



## ACTION ITEM MEMORANDUM

To: CCBWQA Technical Advisory Committee (TAC)  
From: Richard Borchardt, Pollution Abatement Project Manager  
Date: March 2, 2023  
Subject: Cherry Creek Stream Improvements at Dransfeldt Road – IGA Amendment

**Request:** Review and discuss Parker’s memo requesting additional funding from CCBWQA for Cherry Creek Stream Improvements at Dransfeldt Road and recommend that the Board authorize the execution of the Amendment to the Intergovernmental Agreement (IGA Amendment) for Stream Improvements on Cherry Creek at Dransfeldt Road (Project) (Attachment 1) that brings in additional funding in accordance with one of these options:

1. \$170,000 from CCBWQA, which includes the current Authority budget plus a Special Funds Transfer from unspent completed MHFD-led partner projects of about \$37,000 of CCBWQA’s funds, or
2. \$570,000 from CCBWQA, which includes the current budget of \$170,000 and the additional \$400,000 requested from Parker (Attachment 2) plus a Special Funds Transfer from unspent completed MHFD-led partner projects of about \$37,000 of CCBWQA’s funds, or
3. another level as determined by TAC.

**Project:** The Project is on Cherry Creek near Dransfeldt Road, just downstream of Cherry Creek at KOA project which was completed in Summer of 2021 (see figure on right).

The Project sponsors are CCBWQA, Town of Parker (Parker), and the Mile High Flood District (MHFD), which is the project lead. The proposed stream improvements designed by Muller Engineering benefit the water quality in Cherry Creek and the Cherry Creek Reservoir by reducing bed and bank erosion which immobilizes phosphorus in the adjacent soils. It is estimated that this 0.45-mile-long project will immobilize 41 pounds of phosphorus annually.

Relationship to Upstream Reaches: There is a gap between the KOA project and this Dransfeldt project that may be constructed or funded by future development to the east of the creek. This gap was considered during the design of the Project, and it was determined to pose a minimal risk to the Project considering that:

- an easement was acquired with the KOA project to extend the project, add a drop structure, and perform transition grading to minimize future degradation in the gap area; and,



- the gap area was historically aggrading, with the completion of the KOA project, it is anticipated to trend towards equilibrium until the development to the east takes place.

**Funding:** The previously contributed funding level for the project is \$3,340,000, which includes a prior contribution of \$230,000 from CCBWQA. The completed MHFD-led partner projects have CCBWQA-contributed unspent funding of about \$10,995 from Cherry Creek at Norton Farms, about \$26,005 from Cherry Creek at Hess Road, for a total of about \$37,000. Three options have been developed for TAC review and are shown in Tables 1-3 below. Option 1 maintains CCBWQA’s planned funding along with unspent CCBWQA-contributed funds to MHFD-led partner projects. Option 2 increases CCBWQA’s contribution by an additional \$400,000 relative to Option 1, as requested by Parker. Option 3 is an open-ended option that could be considered by the TAC.

**Table 1. Summary of Project Expenditures – Option 1: Matches CCBWQA Budget**

Funding Source	Project Sponsor %	Previously Contributed	Additional MHFD Special Funds Transfer	Additional Contribution Request	Total Contribution
MHFD	16.61%	\$360,000	\$81,856	\$700,000	\$1,141,856
Parker	77.03%	\$2,750,000	\$44,866	\$2,500,000	\$5,294,866
CCBWQA	6.36%	\$230,000	\$37,000	\$170,000	\$437,000
Total	100.00%	\$3,340,000	\$163,722	\$3,370,000	\$6,873,722

**Table 2. Summary of Project Expenditures – Option 2: Increases CCBWQA Participation per Parker’s request**

Funding Source	Project Sponsor %	Previously Contributed	Additional MHFD Special Funds Transfer	Additional Contribution Request	Total Contribution
MHFD	15.70%	\$360,000	\$81,856	\$700,000	\$1,141,856
Parker	72.79%	\$2,750,000	\$44,866	\$2,500,000	\$5,294,866
CCBWQA	11.51%	\$230,000	\$37,000	\$570,000	\$837,000
Total	100.00%	\$3,340,000	\$163,722	\$3,770,000	\$7,273,722

**Table 3. Summary of Project Expenditures – Option 3: Change CCBWQA Participation to a different level as determined by TAC**

