatfield Reservoir)*

*Cherry Creek: 2 (COSPC02; Cherry Creek Reservoir)*

*The commission did not adopt total nitrogen or total phosphorus table value standards for either waterbody in this rulemaking hearing.*

### **Summary of Progress Since April 10, 2023 Lakes Nutrients Rulemaking Hearing**

Since the April 2023 Lakes Nutrients Criteria Rulemaking Hearing, CCBWQA contracted with Hydros Consulting to help CCBWQA develop a site-specific standards methodology and standards proposal, utilizing CCBWQA's extensive site-specific data set, supplemented by its reservoir model. Hydros' approach utilizes the methodology developed by the Division and produces site-specific total phosphorus and total nitrogen standards falling between the Commission's 2012 "interim values" and the April 2023 values adopted in Regulation 31. On October 11, 2023, CCBWQA representatives met with representatives of the Water Quality Control Division's Standards Unit (Division), U.S. Environmental Protection Agency and Colorado Parks and Wildlife to review the site-specific standards approach and draft site-specific total phosphorus and total nitrogen standards. CCBWQA's approach was generally favorably received with some suggestions for minor revisions to the methodology. Due to the significant early progress on development of the site-specific standards and positive feedback obtained from the Division to date, CCBWQA anticipates moving forward with proposing site-specific standards in June 2025.

### **Recommendation**

CCBWQA recommends that the Commission consider adoption of site-specific total phosphorus and total nitrogen standards for Cherry Creek Reservoir in the June 2025 Regulation 38 Rulemaking Hearing if proposed by the CCBWQA. CCBWQA anticipates submitting a proposal for site-specific standards that will follow the Division's Lake Nutrients Criteria methodology utilizing site-specific data for the Cherry Creek Reservoir. As currently envisioned, CCBWQA's proposal will likely also continue to propose a delayed effective date of these site-specific standards after 12/31/2027 to allow time for the Division and the broader regulated community to continue to work through implementation issues related to Lake Nutrients Criteria on the same schedule.

Submitted on Behalf of the Cherry Creek Basin Water Quality Authority,



Jane Clary, Technical Manager  
Cherry Creek Basin Water Quality Authority



## **DRAFT TECHNICAL MEMORANDUM**

**TO:** Jane Clary, Cherry Creek Basin Water Quality Authority (CCBWQA) Technical Manager  
**FROM:** Christine Hawley and Kevin Bierlein, Hydros Consulting Inc.  
**SUBJECT:** **Rev. 1 DRAFT** Development of Site-Specific Standard Values for TP and TN in Cherry Creek Reservoir  
**DATE:** October 23, 2023

---

The Cherry Creek Basin Water Quality Authority (CCBWQA) asked Hydros Consulting (Hydros) to provide technical support in development of site-specific standards for total phosphorus (TP) and total nitrogen (TN) for Cherry Creek Reservoir. That analysis produced proposed site-specific TP and TN standards of 66 ug/L TP and 860 ug/L TN for Cherry Creek Reservoir. This memorandum explains the need for site-specific TP and TN standards in Cherry Creek Reservoir, the analysis conducted to generate the standard values, and associated longevity plan recommendations. This memorandum is organized in seven sections, followed by a listing of references cited:

**Section 1:** Background

**Section 2:** Need for Site-Specific TP and TN Standards

**Section 3:** Consideration of the Secchi-Based Site-Specific Equation

**Section 4:** Site-Specific TP and TN Standard Development

**Section 5:** Discussion of Site-Specific TP and TN Standard Values

**Section 6:** Longevity Plan Recommendations

**Section 7:** Summary

### **1 Background**

The Water Quality Control Commission (WQCC) adopted new table value standards (TVSs) for TP and TN in Regulation 31 during the recent April 2023 rulemaking hearing. The standards now apply to lakes and reservoirs that have aquatic life and recreational (AL/Rec) use designations and are located above permitted dischargers. At this time it is anticipated that the TVSs for TP and TN will be adopted for all

remaining lakes and reservoirs with AL/Rec uses by 2027. Because Cherry Creek Reservoir is below permitted discharges, TP and TN standards have not yet been adopted but are anticipated by 2027<sup>1</sup>.

The TP and TN standards for lakes and reservoirs are designed to correspond to the chlorophyll *a* (Chl*a*) standard for AL/Rec uses, recognizing the critical role that nutrient concentrations play in algal growth. Therefore, TP and TN standards provide a secondary level of protection to support meeting the Chl*a* standard. It is important to recognize that there are no toxicity concerns stemming directly from TP and TN for aquatic life or recreational contact at the concentrations typically observed in Colorado lakes and reservoirs; therefore, the standards are based on TP and TN relationships to Chl*a*.

In the absence of a successful site-specific standard proposal, it is expected that the WQCC will adopt TP and TN standards of 42 ug/L and 620 ug/L, respectively, for Cherry Creek Reservoir. Throughout this document, these values are referred to as the “default” TP and TN standard for Cherry Creek Reservoir. The default values reflect the use of the Water Quality Control Division’s (WQCD) State-wide warm lakes Chl*a*:nutrients relationships, with input of Cherry Creek Reservoir’s 18 ug/L site-specific Chl*a* standard (Table 1). Note that these values are more stringent than the warm lakes TVSs because they are based on 18 ug/L Chl*a* instead of the warm lakes Chl*a* TVS of 20 ug/L (Table 1). Note also that TP and TN TVSs are notably more stringent than the 2012 Interim Criteria (Table 1), which were the anticipated values until 2022 (WQCD, 2022a).

**Table 1. Relevant State Nutrient Standards and Interim Criteria, Including the Default WQCD Standard for Cherry Creek Reservoir**

Constituent	Warm Lakes Nutrient Regulatory Values		Default** Cherry Creek Reservoir Standards
	2012 Interim Criteria	TVSs* (TN and TP Adopted in April 2023)	
Chl <i>a</i> (ug/L)	20	20	<b>18</b>
TN (ug/L)	910	670	620
TP (ug/L)	83	47	42

Note: All are/would be assessed as July through September averages with a one-in-five-year allowable exceedance frequency.

\*Currently only applicable to warm lakes above permitted discharges.

\*\*Default TP and TN standards are those likely to be adopted for Cherry Creek Reservoir in the absence of a successful site-specific standard proposal. The TN and TP values were developed from the WQCD State-wide relationships used in the April 2023 RMH, applying the Cherry Creek Reservoir Chl*a* standard of 18 ug/L, in lieu of the warm lakes Chl*a* TVS of 20 ug/L.

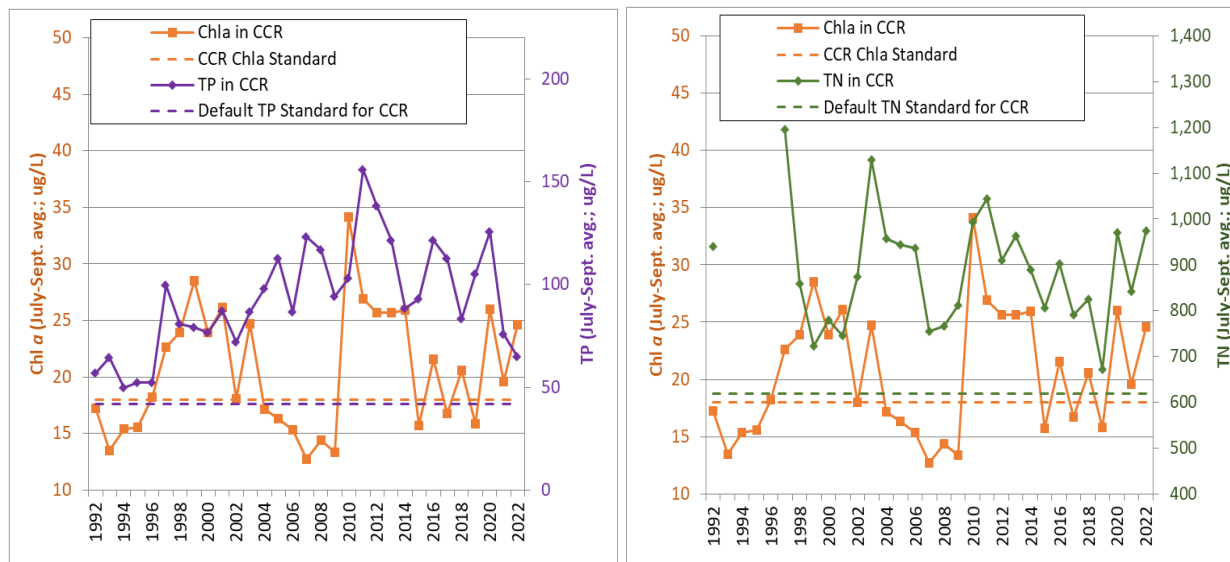
<sup>1</sup> The WQCC is planning to consider site-specific nutrient standard proposals for lakes and reservoirs at the next corresponding basin hearing. For Cherry Creek Reservoir, that is the South Platte Basin hearing in June 2025. Currently, CCBWQA is considering proposing site-specific TP and TN standards at the June 2025, with a delayed effective date of 2027, matching the current schedule for planned TP and TN standard adoption for the reservoir.

## 2 Need for Site-Specific TP and TN Standards for Cherry Creek Reservoir

The default TP and TN standard values for Cherry Creek Reservoir (Table 1; 42 ug/L TP and 620 ug/L TN) are based on State-wide, TP:Chl $\alpha$  and TN:Chl $\alpha$  relationships for warm lakes developed by the WQCD and used to define the TVSs. For these values to be appropriate for Cherry Creek Reservoir, the underlying relationships must reasonably approximate TP:Chl $\alpha$  and TN:Chl $\alpha$  relationships in Cherry Creek Reservoir. Cherry Creek Reservoir is fortunate to have an extensive dataset (1992-2022; 31 years) to support a detailed evaluation of this premise, as discussed in the following subsections.

### 2.1 Observed Concentrations Compared to Default Nutrient Standards

As a first step in evaluating the appropriateness of the default TP and TN standards for Cherry Creek Reservoir, observed data<sup>2</sup> were plotted against the default TP and TN standard values (Figure 1). The observed data indicate that the average summer Chl $\alpha$  concentrations were below the Chl $\alpha$  standard value in 13 of 31 years of record. In contrast, Cherry Creek Reservoir TP and TN concentrations would have been below the default TP and TN standard values in zero of 31 years of record. This comparison indicates a fundamental disconnect between the underlying Chl $\alpha$ :TP and Chl $\alpha$ :TN relationships used to develop the default TP and TN standards and the actual algal response to TP and TN concentrations in Cherry Creek Reservoir.



**Figure 1. Comparison of Observed Chl $\alpha$  and Nutrient Data from Cherry Creek Reservoir to Existing Chl $\alpha$  Standard and Default TP and TN Standards for Cherry Creek Reservoir**

<sup>2</sup> Note that the observed dataset was compiled from the CCBWQA database. Data reflect sampling photic zone results from the deepest location (CCR2). In a few early year of record (1994, 1995, and 2001 for Chl $\alpha$ ; and 2001 for TP and TN), the database only includes CCR-Composite sample results (an average result of CCR1, CCR2, and CCR3). Analysis of the full dataset indicates that CCR-Composite results (July through September averages) exhibit excellent predictive capability for CCR2 July through September averages ( $R^2 = 0.94$  for both Chl $\alpha$  and TN, and  $R^2 = 0.93$  for TP). Therefore, CCR-Composite results were used to fill in CCR2 values for Chl $\alpha$  in 1994, 1995, and 2001, as well as TP and TN in 2001. There were no TN results at any locations in the database for 1993-1996.

## 2.2 Evaluation of Observed Chl<sub>a</sub> Response to Nutrients Using Cherry Creek Reservoir’s Full Dataset

As a first step in direct comparison of site-specific Chl<sub>a</sub>:TN and Chl<sub>a</sub>:TP relationships in Cherry Creek Reservoir to the WQCD State-wide relationships, Cherry Creek Reservoir observed correlations were evaluated (Figure 2 and Figure 3). The first key finding from these graphics showing the full Cherry Creek dataset is the striking lack of a significant relationship between Chl<sub>a</sub> and TP ( $R^2 = 0.06$ ) and between Chl<sub>a</sub> and TN ( $R^2 = 0.12$ ). The lack of relationships is indicative of the underlying complexity and numerous factors driving Chl<sub>a</sub> response in Cherry Creek Reservoir. Nutrient concentrations are, of course, important drivers of Chl<sub>a</sub> response, but the data show that they are far from exclusive and independent controls of Chl<sub>a</sub> response in Cherry Creek Reservoir.

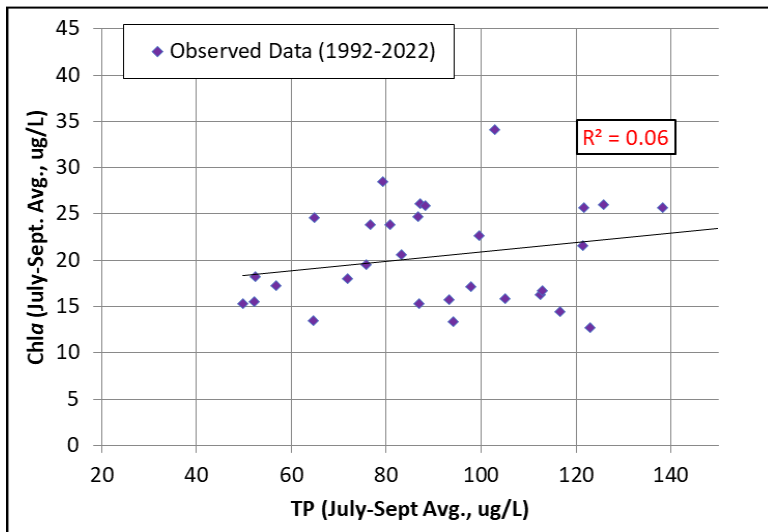


Figure 2. Observed Cherry Creek Dataset; Summer Chl<sub>a</sub> Response Compared to TP Concentrations; 1992-2022

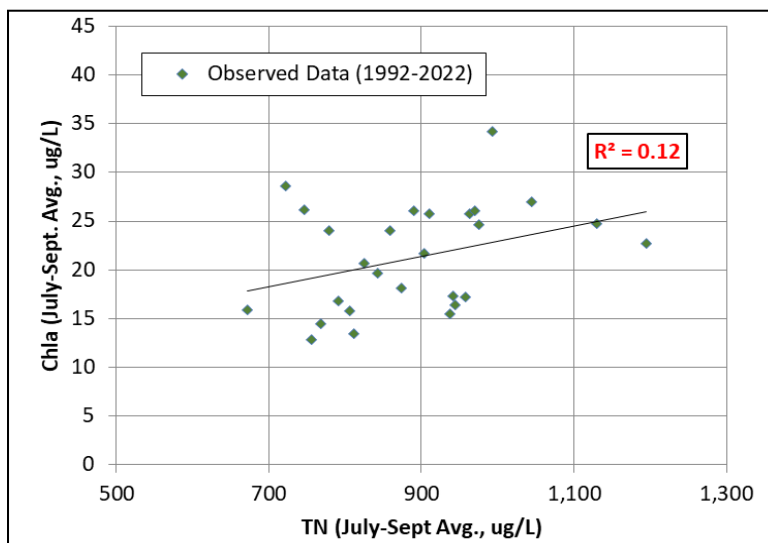
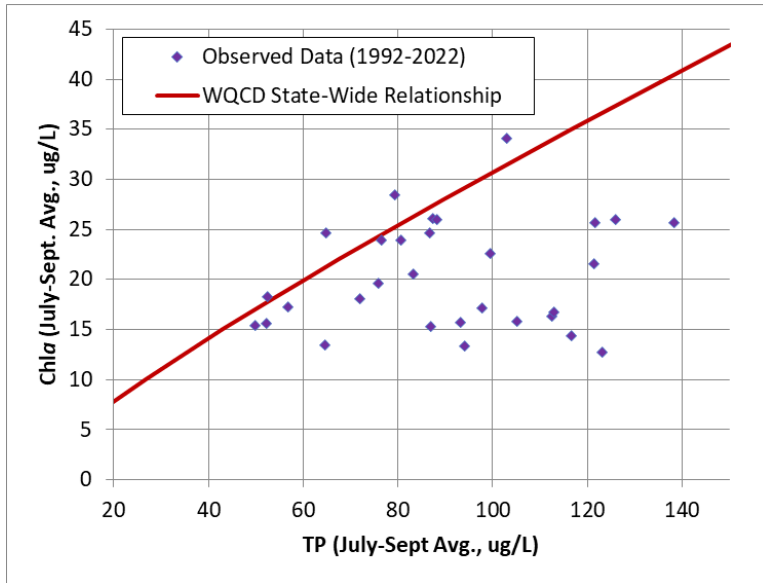


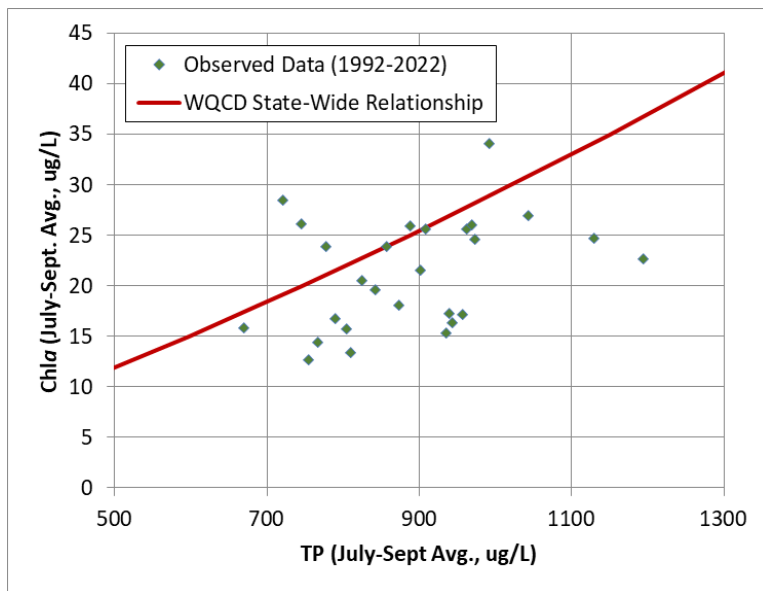
Figure 3. Observed Cherry Creek Dataset; Summer Chl<sub>a</sub> Response Compared to TN Concentrations; 1992-2022

### 2.3 Comparison of Cherry Creek Reservoir Data to State-Wide Warm Lakes Relationships

Direct comparison shows that the Cherry Creek Reservoir dataset is not well described by the WQCD warm lakes State-wide relationships used to develop the default TP and TN standards (Figure 4 and Figure 5). Specifically, the majority of Cherry Creek Reservoir lake-years (i.e., July through September averages) exhibit notably lower production of Chl $a$  for a given nutrient concentration than what is predicted by the State-wide relationship.