Funding Source	Project Sponsor %	Previously Contributed	Additional MHFD Special Funds Transfer	Additional Contribution Request	Total Contribution
MHFD		\$360,000	\$81,856	\$700,000	\$1,141,856
Parker		\$2,750,000	\$44,866	\$2,500,000	\$5,294,866
CCBWQA		\$230,000	\$37,000	TBD	
Total	100.00%	\$3,340,000	\$163,722		

Option 1 is included in the attached draft of the IGA Amendment, which has been reviewed by CCBWQA's attorney. If either option 2 or 3 is selected, then the attached draft of the IGA Amendment will need to be revised accordingly.

For option 3, TAC's recommendation on CCBWQA's 2023 funding amount could replace the TBD in the table and the remaining yellow highlighted cells could be calculated. Additional IGA Amendments may be needed to bring in any future funding by MHFD and/or Parker.

**Budget:** CCBWQA's additional funding of \$170,000 is included in the 2023 approved budget for Cherry Creek at Dransfeldt. The Authority's 2023 CIP budget also includes \$2,111,000 for East Shade Shelters, Cherry Creek at Arapahoe (R 3-4), and McMurdo Gulch projects. It is likely that these projects will be delayed past 2023 due to partner funding constraints and/or revised schedules; therefore, these budgets could be reallocated to cover additional Authority funding for Cherry Creek at Dransfeldt through reallocation of funds without a 2023 CIP budget increase.

**Motion:** **I move to recommend that the Board authorize CCBWQA to execute the IGA Amendment and an expenditure of \$170,000 (OR option of \$570,000, or another level determined by TAC) and a Special Funds Transfer of about \$37,000 in CCBWQA unused funds from the completed projects of Cherry Creek at Norton Farms and Cherry Creek at Hess Road.**

**Attachments:**

Attachment 1 Draft IGA

Attachment 2 Town of Parker's Additional Funding Request



**Photo 1 - Cherry Creek at upstream end of Dransfeldt Project**



**Photo 2 - Cherry Creek near future Dransfeldt Road**



SECOND AMENDMENT TO  
AGREEMENT REGARDING DESIGN AND CONSTRUCTION OF  
DRAINAGE AND FLOOD CONTROL IMPROVEMENTS FOR  
CHERRY CREEK AT DRANSFELDT ROAD  
TOWN OF PARKER

Agreement No. 21-05.04B  
Project No. 108515

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THIS SECOND AMENDMENT TO AGREEMENT (hereinafter called "SECOND AMENDMENT"), by and between URBAN DRAINAGE AND FLOOD CONTROL DISTRICT D/B/A MILE HIGH FLOOD DISTRICT (hereinafter called "DISTRICT") and TOWN OF PARKER (hereinafter called "TOWN"), and CHERRY CREEK BASIN WATER QUALITY AUTHORITY (hereinafter called "CCBWQA") and collectively known as "PARTIES";

WITNESSETH:

WHEREAS, PARTIES have entered into "Agreement Regarding Design and Construction of Drainage and Flood Control Improvements for Cherry Creek at Dransfeldt Road" (Agreement No. 21-05.04) dated June 23, 2021, as amended by First Amendment dated [REDACTED], (hereinafter collectively called "AGREEMENT"); and

Commented [RB1]: MHFD will fill out.

WHEREAS, PARTIES now desire to proceed with design and construction of drainage and flood control improvements for Cherry Creek at Dransfeldt Road (hereinafter called "PROJECT"); and

WHEREAS, PARTIES desire to increase the level of funding by \$3,533,721.56 which includes a transfer of \$10,341.85 from Twenty Mile Detention, Agreement 99-04.01 as Amended, a transfer of \$3,280.19 from Crown Point Detention on Cottonwood Creek at E-470 Agreement 15-02.04, a transfer of \$49,086.67 from Cherry Creek at Norton Farms Agreement 13-01.40C, a transfer of \$101,012.85 from Cherry Creek at Hess Road Agreement 10-10.05 as amended, and an additional contribution of 3,370,000.00. The total amount of additional funds authorized by this Second Amendment is \$ [REDACTED]; and

Commented [RB2]: With the funding in this IGA Amendment, the project appears to have a shortfall of about \$708k. Parker is preparing a letter to request additional funding from CCBWQA, above the \$170k in this year's budget which is the amount currently shown in this agreement. These numbers may change based on TAC and Board direction provided in response to Parker's request.

WHEREAS, Douglas County was party to the Cherry Creek at Hess Road Agreement 10-10.05 as amended but Douglas County is not Party to this Agreement. The Douglas County share of the remaining funds is not being transferred to the PROJECT but will continue to be held by the DISTRICT for use on a future Douglas County project.

Commented [RB3]: MHFD is looking to transfer remaining balances of completed projects to this one, except for Douglas County's piece of this project as they are not a partner in this project.

WHEREAS, DISTRICT's Board of Directors has authorized additional DISTRICT financial participation for PROJECT (Resolution No. 10, Series of 2023 and Resolution No. [REDACTED], Series of 2023); and

Commented [RB4]: This won't be known until MHFD takes it to their Board.

WHEREAS, the Town Council of TOWN, Board of Directors of CCBWQA, and Board of Directors of DISTRICT have authorized, by appropriation or resolution their respective shares of the PROJECT costs as defined in paragraph 4.C below.

NOW, THEREFORE, in consideration of the mutual promises contained herein, PARTIES hereto agree as follows:

1. Paragraph 4. PROJECT COSTS AND ALLOCATION OF COSTS is deleted and replaced as follows:
4. PROJECT COSTS AND ALLOCATION OF COSTS

- A. PARTIES agree that for the purposes of this AGREEMENT, PROJECT costs shall consist of and be limited to the following:
1. Final design services;
  2. Construction of improvements;
  3. Contingencies mutually agreeable to PARTIES.

B. It is understood that PROJECT costs as defined above are not to exceed ~~\$6,873,721.56~~~~\$7,270,000~~ without amendment to this AGREEMENT.

PROJECT costs for the various elements of the effort are estimated as follows:

<u>ITEM</u>	<u>AS AMENDED</u>	<u>PREVIOUSLY AMENDED</u>
1. Final Design	\$ 800,000.00	\$ 440,000
2. Construction	\$ 5,823,721.56	\$ 2,850,000
3. Contingency	\$ 250,000.00	\$ 50,000
Grand Total	\$ 6,873,721.56	\$ 3,340,000

**Commented [RB5]:** These numbers may change based on TAC and Board direction provided in response to Parker's request (see previous comment).

- C. At the request of TOWN and CCBWQA, the following MHFD, TOWN and CCBWQA funds may be transferred to PROJECT from a separate special fund held by DISTRICT:

Project Name	Twenty Mile Detention	Crown Pont Detention	Cherry Creek at Norton Farms	Cherry Creek at Hess Road	Totals
Account No	4104	5302	5614	5608	
Agreement No	99-04.01 A	15-02.04	13-01.40 C	10-10.05 C	
Total Amount	\$10,341.85	\$3280.19	\$49,086.67	\$104,019.00	
Agreement DISTRICT %	50.00%	50.00%	50.00%	48.55%	
DISTRICT \$	\$5,170.93	\$1,640.10	\$24,543.34	\$50,501.22	\$ 81,855.58
Agreement TOWN %	50.00%	50.00%	27.60%	23.56%	
TOWN \$	\$5,170.93	\$1,640.10	\$13,547.92	\$24,506.88	\$44,865.82
Agreement CCBWQA %	0%	0%	22.40%	25.00%	
CCBWQA \$	-	-	\$10,995.41	\$26,004.75	\$37,000.16
Agreement County %	0%	0%	0%	2.89%	
COUNTY \$	-	-	-	\$ 3,006.15**	
Total Special Funds Transfer					\$163,721.56

\*\* COUNTY Share of Cherry Creek at Hess Road Agreement 10-10.05C is not part of the Special Fund Transfer and is reflected for transparency only. COUNTY Share of Funds will continue to be held by DISTRICT.