**Figure 4. Observed Cherry Creek Dataset Compared to WQCD State-Wide Warm Lakes Relationship for Chl $a$  and TP**



**Figure 5. Observed Cherry Creek Dataset Compared to WQCD State-Wide Warm Lakes Relationship for Chl $a$  and TN**

## 2.4 Quadrant Plot Review of Default WQCD Nutrient Standards for Cherry Creek Reservoir

The mismatch between the observed response and the default TP and TN standards is also apparent when the Chl $a$  standard and the default TP and TN standards are included in the Chl $a$ :TP and Chl $a$ :TN observed data graphics (Figure 6 and Figure 7). The standards lines on these graphics create quadrant plots similar to those presented by WQCD (WQCD, 2022a), which are helpful to evaluate how each year of data align with the related standards. Specifically, the quadrants on the plots effectively categorize the observed data into groups. These groups indicate how well the underlying relationships used to develop the TN and TP standards reflect the patterns in the observed data, as follows:

- Aligned:** As shown in Figure 6, the upper right and lower left quadrants correspond to conditions where the observations generally align with the expected response inherent in the related standards. These two “aligned” quadrants indicate cases where both Chl $a$  and nutrient standards are exceeded (upper right quadrant) or neither Chl $a$  nor nutrient standards are exceeded (lower left quadrant). These conditions match the overall intent of the nutrient standards (i.e., agreement with/support for the Chl $a$  standard).
- Not Aligned:** Lake-year data in the lower right quadrant, where the Chl $a$  standard value is met but the nutrient standard value is not met, indicate cases when the nutrient standards may be overly-stringent. Lake-year data in the upper left quadrant correspond to cases when the Chl $a$  standard value is not met, but the nutrient standard value is met, indicating years when the nutrient standard may be under-protective for Chl $a$  concentration.

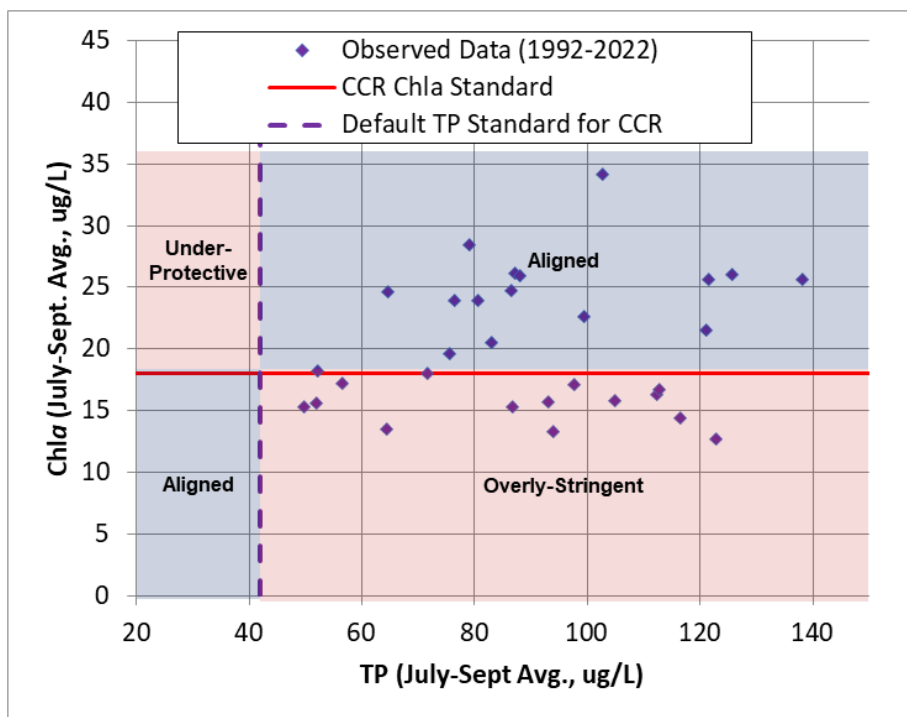
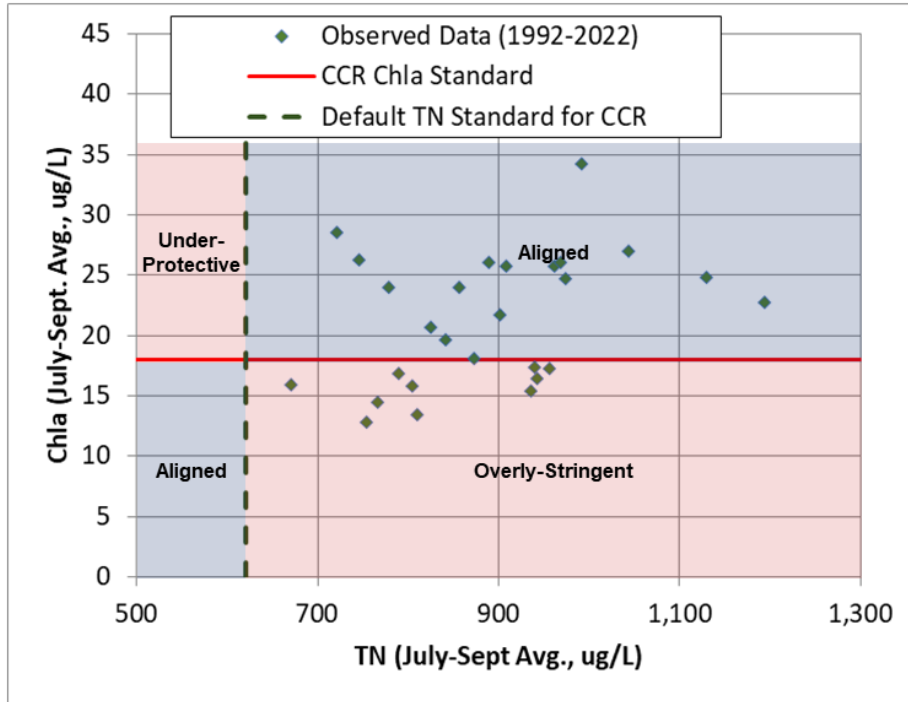


Figure 6. Cherry Creek Reservoir (CCR) Chl $a$ : TP Quadrant Plot with the Default TP Standard





**Figure 7. Cherry Creek Reservoir Chl<sub>a</sub>: TN Quadrant Plot with the Default TN Standard**

While all lake-year data are not necessarily expected to exhibit perfect alignment on such quadrant plots, given the complexity of Chl<sub>a</sub> response to nutrients, the Cherry Creek Reservoir data show notably poor alignment for both TP (Figure 6) and TN (Figure 7). The quadrant plots indicate that the presumed WQCD TP and TN standards would be overly-stringent in more than 1/3 of the years of record. This further illustrates that the State-wide Chl<sub>a</sub>:TP and Chl<sub>a</sub>:TN relationships are not a good fit for Cherry Creek Reservoir.

Many site-specific factors may explain why Cherry Creek Reservoir does not fit well with the State-wide relationships used by WQCD in standards development. For example, Cherry Creek Reservoir receives high concentrations of TP in inflows, the majority of which is in the form of soluble reactive phosphorus (SRP). The high SRP concentrations have led to frequent nitrogen limitation, affecting the algal response and types of algal species present (Hydros, 2015 and 2019). Further, Cherry Creek Reservoir has a notably shallow bathymetric profile and is in a very windy location, creating a polymictic system that exhibits significant internal loading of nutrients (Hydros, 2015 and 2019). All of these factors affect the Chl<sub>a</sub> response in the Cherry Creek Reservoir and may help to explain why the reservoir does not fit well into the State-wide Chl<sub>a</sub>:TP and Chl<sub>a</sub>:TN relationships used to develop the lake nutrient TVSs.

## 2.5 Summary of Need for Site-Specific TP and TN Standards for Cherry Creek Reservoir

In summary, the comparisons presented in the preceding sections indicate that the default<sup>3</sup> TP and TN standards are not a good reflection of Chl<sub>a</sub> response to nutrient concentrations in Cherry Creek Reservoir. Further, the default TP and TN standards tend to be overly stringent, which is a significant

<sup>3</sup> Note that, as with the default TP and TN standards, the TVSs would also be overly stringent for Cherry Creek Reservoir and would fail to reflect the observed Chl<sub>a</sub> response to nutrients in this system.

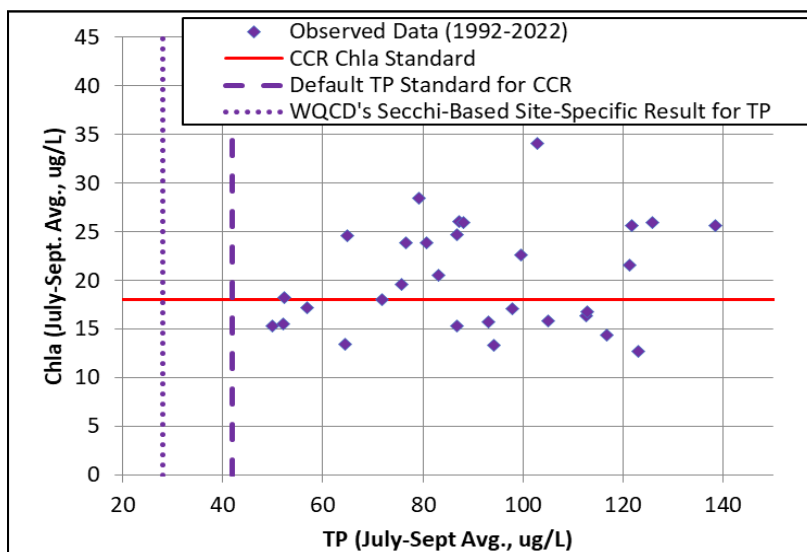
concern for CCBWQA. It is recognized that Cherry Creek Reservoir routinely exceeds the  $Chl a$  standard, and therefore, TMDLs for nutrients will eventually be established. If these TMDLs were to be based on in-lake nutrient standards that were notably more stringent than needed to meet the target  $Chl a$  concentrations, this would translate to significant additional costs and feasibility challenges for TMDL implementation. CCBWQA seeks to set appropriate site-specific nutrient standards that are neither under-protective nor overly-stringent, based on the extensive available dataset.

### **3 Consideration of the Secchi-Based Site-Specific Equations**

During development of the TP and TN TVVs adopted in April of 2023, the WQCD also developed additional relationships that could be used on a site-specific basis to develop site-specific standard

proposals. These additional relationships were developed to include Secchi-depth data as a covariate, recognizing the important role that water clarity (including non-algal turbidity) can play in Chl $a$  response to nutrient concentrations in some lakes. As such, the equations, termed Secchi-based site-specific equations, were provided by WQCD (WQCD, 2022a) as an optional tool to readily develop site-specific TP and/or TN proposals. Therefore, as a first step in site-specific TP and TN standard development for Cherry Creek Reservoir, the potential utility of the Secchi-based site-specific equations was evaluated.

Fortunately, Cherry Creek Reservoir has an extensive Secchi-depth dataset, meeting the frequency and timing requirements specified in WQCD (2022b) in 29 years of record between 1992 and 2022. Based on that dataset, the critical Secchi O/E<sup>4</sup> value (80<sup>th</sup> percentile) for Cherry Creek Reservoir was found to be 1.08. Applying the WQCD Secchi-based site-specific equations (WQCD, 2022b) for a Chl $a$  standard of 18 ug/L, this corresponds to a TP standard of 28 ug/L and a TN standard of 490 ug/L for Cherry Creek Reservoir. These values are even more stringent than the default TP and TN standards (Figure 8 and Figure 9), which were deemed to be overly-stringent in the analysis in Section 2. Therefore, the Secchi-based site-specific equations do not serve to improve the agreement between the Chl $a$  standard and the nutrient standards in Cherry Creek Reservoir and only exacerbate concerns delineated in Section 2 regarding the overly-stringent nature of the default nutrient standards. Based on this, the Secchi-based site-specific equations developed by WQCD are not considered further in site-specific standard development for Cherry Creek Reservoir.



**Figure 8. Observed Summertime Chl $a$  and TP compared to the Default TP Standard and WQCD's Secchi-Based Site-Specific TP Standard for Cherry Creek Reservoir**

<sup>4</sup> O/E refers to the ratio of “observed” to “expected” Secchi depth, where the “expected” value is based on an empirical relationship between Chl $a$  and Secchi depth developed by Carlson (1977). Note also that use of this term as a predictor of Chl $a$  raises technical concerns given that Secchi O/E is calculated with Chl $a$  and is therefore not an independent variable for prediction of Chl $a$ . Despite these concerns, testing of the WQCD Secchi-based site-specific equations for Cherry Creek Reservoir was conducted to meet presumed expectations for this analysis.

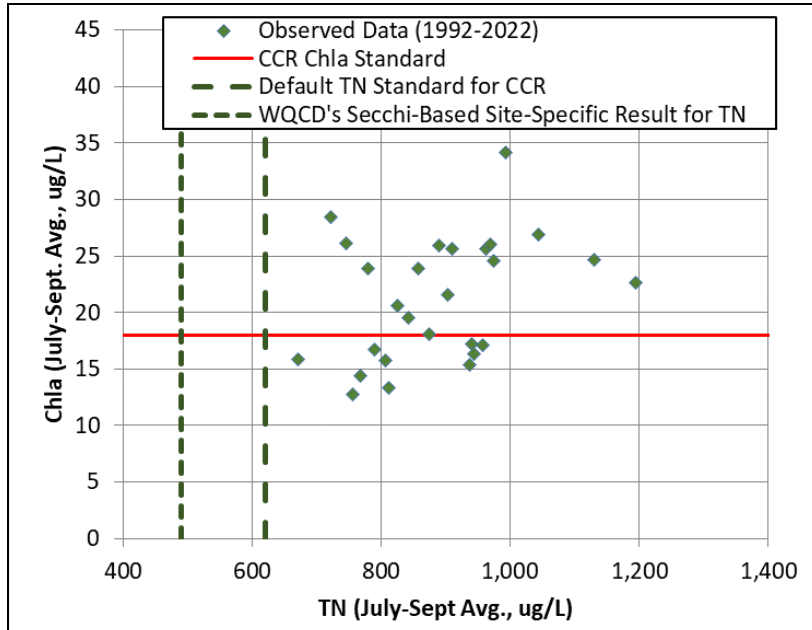


Figure 9. Observed Summertime Chl $\alpha$  and TN compared to the Default TN Standard and WQCD's Secchi-Based Site-Specific TN Standard for Cherry Creek Reservoir

## 4 Site-Specific TP and TN Standard Development

For the reasons explained in Section 2, Cherry Creek Reservoir needs site-specific standards for TP and TN. Further, WQCD's secchi-based site-specific equations do not work for this system (see Section 3); therefore, the site-specific TP and TN standards must be developed from site-specific relationships. This section describes the approach taken to develop the proposed site-specific standard values. Overall the approach follows the WQCD's 4-step method, which was used to develop the TP and TN TVVs adopted in the 2023 Rulemaking Hearing. The discussion begins with an overview of the WQCD's 4-steps (Section 4.1), followed by a detailed presentation of each step as applied to Cherry Creek Reservoir for the site-specific standard development (Section 4.2). Finally, additional analysis to further evaluate the proposed site-specific TP standard is presented in Section 4.3. Note that the approach and findings presented here are specific to Cherry Creek Reservoir, which has an extensive dataset and benefits from a detailed site-specific numerical model. Therefore, this approach to site-specific nutrient standard development may not necessarily be appropriate for other Colorado lakes/reservoirs.