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D. Based on total PROJECT costs, the maximum percent and dollar contribution by each PARTY shall be:

	<u>Percentage Share</u>	<u>Previously Contributed</u>	<u>Special Funds Transfer</u>	<u>Additional Contribution</u>	<u>Maximum Contribution</u>
DISTRICT	16.61%	\$360,000	\$81,855.58	\$700,000	\$1,141,855.58
TOWN	77.03%	\$2,750,000	\$44,865.82	\$2,500,000	\$5,294,865.82
CCBWQA	6.36%	\$230,000	\$37,000.16	\$170,000	\$437,000.16
TOTAL	100.00%	\$3,340,000	\$163,721.56	\$3,370,000	\$6,873,721.56

E. DISTRICT Acknowledges that (i) CCBWQA does not by this Agreement irrevocably pledge present cash reserves for payments in future fiscal years, and (ii) It is understood and agreed that notwithstanding any other provision contained herein to the contrary, any additional contribution obligation of CCBWQA hereunder, whether direct or contingent, shall extend only to funds duly and lawfully appropriated and encumbered by the Board of Directors of CCBWQA for the purposes of the Agreement, and paid into the Treasury of CCBWQA, and shall under no circumstances exceed \$437,000.16 without CCBWQA's prior express written consent.

**Commented [RB6]:** These numbers may change based on TAC and Board direction provided in response to Parker's request (see previous comment).

2. Paragraph 5. MANAGEMENT OF FINANCES is deleted and replaced as follows:

5. MANAGEMENT OF FINANCES

As set forth in DISTRICT policy (Resolution No. 11, Series of 1973, Resolution No. 49, Series of 1977, and Resolution No. 37, Series of 2009), the funding of a local body's share may come from its own revenue sources or from funds received from state, federal or other sources of funding without limitation and without prior DISTRICT approval.

Payment of the balance of each PARTY's full share (TOWN - \$5,294,865.82; CCBWQA - \$437,000.16; DISTRICT - \$1,141,855.58) shall, to the extent not already paid, be made to DISTRICT subsequent to execution of this AGREEMENT and within 30 days of request for payment by DISTRICT. The payments by PARTIES shall be held by DISTRICT in a special fund to pay for increments of PROJECT as authorized by PARTIES, and as defined herein. DISTRICT shall provide a periodic accounting of PROJECT funds as well as a periodic notification to TOWN of any unpaid obligations. Any interest earned by the monies contributed by PARTIES shall be accrued to the special fund established by DISTRICT for PROJECT and such interest shall be used only for PROJECT upon approval by the contracting officers (Paragraph 13).

**Commented [RB7]:** These numbers may change based on TAC and Board direction provided in response to Parker's request (see previous comment).

Within one year of completion of PROJECT if there are monies including interest earned remaining which are not committed, obligated, or disbursed, each party shall receive a share of such monies, which shares shall be computed as were the original shares; or at TOWN

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request, TOWN share of remaining monies shall be transferred to another special fund held by DISTRICT.

- All other terms and conditions of this AGREEMENT shall remain in full force and effect. WHEREFORE, PARTIES hereto have caused this SECOND AMENDMENT to be executed by properly authorized signatories as of the date and year written below.

URBAN DRAINAGE AND  
FLOOD CONTROL DISTRICT D/B/A  
MILE HIGH FLOOD DISTRICT

By \_\_\_\_\_

Name Laura A. Kroeger

Title Executive Director

Date \_\_\_\_\_

\_\_\_\_\_  
Checked By

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TOWN OF PARKER

\_\_\_\_\_  
Jeff Toborg, Mayor

Date \_\_\_\_\_

ATTEST:

\_\_\_\_\_  
Town Clerk's Office

APPROVED AS TO FORM AND SUFFICIENCY:

\_\_\_\_\_  
Town Attorney's Office

CHERRY CREEK BASIN  
WATER QUALITY AUTHORITY

\_\_\_\_\_  
CCBWQA Checked by

By \_\_\_\_\_

Name Joshua Rivero

Title CCBWQA Chairman

Date \_\_\_\_\_

\_\_\_\_\_  
Attest: John McCarty, CCBWQA Secretary

APPROVED AS TO FORM:

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

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*Your kind of place.*

## MEMORANDUM

**TO:** Cherry Creek Basin Water Quality Authority  
**FROM:** Alex Mestdagh, Engineering Services Manager Town of Parker  
**DATE:** February 24, 2023  
**SUBJECT:** Funding Request for Cherry Creek at Dransfeldt Drainage Improvement Project

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This memorandum is in regard to a drainageway improvement project along Cherry Creek within the Town of Parker, approximately 9 miles upstream of Cherry Creek Reservoir. This reach has been identified as unstable with various locations of bank erosion, receding surface flows, a disconnection of the floodplain and die-back of vegetation. A portion of the reach also requires a minor realignment to accommodate the hydraulics of a future roadway crossing. This project proposes the installation of channel improvements such as boulder drop and riffle structures, hard and soft bank stabilization, redefining the active channel, wetland reestablishment, and riparian enhancement. More than 50,000 wetland plugs and willow stakes are proposed for the replacement of damage wetlands, creation of new wetlands, and enhancement of the riparian corridor.

The Town of Parker, the Mile High Flood District (MHFD), and Cherry Creek Basin Water Quality Authority (Basin Authority) entered into an intergovernmental agreement (IGA) on June 7<sup>th</sup>, 2021 to fund the design of the project and amended the agreement on December 5<sup>th</sup>, 2022 to fund a portion the construction costs for the project. It is intended that this IGA be amended again in 2023 to fund the remaining portion of construction. This proposed amendment would result in the following final contribution amounts to the project: Town of Parker - \$5,294,865.82 (77.03%), MHFD - \$1,141,855.58 (16.61%), and Basin Authority – \$437,000.16 (6.36%).

Due to abnormally high inflation of construction material costs, it is anticipated that this project will have a budget shortfall of approximately \$400,000. To illustrate the scale of material inflation in the last year, the cost inflation of diesel fuel, concrete, and rock have averaged somewhere between 5%-25% year-over-year between 2015 and 2021. Between 2021 and 2022 the price of these materials has jumped between a range of 25%-85% in a single year, heavily impacting the cost of moving earth, rebuilding trail, and installing stabilization measures.

The Town of Parker and Mile High Flood District have exhausted all available budgets for their 2023 contributions. The Town of Parker would like to request that the Authority consider additional contributions to help complete

funding for construction. This project is currently being funded by the Authority at a low participation rate among projects within the basin, and additional contributions by the Authority would still leave this project in line with typical participation rates. This project is one in a series of stabilization projects on Cherry Creek that the Town of Parker has planned, and we feel these projects will result in a significant benefit to the water quality of Cherry Creek and the Cherry Creek Reservoir. We respectfully request the TAC and Board's consideration of this request.

Thank you for your sincere consideration,

A handwritten signature in black ink, appearing to read 'Alex Mestdagh', written in a cursive style.

Alex Mestdagh, P.E.

Engineering Services Manager, Town of Parker



To: CCBWQA TAC  
From: Jane Clary, Technical Manager  
Date: February 28, 2023  
Subject: 2023 Subcommittees

**Request:** That the TAC form two subcommittees to work with Staff to 1) identify next steps for both watershed and reservoir models, and 2) provide direction and input on a watershed plan update. These committees will be known as the Modeling Subcommittee and the Watershed Plan Subcommittee. Additionally, Board member participation on these subcommittees is requested.<sup>1</sup>

**Background:** CCBWQA has completed watershed and reservoir models during the past five years, as well as a watershed plan in 2012. Additional action is needed regarding the models and the watershed plan. Direction on these issues is better suited to more in-depth, smaller group interactive discussion that can occur in subcommittees. Recommendations from these subcommittees can then be directed back through the TAC and Board for further action. Both of these subcommittees would provide direction and input to CCBWQA staff and consultants to ensure that the direction taken on models and the watershed plan is consistent with CCBWQA objectives and priorities.

Key [technical references](#) for the subject matter for these committees are included in the Board Binder.

See more information on [committees](#) in the Board Binder.

**Topics to Be Addressed by Each Subcommittee:**

Modeling Subcommittee

- Review RESPEC's recommendations for additional model runs and other potential model runs.
- Prepare technical direction for watershed model runs.
- Review necessary steps for watershed-reservoir model linkage to ensure future reservoir model runs are supported.
- Identify reservoir models runs requested for late 2023 or 2024.
- Other items as identified by the Subcommittee, TAC or Board.

Watershed Subcommittee

- Review existing watershed plan and develop an outline for a watershed plan update.
- Identify missing content that needs to be developed to support update to the watershed plan in 2024.
- Provide feedback to staff on initial work on the watershed plan.
- Participate in the September 2023 Watershed Plan Workshop.
- Other items as identified by the Subcommittee, TAC or Board.