### 4.1 Overview of the WQCD 4-Step Approach for TP and TN Standard Development

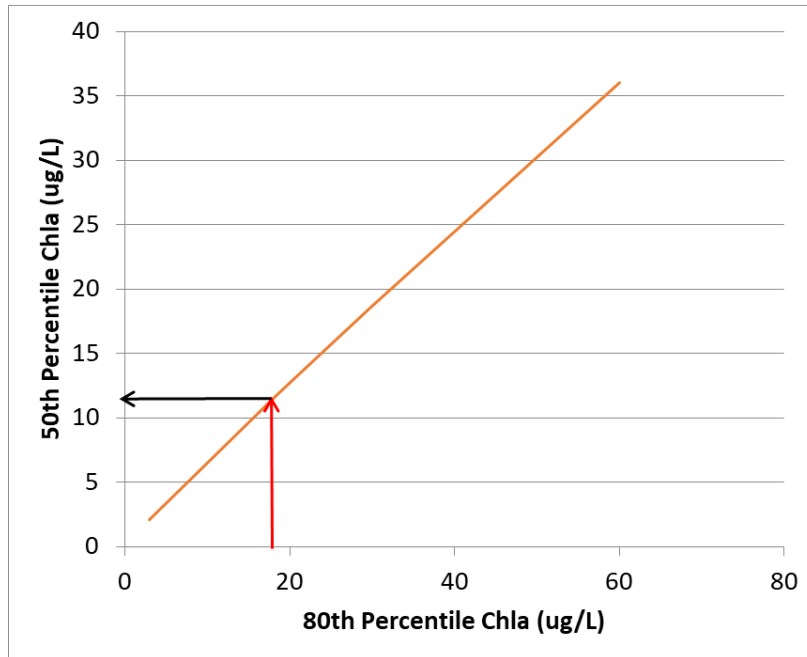
The approach taken to develop the proposed site-specific TP and TN standards for Cherry Creek Reservoir follows the 4-step method applied by the WQCD in development of the TP and TN lakes and reservoirs TVVs (WQCD, 2022a) which were adopted in the 2023 Rulemaking Hearing. The four steps apply relationships based on observed data to translate the  $Chl a$  standard into corresponding TP and TN standards. The translation approach further underscores that the fundamental purpose of the TP and TN standards is to protect lakes and reservoirs from algal growth in excess of the applicable  $Chl a$  standard. The four steps can be summarized as follows:

**Step 1: Define the  $Chl a$  standard value.**

The  $Chl a$  standards for lakes and reservoir are already established; therefore, this step simply involves identifying the applicable  $Chl a$  standard value.

**Step 2: Translate the  $Chl a$  standard to a 50<sup>th</sup> percentile.**

$Chl a$  standards are evaluated as a July through September average, with a one-in-five-year allowable exceedance frequency. Because of the one-in-five-year allowable exceedance frequency, the WQCD considers the  $Chl a$  standard to be reflective of an 80<sup>th</sup> percentile. To support graphical comparison of observed  $Chl a$  and nutrient data, the  $Chl a$  standard value must first be translated from an 80<sup>th</sup> percentile to a 50<sup>th</sup> percentile. WQCD developed a State-wide relationship between the 80<sup>th</sup> percentile and the 50<sup>th</sup> percentile for summertime  $Chl a$  concentrations using data from well-sampled lakes and reservoirs. This relationship is used to translate the applicable  $Chl a$  standard value from Step 1 (reflective of an 80<sup>th</sup> percentile) to a corresponding  $Chl a$  concentration reflective of a 50<sup>th</sup> percentile (Figure 10).



**Figure 10. WQCD State-Wide Relationship for Translating Chl $a$  Standard Value (80th Percentile) to a 50th Percentile (Step 2); Arrows Show Translation for Chl $a$  Standard of 18 ug/L to 50<sup>th</sup> Percentile of 11.5 ug/L**

**Step 3: Translate Chl $a$  as a 50<sup>th</sup> Percentile to TP and TN.**

The next step is to translate the Chl $a$  value (50<sup>th</sup> percentile) identified in Step 2 to TP and TN concentrations. To do this, the WQCD created State-wide relationships between observed July through September Chl $a$  concentrations and TP and TN concentrations. Warm and Cold lakes were distinguished in this step. A fit to the data was found using quantile regression, resulting in an equation relating Chl $a$  and TP and an equation relating Chl $a$  and TN. Use of quantile regression, which is generally less sensitive to the influence of outliers (as compared to a least squares regression fit), is considered a good choice in this case given the high variability in the observed datasets. The resulting relationships were then used to translate the 50<sup>th</sup> percentile Chl $a$  value to TP and TN concentrations (Figure 11 and Figure 12).

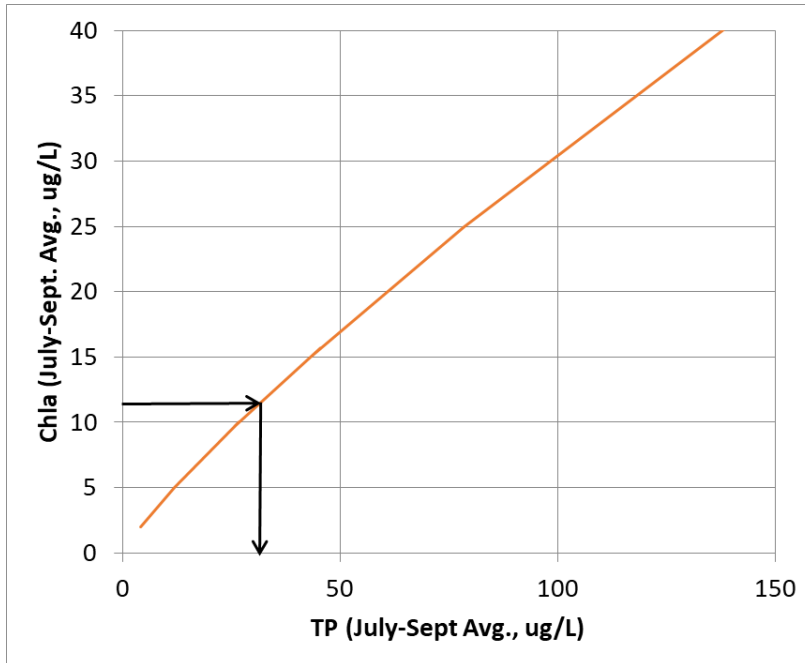


Figure 11. WQCD State-Wide Warm Water Relationship for Translating Chl $\alpha$  Standard (as a 50th Percentile) to Average Summertime TP Concentrations; Arrows Show Translation for Chl $\alpha$  50<sup>th</sup> Percentile of 11.5 ug/L to a TP Concentration of 31.6 ug/L

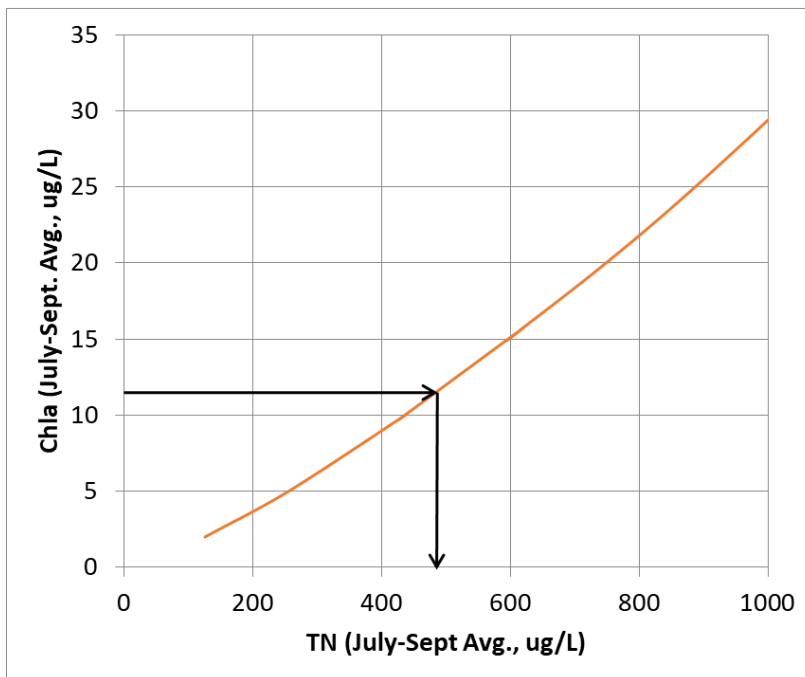
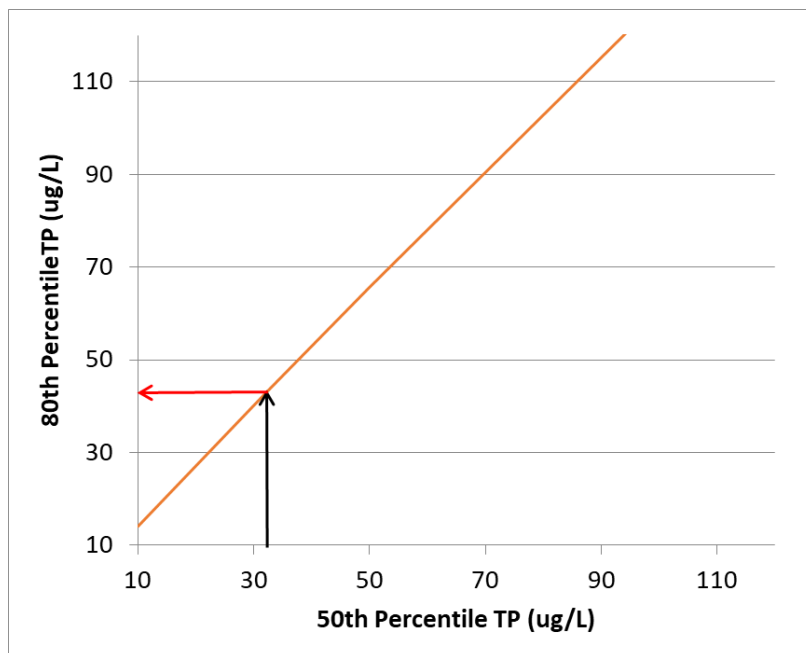


Figure 12. WQCD State-Wide Warm Water Relationship for Translating Chl $\alpha$  Standard (as a 50th Percentile) to Average Summertime TN Concentrations; Arrows Show Translation for Chl $\alpha$  50<sup>th</sup> Percentile of 11.5 ug/L to a TN Concentration of 487 ug/L

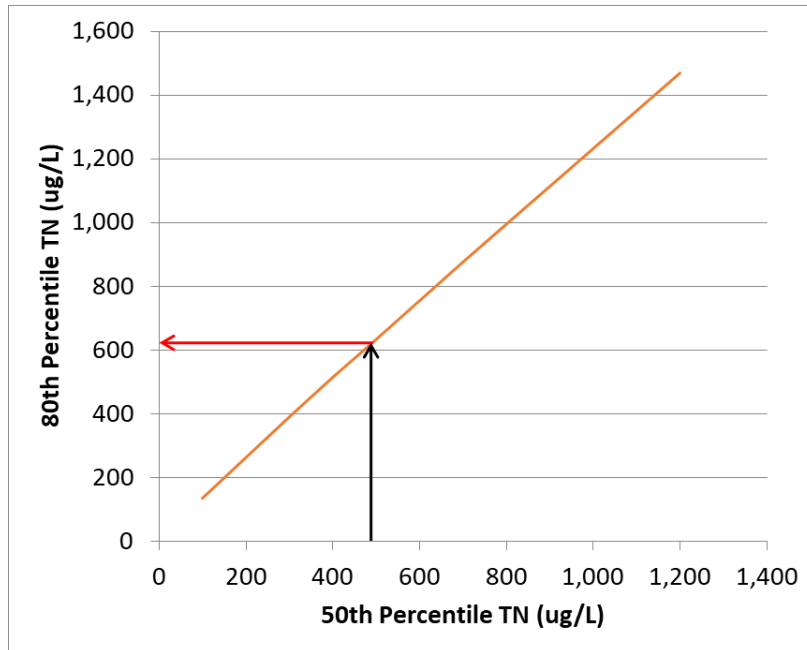
**Step 4: Translate TP and TN concentrations to 80<sup>th</sup> percentiles.**

The final step of the 4-step process is to convert the summertime average TP and TN concentrations identified in Step 3 to 80<sup>th</sup> percentiles. The WQCD included this step to create TP and TN standard values that are applicable with a one-in-five-year allowable exceedance frequency. Following the same logic used in Step 2, the WQCD developed State-wide relationships between the 50<sup>th</sup> percentile and the 80<sup>th</sup> percentile summertime TP (or TN) concentrations, based on observed data from well-sampled lakes and reservoirs. These relationships were then used to translate the 50<sup>th</sup> percentile TP and TN values determined in Step 3 into 80<sup>th</sup> percentile TP and TN concentration values (Figure 13 and Figure 14). The resulting 80<sup>th</sup> percentile concentration values are the resulting TP and TN standard values, assessed as July through September averages with a one-in-five-year allowable exceedance frequency. Note that WQCD rounds the resulting TP and TN standard values to two significant figures.



**Figure 13. WQCD State-Wide Relationship for Translating Average Summertime TP (as a 50th Percentile) to Average Summertime TP as an 80<sup>th</sup> Percentile; Arrows Show Translation for 50<sup>th</sup> Percentile TP of 31.6 ug/L to the 80<sup>th</sup> Percentile TP Concentration of 42 ug/L**





**Figure 14. WQCD State-Wide Relationship for Translating Average Summertime TN (as a 50th Percentile) to Average Summertime TN as an 80th Percentile; Arrows Show Translation for 50th Percentile TN of 487 ug/L to the 80th Percentile TN Concentration of 620 ug/L**

## 4.2 WQCD 4-Step Method Applied to Cherry Creek Reservoir

To develop the site-specific TP and TN standards, the WQCD's 4-step method described in Section 4.1 was applied using Cherry Creek Reservoir data instead of the State-wide dataset used to develop the TVSSs. The discussion is organized by the four steps:

- **Step 1:** Define the  $Chl\alpha$  standard value.
- **Step 2:** Translate the  $Chl\alpha$  standard to a 50<sup>th</sup> percentile.
- **Step 3:** Translate  $Chl\alpha$  as a 50<sup>th</sup> Percentile to TP and TN.
- **Step 4:** Translate TP and TN concentrations to 80<sup>th</sup> percentiles.