*Note: initial work on the watershed plan update has been completed by staff.*

**Process and Time Commitment:** Two to four meetings of each subcommittee are envisioned for 2023. The meetings may be held virtually, in-person or hybrid, depending on the preference of the subcommittee members.

**Budget:** Staff participation and support of these committees is covered under the approved budget for year 2023.

**Committee Members:** To be determined based on TAC and Board interest and expertise.

**Proposed Motion:** The CCBWQA TAC moves to form a Models Subcommittee and a Watershed Plan Subcommittee and requests participation of two Board members on each Subcommittee.

**Next Steps:** Identify TAC and Board participants on each subcommittee, refine committee objectives and develop meeting schedule. The Technical Manager and Administrative Assistant will provide facilitation and administrative support for the subcommittees. CCBWQA staff and contractor support will vary depending on the subject matter of the subcommittee.

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<sup>1</sup> These two subcommittee topics were supported in discussion at the February Board meeting. Following the Board meeting, additional input from several TAC, Board and TAC members has resulted in a recommendation that these committees be formed as TAC Subcommittees with Board participation, rather than vice versa due to the technical subject matter. At the March Board meeting, this approach will be clarified.

The Board also provided direction to phase committees/subcommittees over time (i.e., don't start them up until they are needed). An additional Board Committee or TAC Subcommittee may be requested later this year for input on the Capital Improvements Program.



## MEMORANDUM

To: CCBWQA Technical Advisory Committee (TAC)  
From: Richard Borchardt, Pollution Abatement Project Manager  
Date: March 2, 2023  
Subject: Pollution Abatement Project/Capital Improvement Program Budget and Schedule Update

**Update:** The Authority's 2023 CIP budget also includes \$2,111,000 for East Shade Shelters, Cherry Creek at Arapahoe (R 3-4), and McMurdo Gulch projects. It is likely that these projects will be delayed past 2023 due to partner funding constraints and/or revised schedules. Attachment 1 shows the projected funding currently.

CCBWQA received a request from Parker for additional funding for the Cherry Creek at Dransfeldt project (Project). Attachment 2 shows that an increase in CCBWQA's 2023 funding from \$170k to \$278k (for a total contribution of \$508k) could be supported by cost adjustment from ENR's Building Cost Index.

Attachment 2 includes unit cost analysis (\$/# of phosphorus) of 3 projects in final design and the 3 most recent construction priced projects. The analysis of these 6 projects support an average unit cost of \$6,352 per pound of phosphorus. Attachment 3 shows with a unit cost of \$6,352 an increase in CCBWQA's 2023 funding from \$170k to \$625k (for a total contribution of \$1025k).



CCBWQA's 2023 - Febuary Update

Projects in final design with recent engineering cost estimates

Costs are Based on Engineer's Estimate and adjusted by ENR's adjustment factor  
 Use updated costs based on Value Engineering and CEI's estimate

Project No.	Project Title	Water Quality Benefit (# of Phosphorus annual reduction)	Unit Cost (\$/# of Phosphorus)	Linear Feet	Estimated Cost per Linear Foot	Engineering Cost	Engineer's Estimate for Construction	Date	ENR Factor	Updated Project Costs as of 2/17/23	CCBWQA Prior Year Contributions	2023 Budget Amount	CCBWQA's Total Project Participation	CCBWQA's % Participation in Project	Adjust 2023 Budget for inflation using ENR BCI Index (period 8/20 to 2/23, factor is 1.27)
CCB-5.17	Cherry Creek Stream Reclamation - U/S Scott Road (Douglas County)	73	\$ 4,864	4300	\$ 1,304	\$ 656,075	\$ 4,583,773	Feb-22	1.07	\$ 5,606,637	\$ 900,000	\$ -	\$ 900,000	16%	\$ 243,000
CCB-5.17.1B	Cherry Creek Stream Reclamation - at Dranfheldt Extension (Parker)	41	\$ 11,596	2350	\$ 3,109					\$ 7,306,000	\$ 230,000	\$ 170,000	\$ 400,000	5%	\$ 278,000
CCB-21.3	Lone Tree Creek in CCSP upstream of Pond (Done in conjunction with Centennial Trail Project)	12	\$ 2,206	710	\$ 650		\$ 448,000	May-22	1.03	\$ 461,440	\$ -	\$ 112,000	\$ 112,000	24%	\$ 142,240
Average =			\$ 6,222												

Projects with recent construction prices

Project cost and CCBWQA's contribution were adjusted using Index

Project No.	Project Title	Water Quality Benefit (# of Phosphorus annual reduction)	Unit Cost (\$/# of Phosphorus)	Linear Feet	Cost per Linear Foot	Actual Total Construction Cost	Date	ENR Factor	Updated Project Costs as of 2/23	CCBWQA Prior Year Contributions	2023 Budget	CCBWQA Actual Contributon	CCBWQA's Equivalent Participation as of 2/23	CCBWQA's % Participation in Project
CCB-5.17.1A	Cherry Creek at McCabe Meadows Trail Head (aka KOA)	26	\$ 5,222	1550	\$ 1,400	\$ 1,750,000.00	Dec-20	1.24	\$ 2,170,000			\$ 323,000	\$ 400,520	18.46%
CCB-22..2	Happy Canyon Creek Upstream of I-25 (MHFD)	51	\$ 6,765	3000	\$ 1,814				\$ 5,441,000	\$ 500,000	\$ -		\$ 500,000	9.19%
CCB-23.2	Dove Creek Otero to Chambers Rd. (SEMSWA)	24	\$ 7,460	1300	\$ 2,000				\$ 2,600,000	\$ 100,000	\$ 138,000		\$ 238,000	9.15%
Average =			\$ 6,482											
Average of Current Projects and Bid Projects=			\$ 6,352											

	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	AB
1	<b>CHERRY CREEK BASIN WATER QUALITY AUTHORITY</b>																										
2	<b>TABLE 1 - SUMMARY OF POTENTIAL POLLUTANT REDUCTION FACILITIES</b>																										
3	<b>REVISIONS FOR 2023 CIP</b>																										
4	<b>Date: November 11, 2022</b> <b>Color Code:</b> <ul style="list-style-type: none"> <li><span style="color: blue;">Blue:</span> Project Completed</li> <li><span style="color: green;">Green:</span> Planned for design/construction during 5-year period</li> <li><span style="color: red;">Red:</span> See 2021 CIP Notes for changes to this Spreadsheet</li> </ul>																										
8	Project cost updated to \$7,306k based on CEI's 90% pricing, maintaining CBWQA's 2023 funding of \$170k for a total project cost of \$400k																										
9	Project cost updated to \$7,306k based on CEI's 90% pricing, increased CBWQA's 2023 funding of \$570k for a total project cost of \$800k																										
10	Adjusted project cost to \$4,100k based on unit cost (\$/pound) of \$6,350 which is consistent with analysis of recent projects																										

Proj. Designation	Project Title	Status	Description	Design Basis				Projected Loads				Projected Treatment			Cost Estimate (1000\$)							Unit Cost (\$/pound)		Note			
				PRF Type	Quantity	Unit	Rate	Volume	Rate	Total	Source	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				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)				
43	CCB-5.17.1B	Cherry Creek Stream Reclamation at Dransfeldt	Design in 2021, Construction in 2023	Local stream stabilization (L=2400 ft original)	0.45	mi			100	lbs/mi	45	lbs/yr	Storm Flow	90%	41	lbs/year	\$ 6,010	\$ -	\$ -	\$ -	60	\$ 382	7%	\$400	\$ 9,340	\$ 622	2,3
44	CCB-5.17.1B	Cherry Creek Stream Reclamation at Dransfeldt	Design in 2021, Construction in 2023	Local stream stabilization (L=2400 ft original)	0.45	mi			100	lbs/mi	45	lbs/yr	Storm Flow	90%	41	lbs/year	\$ 7,306	\$ -	\$ -	\$ -	73	\$ 464	5%	\$400	\$ 11,354	\$ 622	2,3
45	CCB-5.17.1B	Cherry Creek Stream Reclamation at Dransfeldt	Design in 2021, Construction in 2023	Local stream stabilization (L=2400 ft original)	0.45	mi			100	lbs/mi	45	lbs/yr	Storm Flow	90%	41	lbs/year	\$ 7,306	\$ -	\$ -	\$ -	73	\$ 464	11%	\$800	\$ 11,354	\$ 1,243	2,3
46	CCB-5.17.1B	Cherry Creek Stream Reclamation at Dransfeldt	Design in 2021, Construction in 2023	Local stream stabilization (L=2400 ft original)	0.45	mi			100	lbs/mi	45	lbs/yr	Storm Flow	90%	41	lbs/year	\$ 4,100	\$ -	\$ -	\$ -	41	\$ 261	25%	\$1,025	\$ 6,372	\$ 1,593	2,3