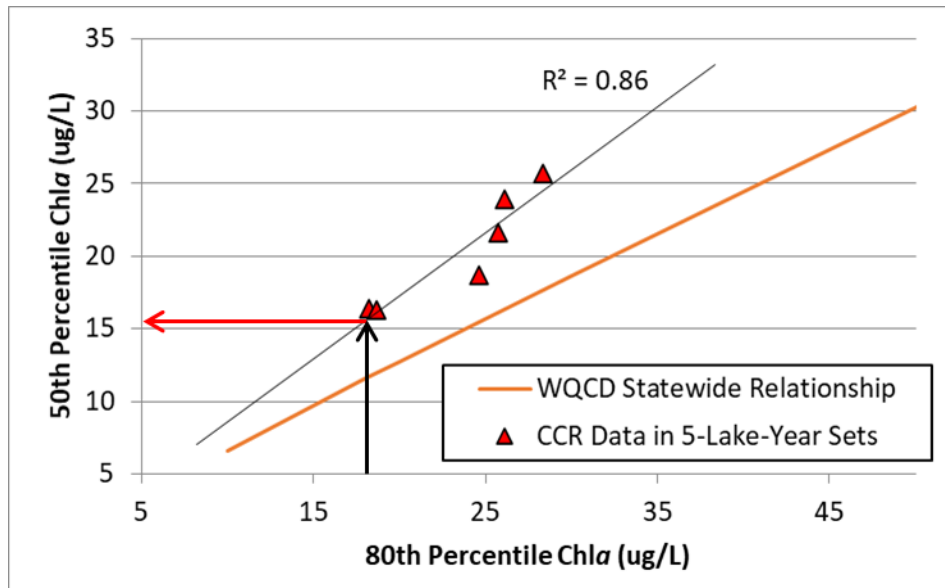
### 4.2.1 Cherry Creek Reservoir – Step 1: Define the $Chl\alpha$ standard Value

The first step is to define the  $Chl\alpha$  standard value. For Cherry Creek Reservoir, there is an existing, site-specific  $Chl\alpha$  standard value of 18 ug/L.

### 4.2.2 Cherry Creek Reservoir – Step 2: Translate the $Chl\alpha$ Standard to a 50<sup>th</sup> Percentile

Continuing to follow the WQCD's 4-step method, the second step is to translate the  $Chl\alpha$  standard to a 50<sup>th</sup> percentile. While the WQCD has a strong State-wide relationship based on well-sampled lakes,

CCQWQA has an extensive<sup>5</sup> site-specific dataset to support consideration of whether the State-wide relationship appropriately reflects the distribution of summertime average Chl $a$  concentrations in Cherry Creek Reservoir, or if a site-specific relationship should be used instead. The Cherry Creek Reservoir dataset was broken into five-year blocks of time<sup>6</sup> (2018-2022, 2013-2017, etc.) to generate a site-specific 80<sup>th</sup> percentile to 50<sup>th</sup> percentile relationship for the summertime average Chl $a$ . Five-year blocks were used to produce multiple points to generate a regression line<sup>7</sup>, and the resulting relationship is strong ( $R^2 = 0.86$ ; Figure 16). The WQCD relationship, however, does not do a good job of reflecting the Cherry Creek Reservoir dataset (Figure 16). Specifically, the State-wide relationship is consistently biased low relative to the Cherry Creek Reservoir dataset.



**Figure 16. Cherry Creek Reservoir Site-Specific Relationship between Summertime Chl $a$  80th Percentile and 50th Percentile Concentrations (Data Presented in Five-Year Sets) Compared to the WQCD State-Wide Relationship; Arrows Show Translation for Chl $a$  Standard of 18 ug/L to 50<sup>th</sup> Percentile of 15.55 ug/L**

It is reasonable to expect that a given water body may exhibit a distribution of summertime Chl $a$  concentrations that differs from that defined based on a State-wide dataset. Therefore, given the

<sup>5</sup> Note that Cherry Creek Reservoir dataset includes 31 years of record with 6 to 14 Chl $a$  observations each year in the months of July through September (1992-2022).

<sup>6</sup> The five-year block approach is considered reasonable, given the WQCD designation that a lake must include at least five years of record for inclusion in the State-wide 80-50 relationship for Chl $a$ . In other words, the WQCD considers five years of data adequate to characterize the 80-50 relationship for Chl $a$  for a given lake; therefore, five-year blocks of time should be appropriate for use in the development of a site-specific 80-50 relationship.

<sup>7</sup> Note that use of all the Cherry Creek Reservoir data in a single data group would produce a single 80-50 data point. More than one point is needed to generate a regression line to translate the Chl $a$  standard value (representative of an 80<sup>th</sup> percentile) to a 50<sup>th</sup> percentile. Further, it would not be appropriate to work from a single point and simply assume that the line should pass through the origin, recognizing that the State-wide relationship also does not pass through the origin.

extensive dataset available for Cherry Creek Reservoir and the apparent differences from the State-wide relationship, the following site-specific relationship was applied for Step 2:

$$\text{Chl}a_{50^{\text{th}} \text{ %ile}} = 0.8683 * \text{Chl}a_{80^{\text{th}} \text{ %ile}} - 0.0772$$

The equation translates the 80<sup>th</sup> percentile Chl $a$  standard value of 18 ug/L to a 50<sup>th</sup> percentile Chl $a$  value of 15.55 ug/L (Figure 16).

#### 4.2.3 Cherry Creek Reservoir – Step 3: Translate Chl $a$ as a 50<sup>th</sup> Percentile to TP and TN

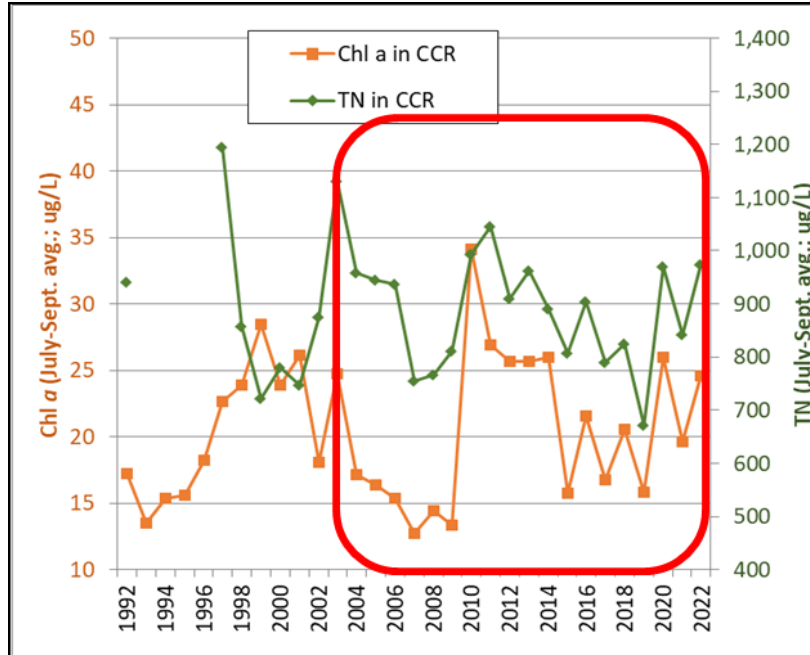
Step 3 is the critical step translating summertime Chl $a$  concentrations to summertime TP and TN concentrations based on the observed relationships. As established in Section 2, the WQCD's State-wide warm lakes relationships for Chl $a$ :TP and Chl $a$ :TN do not perform well in describing the observed algal response in Cherry Creek Reservoir to TP and TN concentrations (Figure 4 and Figure 5). However, it is also noted that the full Cherry Creek dataset lacks clear relationships between Chl $a$  and TP (Figure 2) and Chl $a$  and TN (Figure 3). Therefore, additional analysis was needed to identify a site-specific relationship to support completion of Step 3.

In review of the 31-year dataset for Chl $a$  and nutrients in Cherry Creek Reservoir, an apparent pattern was noted. Specifically, a general pattern match was identified between the response of summertime Chl $a$  to TN concentrations from ~2004 through 2022 (Figure 17). In other words, the data show that over that time period there is general agreement between Chl $a$  and TN in terms of the direction of change (i.e., when TN increases, Chl $a$  generally increases and vice versa). Interestingly, over the same set of years, the pattern is completely absent for TP (Figure 18). This may indicate the dominance of TN (vs. TP) as a primary control on algal growth (nitrogen limitation) in these years (~2004-2022).

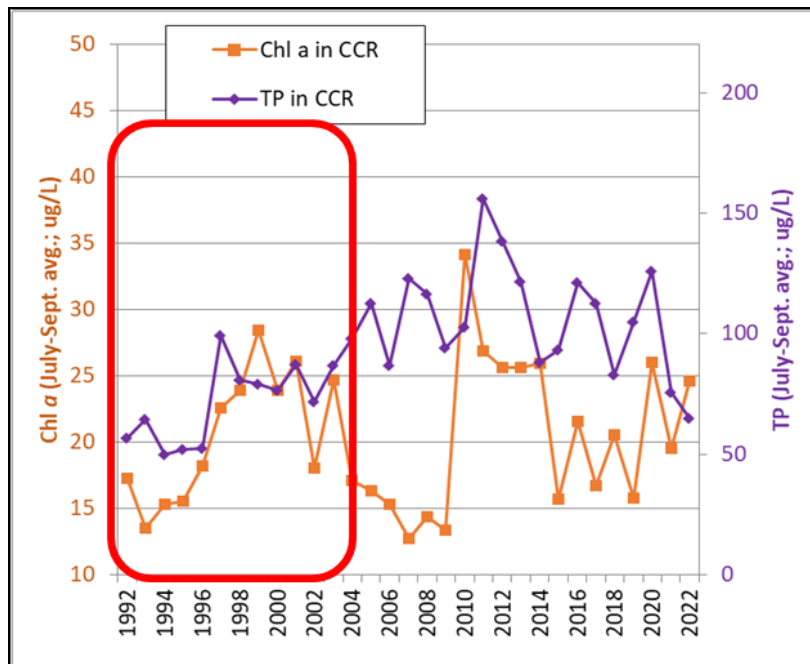
Correspondingly, there appears to be a general pattern match between TP and Chl $a$  in the preceding set of years in the record (1992-~2003; Figure 18). For 1992-~2003, there is a general pattern match for TP and Chl $a$  (1992-~2003), while there is no similar match between TN and Chl $a$  in the same years (Figure 17). This may indicate the dominance of TP (vs. TN) as a primary control on algal growth (phosphorus limitation) in this portion of the record (1992-~2003). These earlier years also correspond to a period when TP concentrations were generally lower than the average observed in the more recent years, further supporting the possibility that the patterns indicate TP limitation followed by TN limitation. Note that there is no alternative explanation<sup>8</sup> for this pattern at this time.

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<sup>8</sup> There is no change in reservoir operations that corresponds to the 2003/2004 timeframe identified here as a change point in the dataset. While the destratification system operations all occurred in the second timeframe, the destratification system was operated in fewer than half of the summers in the second timeframe (2008-2013, 2021, and 2022). Therefore, destratification system operations align with or explain this pattern. There are also no clear step changes corresponding to the 2003/2004 timeframe for in-reservoir conditions such as temperature, clarity, non-volatile suspended solids (NVSS), etc. Therefore, the change in phosphorus concentrations is currently thought to be the primary explanation for the change in pattern.



**Figure 17. Summertime TN and Chl $\alpha$  Concentrations in Cherry Creek Reservoir; Red Outline Indicates Period of Apparent Pattern Match and Possible Dominance of N-Limitation**

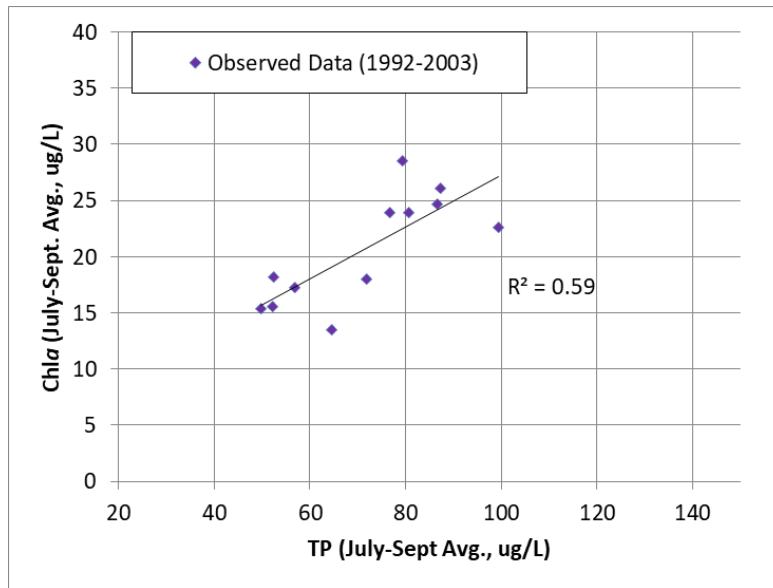


**Figure 18. Summertime TP and Chl $\alpha$  Concentrations in Cherry Creek Reservoir; Red Outline Indicates Period of Apparent Pattern Match and Possible Dominance of P-Limitation**

This pattern change in the observed dataset appears to offer a glimpse into the underlying relationships between TP and Chl $\alpha$  and TN and Chl $\alpha$  that are not readily apparent in the full dataset. When TP and Chl $\alpha$  data from 1992-2003 are plotted, the data exhibit a reasonable correlation ( $R^2 = 0.59$ ; Figure 19),

which is a dramatic improvement over the lack correlation in the full dataset ( $R^2 = 0.06$ ; Figure 2). Similarly, when TN and Chl $a$  data from 2004-2022 are plotted, the data exhibit a reasonable correlation ( $R^2 = 0.48$ ; Figure 20), which is a dramatic improvement<sup>9</sup> over the lack of correlation in the full dataset ( $R^2 = 0.12$ ; Figure 3).

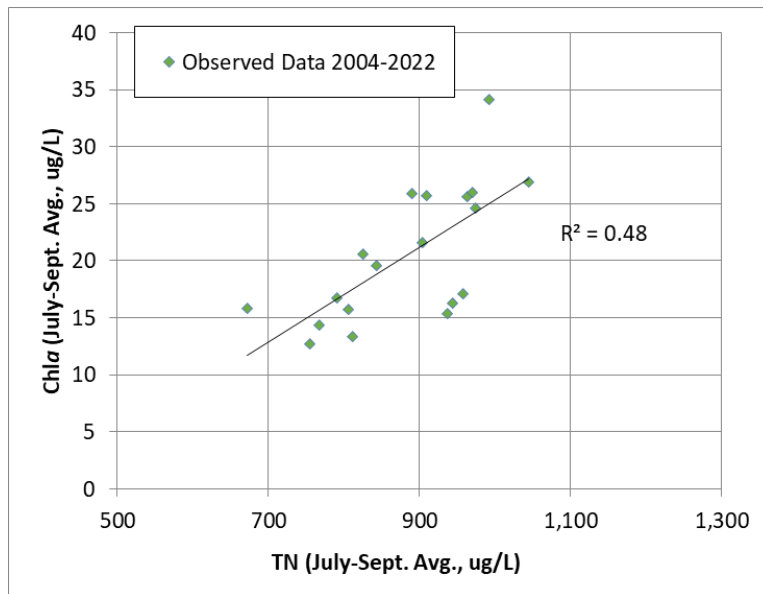
Based on this finding, site-specific relationships for Step 3 were developed by dividing the data into two parts (1992-2003 to identify the Chl $a$ :TP relationship, and 2004-2022 to identify the Chl $a$ :TN relationship). Fortunately, due to the long (31-year) period of record available for Cherry Creek Reservoir, even the subdivided datasets are still reasonably long (12 years of record used to define the Chl $a$  response to TP, and 19 years of record used to define the Chl $a$  response to TN).



<sup>9</sup> While these correlations are notable improvements to those based on the full dataset, and these are comparable, in terms of goodness of fit, to the State-wide relationships used to develop TVSs for warm lakes, the relationships are still far from perfect. This is to be expected when attempting to predict Chl $a$  from TN or TP alone. First, TN and TP are imperfect measures of biologically available nutrient concentrations. TN and TP include nitrogen and phosphorus associated with recalcitrant organic matter, which is slow to decay rendering the nutrients largely inaccessible for algal uptake. The fraction of TN and TP in recalcitrant organic matter can vary over time, limiting the predictive capability of TN and TP for Chl $a$ . Second, Chl $a$  is an imperfect measure of algal biomass. The amount of Chl $a$  produced by a gram of algal cells can vary widely depending on the algal species and light conditions in the reservoir. Third, algal growth in response to TN and TP can be interdependent, particularly in a system like Cherry Creek Reservoir, which exhibits nitrogen limitation (excess bioavailable phosphorus relative to bioavailable nitrogen) at times and nitrogen-fixing cyanobacteria. Fourth, many factors beyond TN and TP concentrations affect the Chl $a$  response in lakes, including vertical mixing dynamics, water temperature, light, etc. In short, there are many reasons to expect an imperfect fit when plotting lake Chl $a$  response to TN or TP concentrations.

At the request of EPA (Moon, 2023), non-volatile suspended solids ([NVSS], data available from 2011-2022) was considered as a secondary predictor variable with TN and TP. However, the analysis did not prove fruitful as NVSS was found to be an insignificant predictor of Chl $a$ , exhibiting high p-values (>0.25). While there are currently no successful approaches identified for Cherry Creek Reservoir to support consideration of secondary controls on Chl $a$  response to nutrients in Cherry Creek Reservoir for the purpose of site-specific standards development, CCBWQA is open to future discoveries.

**Figure 19. Observed Cherry Creek Dataset; Summer Chl $\alpha$  Response to TP Concentrations; 1992-2003**



**Figure 20. Observed Cherry Creek Dataset; Summer Chl $\alpha$  Response to TN Concentrations; 2004-2022**

50th quantile regressions<sup>10</sup> were fit to the subsets of data to support completion of Step 3 (Figure 21 and Figure 22). The site-specific 50<sup>th</sup> quantile relationships for Cherry Creek Reservoir are:

$$TP(ug/L) = 10^{((\log_{10}[Chl\alpha]+4.09425)/1.83521)}$$

$$TN(ug/L) = 10^{((\log_{10}[Chl\alpha]+0.31154)/0.88261)}$$

Using these relationships, the Chl $\alpha$  value from Step 2 (15.55 ug/L) translates to 50.5 ug/L TP and 759 ug/L TN (Figure 21 and Figure 22).

<sup>10</sup> While the WQCD applied a 75<sup>th</sup> quantile regression fit to the State-wide warm lakes dataset in an effort to identify the response of highly-productive lakes, it is appropriate to use a 50<sup>th</sup> quantile fit in a site-specific analysis for a single lake/reservoir.

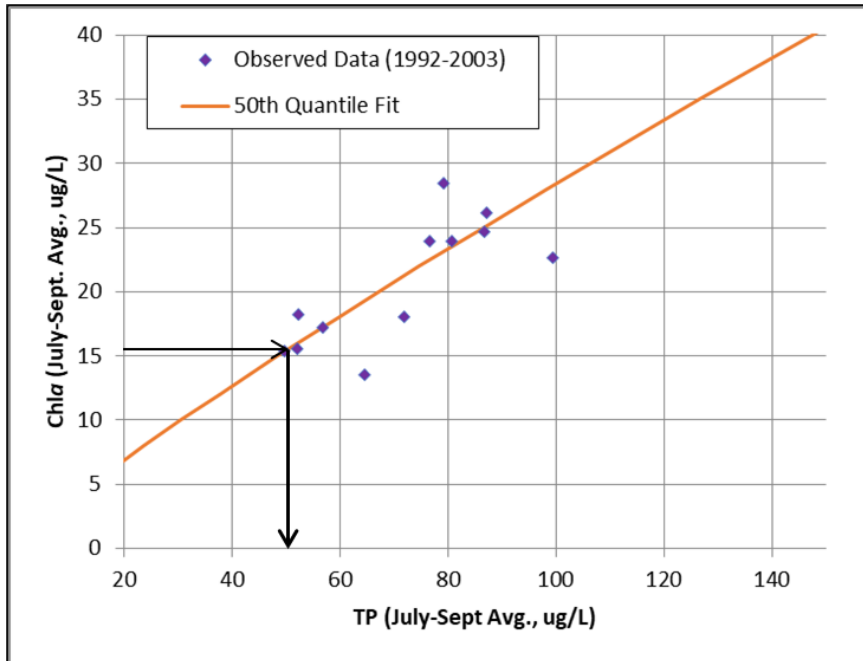


Figure 21. 50<sup>th</sup> Quantile Fit to Cherry Creek Reservoir Summer Chl $\alpha$  Response to Summer TP Concentrations; 1992-2003; Arrows Show Translation for Chl $\alpha$  50<sup>th</sup> Percentile of 15.55 ug/L to a TP Concentration of 50.5 ug/L

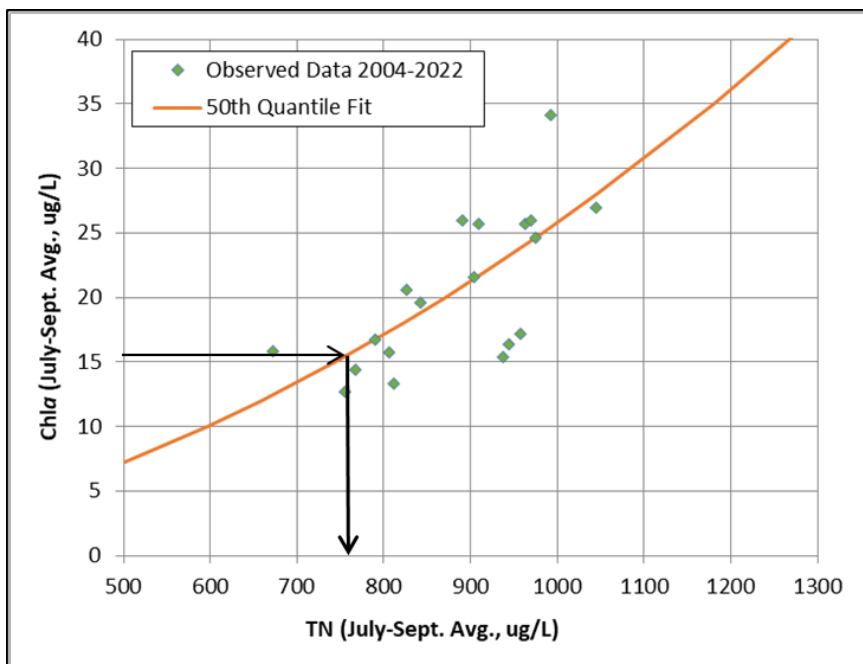


Figure 22. 50<sup>th</sup> Quantile Fit to Cherry Creek Reservoir Summer Chl $\alpha$  Response to Summer TN Concentrations; 2004-2022; Arrows Show Translation for Chl $\alpha$  50<sup>th</sup> Percentile of 15.55 ug/L to a TN Concentration of 759 ug/L

#### 4.2.4 Cherry Creek Reservoir – Step 4: Translate TP and TN Concentrations to 80<sup>th</sup> Percentiles

In the final step, the summertime average TP and TN concentrations identified in Step 3 were converted to final standard values reflective of 80<sup>th</sup> percentiles. While the WQCD has a strong State-wide relationship to translate TP and TN summertime averages (reflective of 50<sup>th</sup> percentiles) to values reflective of summertime 80<sup>th</sup> percentiles, Cherry Creek Reservoir has an extensive dataset that exhibits strong site-specific relationships<sup>11</sup> for TP and TN (Figure 25 and Figure 26). Further, the site-specific relationships do not agree well with the WQCD relationships, exhibiting a consistent high bias in 80<sup>th</sup> percentile response.

As noted for Chl<sub>a</sub> in Section 4.2.2, it is reasonable to expect that a given water body may exhibit summertime TP and TN concentration distributions that differ from relationships based on the State-wide dataset. Therefore, given the extensive dataset available for Cherry Creek Reservoir, the strong relationships, and the apparent difference from the State-wide relationships, the site-specific 50-80 translations for TP and TN were applied (Figure 25 and Figure 26):

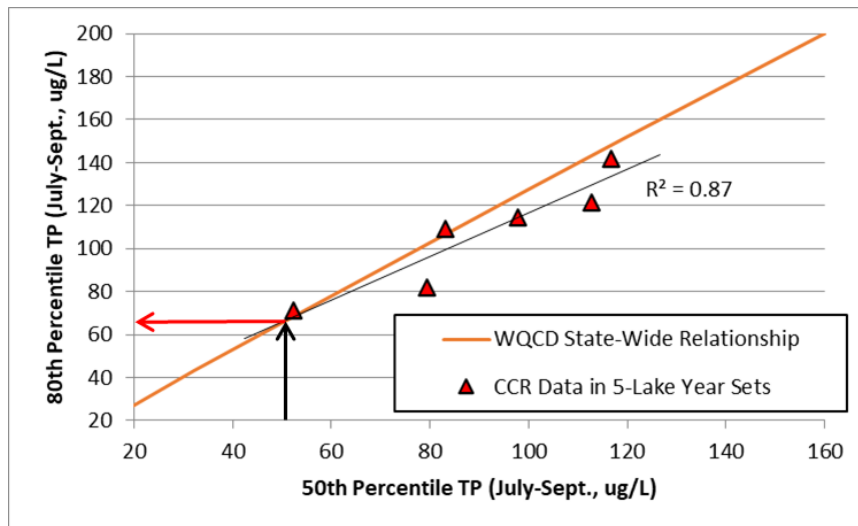
$$TP_{80th\ \%ile} = 1.0127 * TP_{50th\ \%ile} + 15.255$$

$$TN_{80th\ \%ile} (ug/L) = 0.7346 * TN_{50th\ \%ile} + 307.13$$

The resulting proposed site-specific nutrient standard values are:

- Proposed Site-Specific Standard for TP: 66 ug/L TP, and
- Proposed Site-Specific Standard for TN: 860<sup>12</sup> ug/L TN.

As with the TVSSs, these site-specific standards would be assessed based on July through September averages, with a one-in-five-year allowable exceedance frequency.

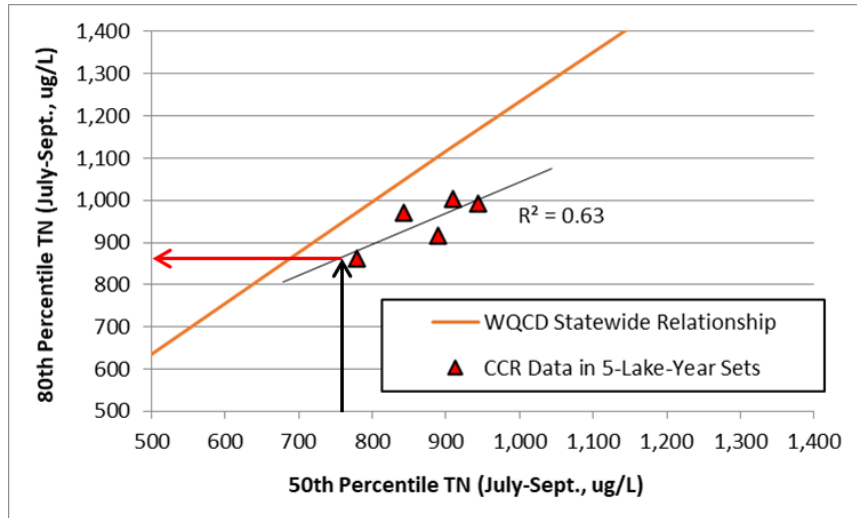


**Figure 25. Cherry Creek Reservoir Site-Specific Relationship between Summertime TP 50<sup>th</sup> Percentile and 80<sup>th</sup> Percentile Concentrations; Arrows Show Translation for 50.5 ug/L TP (50<sup>th</sup> Percentile) to 80<sup>th</sup> Percentile TP Standard Value of 66 ug/L**

<sup>11</sup> Following the same reasoning described in Section 4.2.2 for Step 2, the site-specific relationships for Step 4 were developed from five-year blocks of data.

<sup>12</sup> Note that these values follow the WQCD precedent of rounding the TP and TN standard values to two significant figures.





**Figure 26. Cherry Creek Reservoir Site-Specific Relationship between Summertime TN 50th Percentile and 80th Percentile Concentrations; Arrows Show Translation for 759 ug/L TN (50<sup>th</sup> Percentile) to 80<sup>th</sup> Percentile TN Standard Value of 860 ug/L**

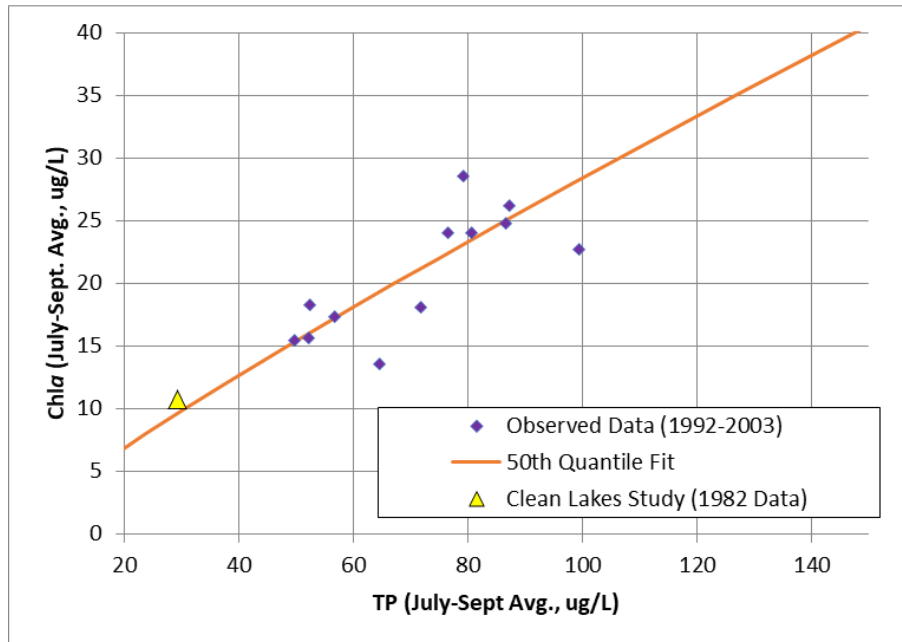
### 4.3 Additional Analysis for TP

The following subsections present additional analysis conducted to further evaluate the proposed site-specific TP standard. Additional analysis was considered useful for TP for two reasons. First, the Chl $a$ :TP relationship applied to develop the proposed TP standard is based on the older portion of the observed dataset (1992-2003). Next, the translations for TP in the 4-step process tend to fall at or even slightly below the lower end of the observed range of TP concentrations (e.g., Figure 21). In contrast, the TN proposal is based on the recent 19 years of observed record and does not use extrapolations below the observed ranges.

#### 4.3.1 Clean Lakes Study TP Data Comparison

To further evaluate the site-specific Chl $a$ :TP relationship used in Step 3 (Section 4.2.3), historical data from the Cherry Creek Reservoir Clean Lakes Study (DRCOG, 1984) were considered. Samples for TP and Chl $a$  were collected through the summer of 1982, providing an additional data point<sup>13</sup> at the lower range of TP concentrations. This data point falls reasonably close to the 50<sup>th</sup> quantile relationship developed from the 1992-2003 dataset (Figure 27), providing additional confidence in the relationship and in its extrapolation to a TP concentration that is slightly lower than the 1992-2003 observed range (Figure 21). Unfortunately, TN data were not available from the Clean Lakes Study for a similar analysis; however, the TN relationship is based on the 19 years of recent record and the translation is taken from within the observed range of TN concentrations (though it is on the lower end of the range).

<sup>13</sup> The average summertime TP concentration for Cherry Creek Reservoir in 1982 (29.3 ug/L) was based on the average of the July, August, and September values reported on page 72 of the Clean Lakes Study document for Cherry Creek Reservoir (DRCOG, 1984), and the summer average Chl $a$  in 1982 (10.7 ug/L) was based on the value reported on page 73 of the document.



**Figure 27. 50<sup>th</sup> Quantile Fit to Cherry Creek Reservoir Summer Chl<sub>a</sub> Response to Summer TP Concentrations; 1992-2003; Clean Lakes Study 1982 Data Also Shown**

#### 4.3.2 Modeling Analysis for TP

To provide further review of the proposed site-specific TP standard for Cherry Creek Reservoir, the existing hydrodynamic and water-quality model of the reservoir (Hydros, 2017 and 2019) was applied. The Cherry Creek Reservoir model is a two-dimensional hydrodynamic and water-quality model developed using CE-QUAL-W2 (Cole and Wells, 2017). The model simulates hydrodynamics, temperature, dissolved oxygen, nutrients, and Chl<sub>a</sub> in Cherry Creek Reservoir from 2003 through 2017, including representation of the effects of the destratification system. The original model development and its extension are documented in detail in Hydros (2017) and Hydros (2019), respectively. The model is considered a useful tool for this purpose because it incorporates much of the complexity absent in the empirical Chl<sub>a</sub>:TP relationships, such as year-to-year differences in residence time, light, water temperature, wind, etc.

The goal in application of the Cherry Creek Reservoir model was to see what the model suggests as an appropriate TP standard corresponding to the Chl<sub>a</sub> standard and consider that relative to the site-specific TP standard developed from the observed data (as described in Sections 4.2 through 4.2.4). This was done by conducting a series of runs that simulated Chl<sub>a</sub> response to reductions in reservoir TP concentrations extending below the current observed range. Run results for summertime TP and Chl<sub>a</sub> concentrations were then used in place of observed data in Step 3 of the WQCD’s 4-Step method.