97	<b>BASIS FOR ANALYSIS:</b>																										
98	(A) Unit cost of phosphorus removal based on annualized cost of completed project over 35 years at 4% interest rate. <span style="color: red;">CRF = 0.053577</span>																										
99	(B) All projects identified provide for additional phosphorus immobilization beyond minimum requirements, unless noted otherwise.																										
100	<b>2023 CIP NOTES:</b>																										
101	1. Assumed that augmentation for consumptive use not required																										
102	2. Augmentation for naturally established wetlands not required (assumption)																										
103	3. Phosphorus Estimated based on Interim Stream Reclamation Paper																										
104	4. See 2020 Cattail Harvesting Pilot Project Memo. Phosphorus estimated based on SEMSWA 2020 Data.																										
105	5. Pond updates to bring up to current standards and to facilitate maintenance. No phosphorus calculation provided, since ponds already exist.																										
106	6																										
107	7																										
108	8. Water costs at <span style="color: blue;">\$</span> 6,500 per acre foot																										
109	9. Present worth of capital replacement																										
110	11. Land acquisition and water augmentation not defined. CWSD\ACWWA JWPP project influenced scope of project.																										
111	12. Total Phosphorus loading derived from laboratory sediment samples & Stantec Geomorphic Study BANCS analysis.																										
112	15. Estimate based on costs for similar work along East Shoreline dating back to 1996																										
113	16. Benefit approximated based on other shoreline projects and estimates																										
114	17. Loads and performance based on calculations for 3 McMurdo Gulch ponds.																										
115	18. SEO opined that ET must be augmented. Also, recent Reservoir fluctuations may render project infeasible. Placed on indefinite hold.																										
116	19. Approach was shifted to focus on stream reclamation (CCB-5.14) and reduction of sediment and nutrient sources from erosion.																										
117	20. Joint project with CCSP. Integrate design with Dog Park uses and improvements.																										
118	Estimate based on similar stream stabilization projects																										
119	21. Phosphorus: Shoreline 177 lbs/yr + Parking Lot 2 lbs/yr = 179 lbs/yr																										
120																											
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**REFERENCES**

- Muller Eng 2003. *Feasibility Evaluation for Cherry Creek State Park Wetlands Project*
- Muller Eng 2003. *Feasibility Evaluation for Cottonwood Creek Stream Stabilization Project*
- AMEC 2005. *Draft Feasibility Report Cherry Creek Reservoir Destratification*
- AMEC 2006. *Recommendations for Prepurchase of Jamor Equipment for Cherry Creek Reservoir Destratification Project.*
- Tetra Tech August 2006. *Phosphorus Estimates in Cherry Creek and Cost for Removal via Sediment Trap.*
- WERF 2000. *Phosphorus Credit Trading in the Cherry Creek Basin: An Innovative Approach to Achieving Water Quality Benefits.*
- Ruzzo, WP September 5, 2003. *Cherry Creek Corridor Master Plan-Estimate of Phosphorus Reduction from Stream Reclamation*
- Ruzzo, W. P. September 21, 2006. *Cottonwood Creek Reclamation - Water Rights Augmentation Requirements.*
- TetraTech December 2006. *Design of Cherry Creek Sediment Basin and Stream Stabilization.*
- Brown and Caldwell Feb 2007. *Shop Creek Wetlands Pollutant Reduction Facility Wetland Assessment*
- PBSJ October 2006. *Draft McMurdo Gulch Major Drainageway Master Plan*
- Brown and Caldwell 2010. *Cherry Creek Stream Reclamation at Shop Creek Trail.*
- CCBWQA TAC June 16, 2011. *Stream Reclamation Water Quality Benefit Evaluation Interim Status Report*
- Ruzzo Memo, September 4, 2013, *West Shade Shelter Shoreline Stabilization PRF - Water Quality Analysis.*