##### 4.3.2.1 Model Runs

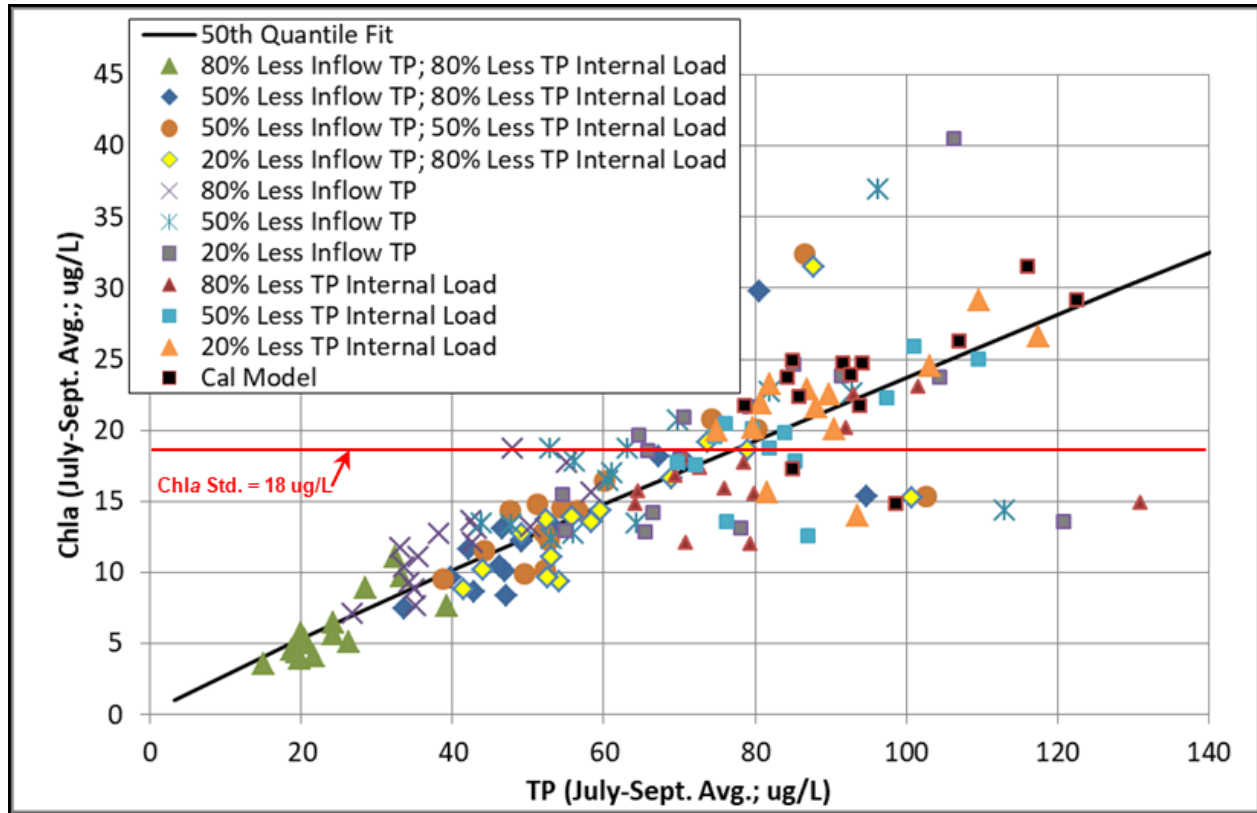
Reductions in TP concentrations in the reservoir were simulated in a series of model runs reflecting the two general nutrient control strategies concepts of watershed controls and in-reservoir nutrient management. In addition to the calibration run simulating observed conditions from 2003-2017, the following ten modeling runs were conducted:

- 20% Less TP Inflow (uniform 20% reduction in inflow TP concentrations);
- 50% Less TP Inflow (uniform 50% reduction in inflow TP concentrations);
- 80% Less TP Inflow (uniform 80% reduction in inflow TP concentrations);
- 20% Less TP Int. Load (20% reduction in internal loading rates for TP);
- 50% Less TP Int. Load (50% reduction in internal loading rates for TP);
- 80% Less TP Int. Load (80% reduction in internal loading rates for TP);
- 20% Less TP Inflow; 80% Less TP Int. Load (uniform 20% reduction in inflow TP concentrations and 80% reduction in internal loading rates for TP);
- 50% Less TP Inflow; 50% Less TP Int. Load (uniform 50% reduction in inflow TP concentrations and 50% reduction in internal loading rates for TP);
- 50% Less TP Inflow; 80% Less TP Int. Load (uniform 50% reduction in inflow TP concentrations and 80% reduction in internal loading rates for TP); and
- 80% Less TP Inflow; 80% Less TP Int. Load (uniform 80% reduction in inflow TP concentrations and 80% reduction in internal loading rates for TP)

Note that simulation designs were not constrained to fractional reductions that are currently considered achievable, particularly in terms of watershed controls. Inclusion of such runs is considered reasonable recognizing that the objective of this effort is not to assess attainability but instead to evaluate the modeled relationship between Chl $a$  and TP, ideally including conditions below the Chl $a$  standard.

#### 4.3.2.2 Modeling Results

Modeling results for the runs listed above were compiled in terms of July through September average concentrations for TP and Chl $a$ . A 50<sup>th</sup> quantile regression was then fit to the full set of run results (Figure 28). The R<sup>2</sup> analog for the 50<sup>th</sup> quantile regression fit is 0.70 indicating a relatively good correlation. Interestingly, modeling results show that the Chl $a$  response to summertime TP predictions becomes more consistent (a better fit) at lower TP concentrations (<~70 ug/L), which may reflect a general turning point to (or toward) phosphorus limitation in the reservoir. Another interesting finding in the results is that TP concentration reductions on the order of 20% (as inflow loading reductions or as internal loading rate reductions) do not change the Chl $a$  response enough to bring most years below the Chl $a$  standard. To get most years below the Chl $a$  standard, the modeling indicates that major reductions are needed (50% to 80% reductions), and a combination of inflow and in-reservoir strategies produce the best results.



**Figure 28. Results of Cherry Creek Reservoir Model Runs Showing Chl<sub>a</sub> Response to Progressive Reductions of Inflow Phosphorus Concentrations and Internal Phosphorus Loading Rates**

Using the 50<sup>th</sup> quantile regression fit from the modeling results<sup>14</sup> in Step 3 of the WQCD’s 4-step process (note: all other steps use relationships presented in Sections 4.2, 4.2.2, and 4.2.4), the modeling results produce a site-specific TP standard value of 79 ug/L. This value is higher (less stringent) than the 66 ug/L site-specific TP standard developed from the observed data. The CCBWQA is not planning to propose the modeling-based TP standard (79 ug/L) at this time, but is instead planning to propose the more stringent observation-based site-specific standard value of 66 ug/L TP. The modeling results are considered to provide supporting evidence that a standard value less stringent than the default TP standard for Cherry Creek Reservoir (42 ug/L TP) is justifiable. Further, the modeling results are considered to be an indication that future refinements to the site-specific TP standard for Cherry Creek Reservoir may be warranted, particularly as in-reservoir TP concentrations decrease and the observed data record better reflects the underlying Chl<sub>a</sub>:TP relationship at lower concentrations.

#### 4.4 Summary of Site-Specific TP and TN Standard Development

Site-specific TP and TN standards for Cherry Creek Reservoir were developed following the same 4-step process applied by WQCD to develop the TVSSs. In each step, the extensive Cherry Creek Reservoir dataset was used in lieu of the WQCD’s State-wide database. The resulting proposed site-specific nutrient standard values are:

<sup>14</sup> TP<sub>ug/L</sub> = 10((log<sub>10</sub>[Chl<sub>a</sub>] + 0.47309) / 0.92469)

- Proposed Site-Specific Standard for TP: 66 ug/L TP, and
- Proposed Site-Specific Standard for TN: 860<sup>15</sup> ug/L TN.

As with the TVVs, these site-specific standards would be assessed based on July through September averages, with a one-in-five-year allowable exceedance frequency.

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<sup>15</sup> Note that these values follow the WQCD precedent of rounding the standard values to two significant figures.

## 5 Discussion of Site-Specific TN and TP Standard Values Developed for Cherry Creek Reservoir

Based on the analysis described in Section 4, site-specific TP and TN standards of 66 ug/L TP and 860 ug/L TN were developed for Cherry Creek Reservoir. In this section, these values are discussed in the context of State-wide TP and TN standards for warm lakes as well the observed data record for Cherry Creek Reservoir. The intent of this discussion is to offer perspective on the site-specific standard values relative to the broader regulatory framework and relative to the range of observed conditions in the reservoir.

While the site-specific TP and TN standard values developed for Cherry Creek are less stringent than the default values that the WQCC would assign to the reservoir, they are more stringent than the 2012 Interim Criteria values for lakes and reservoirs that were approved by the Environmental Protection Agency (EPA, 2016; site-specific TP and TN standard values ). As such, the site-specific TP and TN standard values are considered to fall within a reasonable range from a regulatory context (i.e., between two sets of EPA-approved nutrients standards for warm lakes in Colorado)<sup>16</sup>.

**Table 2. Cherry Creek Reservoir Site-Specific TP and TN Standards Compared to Relevant State Nutrient Standards and Interim Criteria**

Constituent	Warm Lakes Nutrient Standards		Default** Cherry Creek Reservoir Standards	Site-Specific Standards Developed for Cherry Creek Reservoir
	2012 Interim Criteria	TVSs* (TN and TP Adopted in April 2023)		
Chl <sub>a</sub> (ug/L)	20	20	18	18
TN (ug/L)	910	670	620	860
TP (ug/L)	83	47	42	66

Note: All are/would be assessed as July through September averages with a one in five-year allowable exceedance frequency.

\*Currently only applicable to warm lakes above permitted discharges.

\*\* Default TP and TN standards are those expected to be adopted for Cherry Creek Reservoir in the absence of a successful site-specific standard proposal. The TN and TP values were developed from the WQCD State-wide relationships used in the April 2023 RMH, applying the Cherry Creek Reservoir Chl<sub>a</sub> standard of 18 ug/L, in lieu of the general warm lakes Chl<sub>a</sub> standard of 20 ug/L.

When compared to the Cherry Creek Reservoir water-quality records, the proposed site-specific TP and TN standards fall on the low end of the observed dataset (Table 3 and Figure 29). While the Chl<sub>a</sub>

<sup>16</sup> While this is considered to be a reasonable range based of EPA-approved standard values, it should be noted that site-specific standard values outside of this range may be appropriate for some warm lakes, depending on the observed system response.

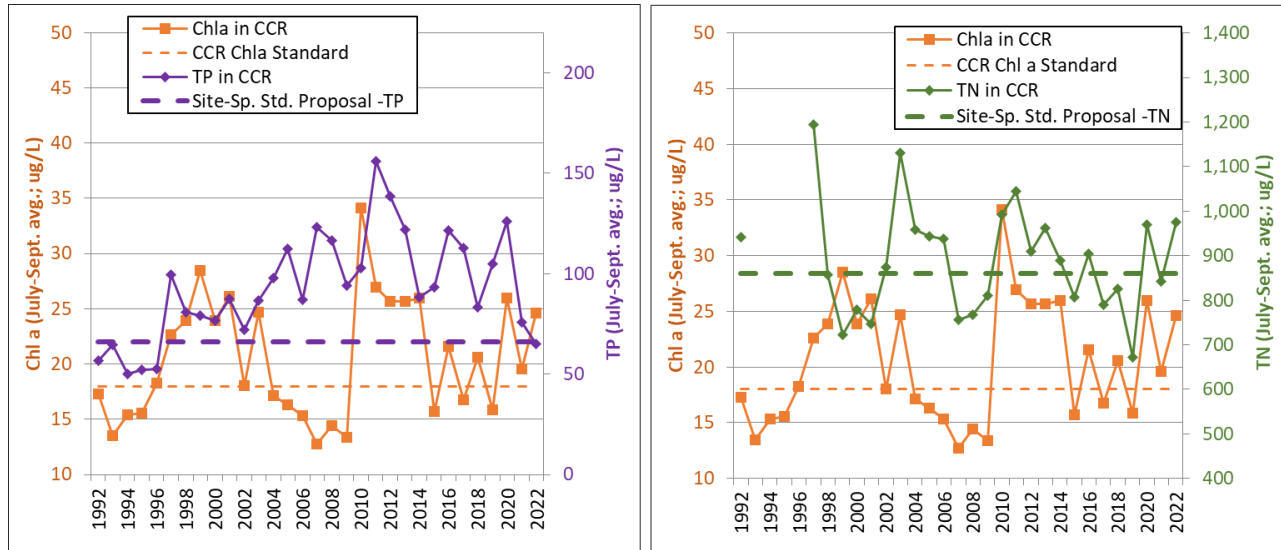
standard value is not routinely met, it is met<sup>17</sup> in 13 of the 31 years of record (Figure 29). Similarly, the proposed site-specific standard for TN would have been met in a similar number of years of record (12 of 27). In contrast, the proposed site-specific standard for TP would have only been met in 6 years of record (Figure 29). This pattern agrees with the overall conceptual understanding of the system, which is generally considered to be further from the optimal TP concentration than the optimal TN concentration. The relevant point is that meeting the proposed site-specific standards for both TP and TN would require in-reservoir summer concentrations well below typically-observed concentrations. As such, the proposed site-specific standards comprise challenging targets for CCBWQA as they continue their mission to protect and improve water quality in the reservoir. The challenge of meeting these targets is further underscored by the modeling results presented in Section 4.3, which indicate that major reductions in inflow nutrient concentrations and/or in-reservoir nutrient internal loading rates (on the order of 50 to 80%) are needed to meet the Chl<sub>a</sub> standard (and, correspondingly, the nutrient standards).

**Table 3. Comparison of Site-Specific TP and TN Standards Developed for Cherry Creek Reservoir to Range of Summertime Average Observations**

Constituent	Site-Specific Standards* Developed for Cherry Creek Reservoir	Cherry Creek Reservoir Observed Data (1992-2022) Jul.-Sept. Averages (Avg., Range)
Chl <sub>a</sub> (ug/L)	18	21 (13-34)
TN (ug/L)	860	889 (672-1,195)
TP (ug/L)	66	93 (50-156)

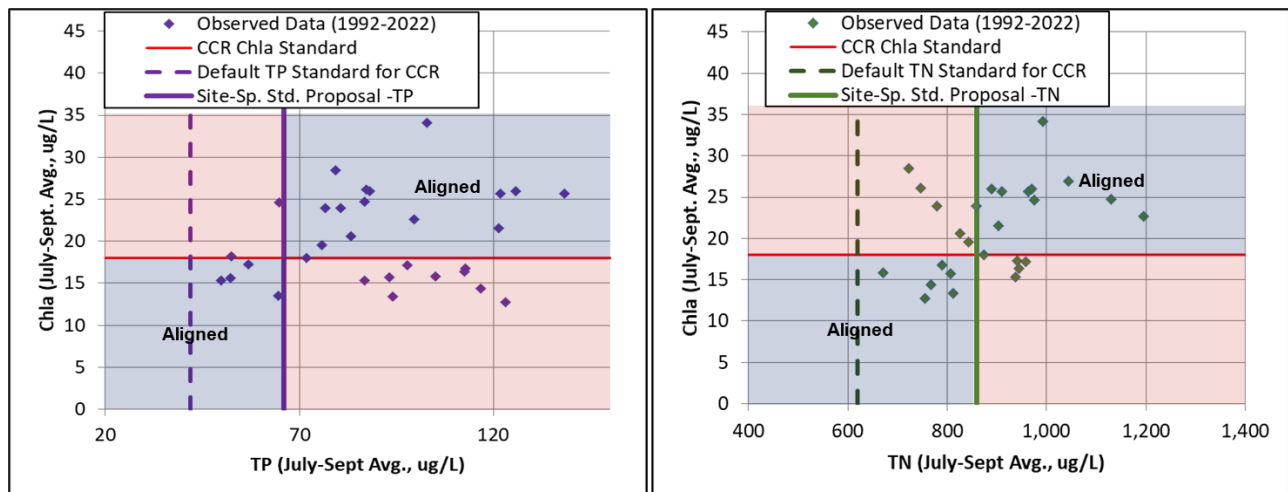
\*All would be assessed as July through September averages with a one in five year allowable exceedance frequency.

<sup>17</sup> Note the terminology used here is purposeful, referring to a direct comparison of the standard value to the observed data, as opposed to an assessment of compliance with the standard. This analysis is not intended to evaluate compliance. Compliance analysis would require consideration of the one-in-five-year allowable exceedance frequency and does not match the purpose of this comparison conducted here.



**Figure 29. Comparison of Observed Chl<sub>a</sub> and Nutrient Data from Cherry Creek Reservoir to Existing Chl<sub>a</sub> Standard and Site-Specific TP and TN Standards Developed for Cherry Creek Reservoir, 1992-2022**

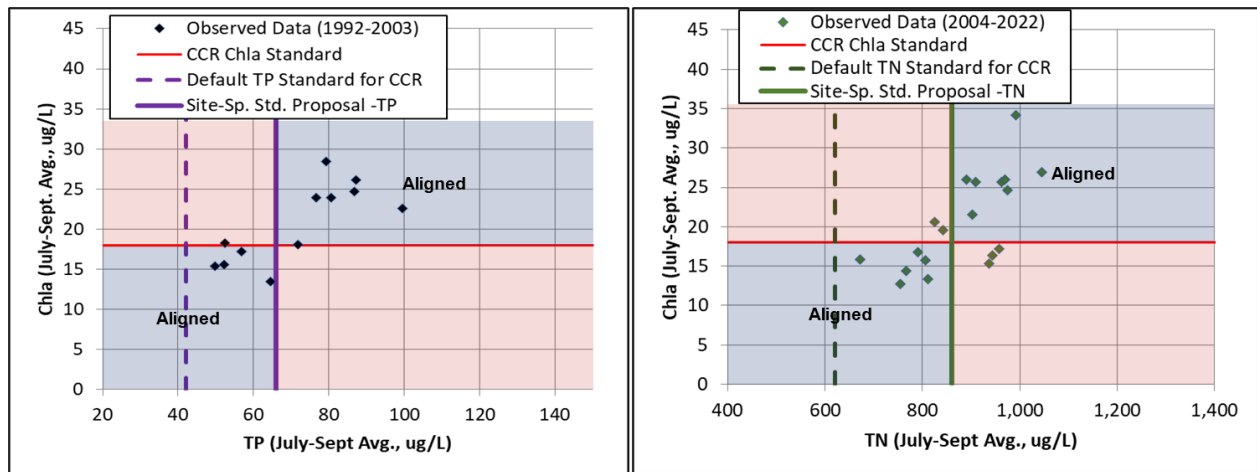
The site-specific TP and TN standards developed for Cherry Creek Reservoir were also reviewed against the observed dataset using the quadrant plot approach (described in Section 2.4). Even with the site-specific proposal values, there are still numerous years of record that fail to show alignment between the Chl<sub>a</sub> standard and the TP and TN standards (Figure 30). In fact, there is no ideal value for the TP and TN standards to lead to good alignment with the full observed dataset. This underscores the underlying complexity of the Chl<sub>a</sub> response to nutrient concentrations in Cherry Creek Reservoir. In other words, TP and TN are clearly not independent controls on Chl<sub>a</sub> in Cherry Creek Reservoir as effectively assumed in the standard development process. That said, following the WQCD’s 4-step process using site-specific data is expected to have produced TP and TN standard values that better reflect the underlying relationships between nutrients and Chl<sub>a</sub> in Cherry Creek Reservoir.



**Figure 30. Cherry Creek Reservoir Chl<sub>a</sub>: TP and Chl<sub>a</sub>: TN Quadrant Plots with Site-Specific TP and TN Standards Developed for Cherry Creek Reservoir, 1992-2022**



The underlying relationships become more apparent when the quadrant plots are reviewed focusing on the subsets of years used in standard development (Figure 31). As a reminder, the subsets of years used in the site-specific standard development (1992-2003 for TP and 2004-2022 for TN) are expected to generally differentiate between years with a greater tendency toward phosphorus limitation and years with a greater tendency toward nitrogen limitation. Using those data subsets, the proposed site-specific TP and TN standards align reasonably well with the Chl<sub>a</sub> standard in Cherry Creek Reservoir (Figure 31). Further, the site-specific TP and TN standards show much better alignment with the observed dataset as compared to the default TP and TN standards for Chery Creek Reservoir (Figure 31). As noted previously, future refinement of the site-specific standards, particularly for TP, may be needed as concentrations in the reservoir decrease and the observed dataset further illuminates the underlying relationship between TP and Chl<sub>a</sub> at lower concentrations.



**Figure 31. Cherry Creek Reservoir Chl<sub>a</sub>: TP and Chl<sub>a</sub>: TN Quadrant Plots with Site-Specific TP and TN Standards Developed for Cherry Creek Reservoir, Observed Data Limited to Year Sets Used in Standard Development**

## 6 Longevity Plan Recommendations

It is recommended that a Longevity Plan be developed and included in the proposal for site-specific TP and TN standards for Cherry Creek Reservoir. As noted in Regulation 31 (WQCC, 2023) in the Statement of Basis and Purpose for the June 2021 Rulemaking Hearing, the purpose of a Longevity Plan for a site-specific standard is “to guarantee the collection and analysis of information that will be necessary to ensure that a site-specific standard is maintained over time, continues to be scientifically sound, protects the beneficial uses, and can be updated or revised as needed.”

Key elements of the Longevity Plan for the site-specific TP and TN standard for Cherry Creek Reservoir should include:

- **Sampling** – The plan should include a commitment by CCBWQA to continue July through September monthly (at a minimum) sampling in the mixed layer at CCR2 for ammonia, nitrate+nitrite, total Kjeldahl nitrogen, SRP, TP, and Chl<sub>a</sub>, with current sampling and analysis methods.

- **Data Analysis** – The plan should include a commitment for analysis of the sampling results to evaluate  $Chl\alpha$ :TP and  $Chl\alpha$ :TN response relative to the historical dataset and review of apparent agreement in reservoir response relative to the TP and TN standards as compared to response relative to the  $Chl\alpha$  standard.
- **Reporting** – The plan should include a commitment to generate a report every three years for the WQCC, corresponding to the triennial review cycle for the basin. Each report should provide the dataset corresponding to data collection commitment, a summary of the data analysis conducted, and a statement of the finding as to whether or not the site-specific TP and TN standards are still considered appropriate for Chery Creek Reservoir and adequately protective of the AL/Rec beneficial uses.

These data collection, analysis, and reporting commitments in a Longevity Plan should support ongoing review of the appropriateness and protectiveness of the site-specific TP and TN standards. It is anticipated that the data analysis may also support subsequent proposals to adjust the site-specific standards in the future, as needed. Note that the sampling and data analysis commitments in the Longevity Plan are intended to provide the minimum adequate information needed to support the WQCC in determining whether there have been any major changes in reservoir response which could indicate that the basis and assumptions used to support adoption of the original site-specific standards have become invalid. As such, the Longevity Plan is not intended to limit, in any way, the information that may be considered or the approach that may be taken to develop revised site-specific TP and TN standard for Cherry Creek Reservoir in the future, as needed.

## 7 Summary

The State-wide  $Chl\alpha$ :TP and  $Chl\alpha$ :TN relationships for warm lakes that were used to develop the AL/Rec TP and TN TVSs do not reflect the observed  $Chl\alpha$  response to nutrient concentrations in Cherry Creek Reservoir. This mismatch may be due to the polymictic nature of the reservoir, high inflow concentrations of SRP, and/or the existence of strong nitrogen limitation in much of the observed record. Ultimately, the observed data indicate that the default standards are not appropriate for Cherry Creek Reservoir. Further, WQCD's Secchi-based Site-specific equations do not provide improved approximations of observed conditions in Cherry Creek Reservoir. Therefore, site-specific TP and TN standards are needed for Cherry Creek Reservoir.

An analysis of the observed dataset was conducted to identify site-specific nutrient standards for Cherry Creek Reservoir that are neither under-protective nor overly stringent. The resulting proposed site-specific standards for Cherry Creek Reservoir are:

- Proposed Site-Specific Standard for TP: 66 ug/L TP, and
- Proposed Site-Specific Standard for TN: 860<sup>18</sup> ug/L TN.

The site-specific TP and TN standards would be assessed with annual July through September averages and a one-in-five-year allowable exceedance frequency. These standards are considered to be defensible and appropriately protective for Cherry Creek Reservoir for the following reasons:

- The site-specific standards presented here were developed using the Cherry Creek Reservoir's extensive dataset (31-year record).
- The site-specific standards presented here were developed using the same 4-step method developed and applied by WQCD to define the TP and TN TVSs for lakes and reservoirs.
- The proposed values better reflect the apparent underlying  $Chl\alpha$ :TP and  $Chl\alpha$ :TN relationships present in the Cherry Creek Reservoir datasets, as compared to the default standards for Cherry Creek Reservoir.
- Historical TP data from 1982 (Clean Lakes Study) further support the proposal.
- Reservoir water-quality modeling of  $Chl\alpha$  response to TP further supports the proposal.
- The proposed site-specific standard values fall into the range between the EPA-approved warm lakes TVSs (adopted in April of 2023) and the EPA-approved 2012 Interim Criteria, suggesting the magnitude of the values is reasonable.
- The proposed site-specific TP and TN standards comprise challenging targets that will not in any way deter CCBWQA from continuing its long-term efforts to drastically reduce nutrient concentrations in the reservoir.

A longevity plan is recommended for inclusion with the site-specific proposal. The longevity plan would include data collection, analysis, and reporting commitments to support ongoing review of the appropriateness and protectiveness of the site-specific TP and TN standards.

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<sup>18</sup> Note that these values follow the WQCD precedent of rounding the standard values to two significant figures.

In summary, this analysis provides a strong technical basis for proposal of site-specific TP and TN standards of 66 ug/L TP and 860 ug/L TN for Cherry Creek Reservoir to the WQCC. These values are considered to be protective of the AL/Rec beneficial uses and more appropriate for Cherry Creek Reservoir than the default TP and TN standards.

## 8 References

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- WQCC. 2023. Regulation No. 31 – The Basic Standards and Methodologies for Surface Water; 5 CCR 1002-31. Effective June 14, 2023.
- WQCD. 2022a. WQCD Prehearing Statement. November 2022 Regulation Numbers 31-38/ Regulation Number 85 Rulemaking Hearing: August 3, 2022.
- WQCD. 2022b. WQCD Exhibit C\_Lakes - Secchi-Based Site-Specific Equations; Spreadsheet Tool; Updated August 3, 2022.

The Cherry Creek Stewardship Partners and Cherry Creek State Park joined the South Platte Coalition for Urban River Evaluation at their annual event: **Confluence on the Confluence, We're All in One South Platte Boat** on October 17<sup>th</sup> in Englewood to tell our story of outreach and engagement in the Cherry Creek Watershed. Other speakers included: Jane Clary (Cherry Creek), Russ Clayshulte (Bear Creek), Alan Leak (Chatfield), Steve Lundt (BMW), and Ashley Giles (Clear Creek). This event built upon the success of the Cherry Creek Watershed Conference collaboration among the flood control reservoirs in the Tri-Lakes Project highlighting their shared interest in protecting water quality for millions of front range residents.

Congratulations to the team at Prairie Canyon Ranch! Jamie, Ben, and Maddie were given the **Excellence in Rangeland Conservation Award** by the **Colorado Section of the Society for Range Management** at their Annual Meeting in Canon City, Colorado. Prairie Canyon Ranch was highlighted in the Cherry Creek Watershed Conference presentation describing **"Headwaters Opportunities"**. As Scott suggests: "We all get so focused on managing our primary objectives, whether it is water, weeds, recreation, or any number of other things, we can lose sight of the interconnected nature of all systems, especially at the watershed scale." Over 75% of the Cherry Creek watershed can be described as rangeland. Scott McEldowney, Deputy Director for Open Space and Natural Resources, Douglas County noted that the "health of this rangeland is critical to the health of the watershed and all of its inhabitants. Complex systems require integrated management." At 978 acres, Prairie Canyon Ranch is one of the largest open space properties owned and managed by Douglas County. The award is given annually to an individual or group that has demonstrated exceptional skill and knowledge in practicing sound management of rangelands in the State of Colorado.



We continue to work with the U.S. Army Corps of Engineers, and local partners, to develop two events to coincide with the dam release scheduled for May, 2024. One family event will take place at the Joe Shoemaker School, 3333 S Havana St, in Denver and another is planned for Tower Loop at Cherry Creek State Park. Both events will promote the role of Cherry Creek Dam for flood control and the importance of dam safety.

The Partners are coordinating an update of the Cherry Creek Water Quality Brochure which explains the need for the Water Quality fee collection at Cherry Creek State Park. We are also working on our annual report of activities for 2023.

Scheduled events through Spring of 2024 include: Winter Solstice Hike – 12/16/23, Hawk Walk on Cottonwood Creek – 1/27/24, Science Fair and Awards 2/23/24.

**CHERRY CREEK BASIN WATER QUALITY AUTHORITY**  
**2023 Capital Project Status Report**  
November 10, 2023

**RESERVOIR PROJECTS**

1. East Shade Shelters Phase III and Tower Loop Phase II Shoreline Stabilization (CCB-17.5 and CCB-17.7)
  - a. Description: These projects were identified in 2014 through the annual inspection. The Tower Loop Phase II connects to the Phase I project and extends shoreline protection 570 feet to the southeast towards Dixon Grove. The East Shade Shelters Phase III starts on the north end of the Shade Structure and goes 400-feet to the south.
  - b. Status: Consultant selection is scheduled for the 1<sup>st</sup> quarter. A consultant selection committee will be set in February (1/29/21). At the February TAC meeting Jason Trujillo, Jon Erickson, Lanae Raymond, Bill Ruzzo were interested in serving on the consultant selection committee (2/11/21). This selection committee was discussed at the 3/18/21 Board Meeting, and no further members were added. The Request for Proposals (RFP) has been posted on BidNet and Proposals are due 04/21/21 (3/25/21). The pre-proposal meeting was held on 4/7/21. 5 proposals were received on 4/28/21; the selection committee is reviewing them. Interviews were held and a selection is being brought to the May Board meeting (5/14/21). Board authorized negotiations with RESPEC (5/27/21). Agreement has been executed with RESPEC (10/15/21). Field Survey of project areas and topographic mapping is underway (12/30/21). A design kickoff meeting was held on 4/22/22. A design sprint workshop was held on 7/12/22 which included a site visit and evaluation of alternatives. RESPEC is developing a recommended alternative (9/8/22). RESPEC provided updated project costs for budgeting (10/13/22). The 30% submittal was received on 11/16/22 and is under review. CCBWQA provided comments on 30% review on 1/17/23; a value engineering effort is recommended as the project costs exceed the budget. The value engineering meeting was held on 2/24/23. RESPEC's request for additional services was approved by TAC and Board in May (5/25/23). The reservoir water level has come down since the May and June storms and additional erosion was observed on 7/14/23; a site visit was made with RESPEC on 8/1/23 and the erosion areas at East Shade Shelters were measured. *It has been estimated that roughly 14 cubic yards of soil was eroded from the 2023 storms (9/15/23).* A progress meeting was held on 9/15/23, RESPEC will refine the breakout of components between recreational (CPW responsibility), water quality (CCBWQA responsibility), and shared (both CPW and CCBWQA responsibilities) costs and work on 408 review submittal to US Army Corps of Engineers.

**STREAM RECLAMATION PROJECTS**

1. Cherry Creek Stream Reclamation at Arapahoe Road aka Reaches 3 and 4 (CCB-5.14C)
  - a. Description: This project continues the work on Cherry Creek by CCBWQA, MHFD, and local partners. It ties into the previous stream reclamation projects of Cherry Creek Eco Park to Soccer Fields (CCB-5.14A) and Cherry Creek at Valley Country Club (CCB-5.14B). The 5,167 Linear Feet of stream reclamation reduces bed and bank erosion immobilizing approximately 88 pounds of phosphorus annually. The project is anticipated to be funded over several years and likely be broken into phases.
  - b. Status: In 2021, and IGA was executed between CCBWQA, MHFD, City of Aurora, and SEMSWA to begin this work. IGA Amendment that brings in 2022 funding is under review (5/13/22). Board authorized IGA Amendment for 2022 funding on 7/21/22 (8/12/22). IGA Amendment has been revised to show Aurora's lower participation; CCBWQA's participation was lowered accordingly to meet 25% partner project level; revised IGA Amendment received TAC recommendation and is being taken to Board for their consideration in October (10/13/22). Board authorized the IGA Amendment for 2022 funding at their 10/22/22 meeting. It appears that CCBWQA's 2023 participation will be reduced as a result of less

partner funding available for this project (2/24/23). The IGA Amendment that brings in 2023 funding was recommended by the TAC and authorized by the Board at their June meetings (6/29/23). MHFD is starting consultant selection process (10/13/23). *Jacobs, Olsson, and Muller were shortlisted for interviews which are scheduled for mid-December (11/10/23).*

2. Cherry Creek Stream Reclamation – Upstream of Scott Road (CCB-5.17)
  - a. Description: Design and construction of stream reclamation is in partnership with Douglas County and MHFD. It improves 4,100 feet of Cherry Creek and is located upstream of Scott Road.
  - b. Status: IGA was approved by the Board at their April 2020 meeting. Muller had been selected as consultant, and design scope of work is being prepared. Kickoff meeting was held on 12/11/20; a follow-up field visit will be scheduled for early 2021. Site visit was held on 1/29/21. Conceptual design is complete, negotiations are underway to contract for 60% design (4/8/21). Muller is working on alternatives (4/30/21). Muller is working on preliminary design and an IGA Amendment to bring in additional 2021 funding from Douglas County is being brought to the Board in October (10/15/21); IGA Amendment has been executed (11/11/21). Muller is preparing 60% Design Submittal (1/28/22). Muller submitted 60% Design on 2/2/22; comments have been provided on 60% Design Submittal (3/10/22). IGA Amendment bringing in 2022 funding is scheduled for TAC and Board consideration in June (5/27/22). IGA Amendment was authorized at the June 16<sup>th</sup> Board Meeting (6/30/22). Muller is working on Final Design and held a progress meeting on 4/14/23, a site visit is being scheduled to support the 90% design submittal. The 90% site visit was held on 5/22/23. Muller submitted their 90% design submission on 9/14/23; the engineer's estimate confirms that additional funding is needed for construction. IGA Amendment for additional funding is scheduled for TAC and Board consideration at October meetings and 90% review meeting was held on 10/13/23. *Comments were provided for 90% submittal and discussed at the review meeting (11/10/23).*
3. Cherry Creek Stream Reclamation at Dransfeldt (CCB-5.17.1B)
  - a. Description: Design and construction of stream reclamation is in partnership with Town of Parker and MHFD. It improves 2,400 feet of Cherry Creek near the future location of Dransfeldt bridge which is just downstream of the Cherry Creek at KOA project.
  - b. Status: Initial scoping has begun, and a partners meeting was held on 1/30/21. IGA is scheduled for CCBWQA's May TAC and Board meetings (4/30/21). IGA was approved by all parties and has been executed (6/25/21). Muller Engineering has submitted their Draft Scope of Work for Design Services, and the project sponsors have reviewed it (7/8/21). Design kickoff meeting was held on 10/14/21. Alternatives are being evaluated (12/9/21). Pre-submittal meeting for the 404 permit is being scheduled (12/30/21). CLOMR is being prepared for project (3/10/22) and was submitted to FEMA on 3/31/22. CEI was selected for as project partner to provide contractor input during the design (5/27/22). CLOMR is under review by FEMA (8/12/22). Muller has received comments on CLOMR and is preparing responses; 90% Submittal is scheduled for early February (1/27/23). Comments on 90% Submittal were provided on 2/22/23; project is experiencing substantive cost increases due to current market conditions (2/24/23). TAC at their 3/2/23 meeting recommended that the Board authorized the IGA Amendment to bring in 2023 funding along with an increase in CCBWQA's 2023 funding from \$170,000 to \$570,000. The Board authorized the IGA Amendment with the increased 2023 funding of \$570,000 at their 3/16/23 meeting. The Conditional Letter of Map Revision (CLOMR) was issued by the Federal Emergency Management Agency (FEMA) on April 28, 2023 (5/12/23). The sanitary sewer relocation will be contracted to start with, in order to avoid a pipe material cost increase, and to get it out of the way for the forthcoming stream reclamation (7/13/23). The sanitary sewer relocation has been contracted for with Concrete Express Inc. or CEI (8/11/23). *Construction of stream reclamation will start once 404 permit has been received (11/10/23).*
4. McMurdo Gulch Priority 3 Stream Reclamation (CCB-7.2)



- a. Description: The design and construction of stream reclamation is in partnership with Castle Rock. Castle Rock is the lead agency. This phase continues the work from the previous phase. Muller Engineering is the design consultant.
  - b. Status: Board authorized IGA for Priority 3 at their May 19,2022 meeting. Muller submitted their 30% deliverable on 10/31/22, review comments were returned on 11/8/22. Easements needed for projects have been identified (1/23/22). The 60% Submittal was received on 1/30/23 and comments have been provided on 2/7/23. Muller is working on updating their construction cost estimate (2/8/23). On 2/23/23, Castle Rock requested that CCBWQA's 2023 funding be deferred to 2024 to match their schedule.
5. Lone Tree Creek in Cherry Creek State Park (CCB-21.1)
- a. Description: This project includes a trail connection to Cherry Creek State Park and includes 570 linear feet of stream reclamation on Lone Tree Creek from the State Park Boundary to the Windmill Creek Loop Trail. The City of Centennial is the project lead. CCBWQA participation is for stream reclamation only.
  - b. Status: 95% submittal is under review (5/13/22); review comments have been returned (5/27/22). Project funding was brought to TAC at their 7/7/22 meeting, during drafting of IGA it was discovered that future maintenance of stream reclamation should be considered, project will be brought back to TAC at an upcoming meeting for maintenance discussion and recommendation (8/12/22). A stakeholder meeting was held on 9/29/22 to discuss maintenance. A stakeholder meeting was held on 11/2/22 to discuss findings from CCBWQA's site visit and findings included in Wright Water Engineers report. The Board supports CCBWQA's partnering with Centennial at their 11/17/22 meeting. A Memo of Understanding is under review by Colorado Parks and Wildlife (CPW) affirming maintenance responsibilities for the stream reclamation fit under the current agreement between CCBWQA and CPW (3/30/23). CCBWQA sent the Draft IGA to Centennial for review on 5/23/23. *The project is included in CCBWQA's 2024 Budget and 10-year CIP (11/10/23).*
6. Happy Canyon Creek – County Line to Confluence with Cherry Creek (aka Jordan Road, CCB-22.1)
- a. Description: The design and construction are in partnership with Southeast Metro Stormwater Authority and MHPD and includes 2,500 feet of stream reclamation. The Authority's water quality component share for design and construction is estimated to be \$325,000. The total project cost is estimated at \$1,300,000.
  - b. Status: IGA is scheduled for June TAC and Board meetings (5/27/21). IGA has been approved and executed by all parties (7/29/21). Jacobs has been selected as design consultant and project scoping is underway; limits have been extended upstream to the County Line and sediment capture area and transport will be included with the project (10/15/21). Jacobs has submitted their scope of work and fee for design which is under review by project sponsors (11/11/21). Project sponsors have completed a review of Jacobs' fee and scope of work and the agreement is being routed for signatures (1/28/22). IGA Amendment to bring in 2022 funding is in process (3/10/22). A project kickoff meeting was held on 3/28/2022. A site visit was performed on 4/12/22 to document existing conditions and identify sediment source/transport/deposition areas. Project Team is preparing a sampling plan for bank and bed materials to determine phosphorus content (5/13/22). The project team met on 5/24/22 to discuss project goals and Jacobs is progressing through the study. Jacobs and ERC are working on sediment transport analysis and model (6/30/22). The results from the sediment transport model were presented at the 8/23/22 progress meeting and an upstream sediment capture area just south of the JWPP was included in the alternatives analysis (8/26/22). The alternative analysis report is expected to be completed before the end of 2022 (10/13/22). Lab results from stream soil samples were sent to Jacobs so that they include phosphorus reduction in the alternatives analysis report; a groundwater investigation is needed to inform sediment capture facility and stream reclamation alternatives, scoping and negotiations are in progress (11/11/22). Groundwater scope of work has been reviewed and approved by project sponsors (1/13/23). The IGA Amendment bringing in the 2023 funding was recommended by TAC and authorized by the Board in April (5/12/23). *Progress meeting was held on 10/30/23 where the groundwater information was reviewed and the*

*impacts from the 2023 storms were discussed; MHFD is planning additional sediment removals accordingly.*

7. Happy Canyon Creek - Upstream of I-25 (CCB-22.2)
  - a. Description: The design and construction are in partnership with Douglas County, City of Lone Tree, and MHFD and includes 2,500 feet of stream reclamation. The Authority's water quality component share for design and construction is estimated to be \$500,000. The total project cost is estimated at \$2,000,000.
  - b. Status: Douglas County, City of Lone Tree, and MHFD have initially funded and selected Muller Engineering as the design engineer. Design has started and a progress meeting was held on 1/27/21. Design is progressing (2/11/21). Muller has submitted 60% Design Deliverables (5/27/21). IGA for 2021 Funding is being brought to Board in September (9/9/21). 2021 IGA Amendment has been executed (11/11/21). Coordination with CDOT and easement acquisitions are on-going (1/13/22). Board authorized 2022 funding and IGA Amendment at their June 16<sup>th</sup> meeting (6/30/22). The project received environmental clearance from CDOT (8/12/22). The 90% design submittal is scheduled for delivery by end of September (8/26/22). The 90% design submittal is being reviewed (10/13/22). Comments were provided on 90% submittal (11/11/22). Muller completed the 100% design submittal on 11/22/22. CDOT permit was issued, and pre-construction meeting was held on 1/10/23; construction start is scheduled for 1/30/23 pending execution of easement documents from Surrey Ridge which has agreed to terms and easement language. Notice to Proceed on construction is pending execution of easement documents (1/27/23). Easements have been signed by property owners and Notice to Proceed has been issued to Naranjo Civil Constructors (2/8/23). Construction is underway with initial construction BMPs/stormwater controls in place; water diversion and control is being set up for the downstream section of the project (3/10/23). Water control is in place and construction of stream reclamation is underway for downstream sections of the project (3/30/23). Riffle and Boulder Cascade drop structures on downstream third of project are nearing completion (4/13/23). Construction is underway in the middle third of the project; efforts consist of stream grading and installation of Riffle and Boulder Cascade drop structures (5/12/23). The storm damage from May 11 to 13, 2023 event is being identified and repaired (5/25/23). Construction on the middle third is substantially complete and work has begun on the upstream third (7/27/23). The construction is nearly complete with the punch list walk on 9/13/23; contractor is working on completing plantings and resolving punch list items. *Asphalt repairs on the frontage road are being scheduled and some of the plantings will need to be done during the 2024 spring planting window to improve their chance for success (11/10/23).*
8. Dove Creek - Otero to Chambers Rd. (CCB-23.1)
  - a. Description: The design and construction are in partnership with Southeast Metro Stormwater Authority (SEMSWA) and with Mile High Flood District (MHFD) being a key stakeholder; it includes 1,300 feet of stream reclamation. The Authority's water quality component share for design and construction is estimated to be \$175,000. The total project cost is estimated at \$700,000.
  - b. Status: SEMSWA is drafting the Intergovernmental Agreement to bring in the 2021 funding for the project (3/12/21). RESPEC is the design consultant; two conceptual design alternatives have been prepared and reviewed during meeting on 3/15/21. IGA is scheduled for CCBWQA's May TAC and Board meetings (4/30/21). IGA has been approved and executed by all parties (7/29/21). 30% Design Review Meeting was held on 8/23/21. A Progress meeting is scheduled for 2/26/22 with 60% Plan submittal expected to follow (1/28/22). The 60% Design was submitted on 2/16/2022, comments were provided, and a design review meeting was held on 2/23/2022. IGA Amendment to bring in 2022 funding is in process (3/10/22). Construction costs were prepared by CEI based on 60% submittal (5/13/22). A design progress meeting was held 6/14/22 and 90% design submittal is being prepared (6/30/22). 90% design submittal is expected by the end of July (7/15/22). The 90% design submittal was reviewed, and comments were submitted on 8/22/22. *Construction is anticipated in 2023 (10/13/22).* A progress meeting was held on 11/8/22, project will likely be

done in 2 phases, IGA Amendment will be needed early in 2023 so that construction can start ahead of storm season. Dove Creek IGA for construction of Phase 1 is scheduled for TAC and Board in January 2023, construction is expected to start shortly afterwards (12/30/22). Construction is scheduled to start mid-February; construction agreement and engineering construction services amendment are currently being reviewed (1/27/23). Construction and engineering construction services have been finalized and a preconstruction meeting was held on 2/2/23. Notice to Proceed has been issued to Concrete Express; construction is underway with initial construction BMPs/stormwater controls in place (3/10/23). Water control is in place and construction of stream reclamation is on-going (3/30/23). Step pool drop structures have been constructed and work on soil wraps is underway (4/13/23). Low-flow or bank full channel work (soil wraps and erosion control blanket) and step-pool structures are complete, water diversion has been removed, and is active to storm flows; work continues in upland areas and higher elevations of stream reclamation (5/12/23). Storm damage from May 11 to 13, 2023 event is being repaired (5/25/23). Construction punch list is being completed (6/29/23). Construction of Phase 1 is complete (7/27/23).

9. Dove Creek - Chambers Rd. to Pond D-1 (CCB-23.1)
  - a. Description: The design and construction are in partnership with Southeast Metro Stormwater Authority (SEMSWA) and with Mile High Flood District (MHFD) being a key stakeholder; it includes 1,300 feet of stream reclamation. Construction was broken into 2 phases with Phase 2 scheduled for 2024.
  - b. Status: *CCBWQA acted at their October meeting to advance their funding for Phase 2 Construction to 2023 with SEMSWA's funding scheduled for 2024, IGA has been prepared and scheduled for signatures after SEMSWA's November Board meeting, phosphorus estimates for sediment capture areas for the project were provided to Technical Manager (11/10/23).*
  
10. Piney Creek from Fraser Street to Confluence with Cherry Creek aka Reaches 1 and 2 (CCB-21.1)
  - a. Description: This project includes 2900 liner feet of stream reclamation on Piney Creek. The project partners are SEMSWA and CCBWQA.
  - b. Status: Project coordination meeting was held with SEMSWA on 6/29/22. IGA drafted and is being reviewed by SEMSWA (8/12/22). IGA was approved by CCBWQA at the 9/15/22 Board meeting. IGA Amendment to bring in 2023 funding was recommended by the TAC and authorized by the Board in May (5/25/23). CCBWQA sent the Draft IGA Amendment to SEMSWA for review on 6/29/23. SEMSWA has no comments on the IGA Amendment and plans to take it to their Board in October (8/11/23). The project site was walked with SEMSWA and Olsson and Associates on 8/30/23, Olsson is preparing their scope of work and fee for design. *Comments on Olsson's scope of work and fee were provided to and coordinated with SEMSWA (11/10/23).*
  
11. Mountain and Lake Loop Shoreline Stabilization Phase II (OM 4.6)
  - a. Description: This project was identified through the 2020 annual inspection and design and permitting started in 2021. It adds about 40 feet of shoreline protection where it has eroded leaving a 1-2 foot tall vertical bank.
  - b. Status: Construction Plans have been prepared and the GESC was submitted to Arapahoe County for review (1/13/22). Plans are being reviewed by US Army Corps of Engineers for 408 clearance (5/13/22). *Comments were received from the US Army Corps of Engineers on 8/29/23. A meeting has been scheduled for 11/16/23 with USACOE's local staff and CPW staff to discuss the cut and fill balance requirements on this project and other planned projects in Cherry Creek State Park (11/10/23).*
  
12. Cherry Creek from Reservoir to Lake View Drive (OM 4.6)
  - a. Description: This project is in follow up to CCBWQA's study of Cherry and Piney Creeks in Cherry Creek State Park (CCSP). Muller completed two reports on Cherry Creek from Reservoir to State Park Boundary, Stream and Water Quality Assessment and Baseline Channel Monitoring Report, in 2022. These reports highlight the need for this project.

- b. Status: A workshop is scheduled for the 3/16/23, to seek CCBWQA Board and TAC input on this project and Cherry and Piney Creeks in CCSP (3/10/23). *The follow up from workshop is underway – project overview and funding flyer has been created*, Muller is scoping the next step of design for Reach 1 and providing a fee, and multi-pronged approach is in development for workshop priority reaches that prioritizes Reach 1 and reduces risk from upstream reaches; these items will be brought to TAC and Board for discussion, direction, and/or action at upcoming meetings (3/30/23). A site visit for partner outreach and funding was held on 5/25/23 at 1-4 pm (6/8/23). A coordination meeting was held with Aurora on 6/23/23 and they showed interest in partnering on the project to protect their water lines. The Mile High Flood District has provided their budget/CIP schedule and Arapahoe County Open Space has been contacted to investigate potential partnering opportunities (7/13/23). The TAC created a subcommittee for this project on 8/3/23; which will attend progress meetings, provide timely feedback to Muller, and to coordinate with TAC as needed. The alternatives analysis kickoff meeting was held on 8/29/23. A site visit was held on 9/22/23 to look at multiple flow paths and potential risks for consideration in alternatives analysis.