



**Cherry Creek Basin Water Quality Authority
Technical Advisory Committee Meeting Agenda
Thursday, May 2, 2024, 9:00 a.m.**

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**

TAC Meeting Documents can be found online at the link below.

<https://drive.google.com/drive/folders/12BoEhmFbnnMCxivnpjY2l7T5TzP8Azlq?usp=sharing>

1. Call to Order (9:00) (5 minutes)
2. Meeting Minutes from April 4, 2024 (enclosed)
3. Highlights from the April 18, 2024 Board Meeting and Watershed Plan Workshop (Clary) (9:05) (5 minutes)
4. Action Items (9:10) (20 minutes)
 - a. Recommendation on Piney Creek Reaches 4-5 Agreement (Loewen, enclosed)
 - b. Recommendation on Cherry Creek at Arapahoe Road Agreement (Loewen, enclosed)
 - c. Recommendation on Site Application for Castle Pines North Lift Station No. 1 (Goncalves, enclosed)
5. Discussion Items (9:20) (60 minutes)
 - a. Update on Reservoir Model (Hawley, enclosed)
 - b. Wetland Harvesting Update (Stewart, enclosed)
 - c. Cherry Creek Flow Monitoring Upstream of Reservoir (Stewart)
 - d. Watershed Plan Follow-up (Clary)
6. Presentations (none)
7. TAC Member Updates (As Needed)
8. Updates (20 minutes)
 - a. Manager (Clary)
 - i. Runoff Reduction Report Status Update
 - b. Cherry Creek Stewardship Partners (Davenhill)
 - i. Conference Planning
 - c. [TAC Subcommittees](#) (As Needed)
 - i. Modeling Subcommittee
 - ii. Watershed Plan Subcommittee
 - iii. Cherry Creek Reach 1 Reservoir to Lakeview Drive Alternatives Analysis Subcommittee
 - iv. CIP Subcommittee
 - v. Lone Tree, Windmill, and Cottonwood Creek Subcommittee
 - a. Update TAC that this Subcommittee is closed
 - d. Contractors (As Needed)
 - i. [Water Quality Update](#) (Stewart)
 - ii. Pollution Abatement Projects - CIP Status Report (Loewen, enclosed)
 - a. Cherry Creek Reach 1 Alternatives Analysis
 - iii. In-Park PRF and RDS Maintenance and Operations (Goncalves)
 - a. RDS system activated April 16, 2024
 - b. Perimeter Pond cleanout
 - iv. Regulatory (DiToro)
 - a. Update on the 10-Year Water Quality Roadmap Feasibility Subgroup

v. [Land Use Referral Tracking](#) (Endyk)

9. Adjournment

[Board Binder](#) and [2024 Timeline](#)



**Cherry Creek Basin Water Quality Authority
Minutes of the Technical Advisory Committee Meeting
Thursday, April 4, 2024, 9:00 a.m.**

TAC Members Present

Alex Mestdagh, Town of Parker
Ashley Byerley, TAC Vice Chair, SEMSWA (representing the City of Centennial)
Caitlin Gappa, Board Appointee, Douglas County Health Department (zoom)
Casey Davenhill, Board Appointee, Cherry Creek Stewardship Partners (zoom)
Cayla Cappello, City of Greenwood Village
Diana Rashash, Board Appointee, Arapahoe County Public Health
Gene Seagle, US Army Corps of Engineers
Jacob James, City of Lone Tree
Jim Watt, Board Appointee, Mile High Flood District
Joseph Marencik, City of Castle Pines
Jon Erickson, Board Appointee, Colorado Parks and Wildlife (zoom)
Kat Hoffman, CDOT - Alternate (zoom)
Lisa Knerr, TAC Chair, Arapahoe County
Michelle Seubert, Board Appointee, Cherry Creek State Park (zoom)
Rebecca Tejada, Board Appointee, Special Districts, Parker Water and Sanitation District
Rick Goncalves, Board Appointee
Ryan Adrian, Douglas County (zoom)

Board Members Present

Bill Ruzzo, Assistant Secretary, Governor's Appointee
Tom Downing, Governor's Appointee (zoom)

Others Present

Alan Leak, RESPEC
Elysa Loewen, Loewen Engineers
Erin Stewart, LRE Water
Jane Clary, Wright Water Engineers, CCBWQA Technical Manager
Jessica DiToro, LRE Water
Tim Flynn, Collins Cole Flynn Winn & Ulmer, PLLC (zoom)
Val Endyk, CCBWQA
John Yager, Muller Engineering
Jim Willimen, Muller Engineering
Cody R. Volt, Muller Engineering
Mike Tilko, Mott MacDonald
Shawn Krier, CPW

1. Call to Order

Lisa Knerr called the meeting to order at 9:00 am.

2. Meeting Minutes from March 7, 2024

Rick Goncalves moved to approve the March 7, 2024 meeting minutes. Seconded by Cayla Cappello. The motion carried.

3. Highlights from the March 21, 2024 Board Meeting

Jane Clary provided an update on actions taken at the March 21, 2024 Board meeting. Minutes from the meeting can be found [here](#).

4. Action Items

a. Recommendation on Happy Canyon Creek at Jordan IGA Amendment (Loewen, enclosed)

Elysa Loewen provided the TAC with an [Action Item Memo](#) detailing the Happy Canyon Creek at Jordan Road project. The Project is along Happy Canyon Creek near Jordan Road beginning downstream at the Confluence with Cherry Creek to the upstream limits of the project at the Douglas County line. It is a partner project with MHFD and SEMSWA with MHFD as the project lead. It is estimated that this 0.85-mile-long project will immobilize 77 pounds of phosphorus annually. The sediment deposition within the channel, especially from Jordan Road to the Cherry Creek confluence has increased annually and more significantly after Spring 2023 events (see photos in AIM). A site walk was completed by the project stakeholders in January 2024 to observe the conditions and discuss the assessment/study completed by Jacobs (the consultant); the project is moving forward with preparing alternative analysis for conceptual design. Project funding was included in CCBWQA's 2024 Budget. A draft of the [IGA Amendment](#) was included in the TAC packet.

Rick Goncalves moved that the TAC recommends that the Board authorize the execution of the IGA Amendment for Stream Improvements at Happy Canyon Creek pending satisfactory resolution of CCBWQA's comments, if any, with an expenditure not to exceed \$50,000 for 2024. Seconded by Jacob James. The motion carried.

b. Recommendation on [Appendix H](#) of the March 2024 Cherry Creek Southwest Tributaries Major Drainageway Plan: Cottonwood, Lone Tree, Windmill, and Dove Creeks (Clary, link attached)

i. CCBWQA-funded Portion of Plan in Cherry Creek State Park (Appendix H)

ii. Dropbox Link to Overall Lone Tree, Windmill, Dove and Cottonwood Major Drainageway Plan: [Final Report - Dropbox](#) (for broader context only)

Jane Clary reported that Wright Water Engineers, Inc., addressed stakeholder comments received on the draft "Appendix H" of the Cherry Creek Southwest Tributaries Major Drainageway Plan: Cottonwood, Lone Tree, Windmill, and Dove Creeks, with links provided in the TAC packet. Jane provided an opportunity for additional input and discussion on the project and requested that the TAC recommend acceptance of the report, given no additional comments.

Ashley Byerley moved that the TAC recommends that the Board accept "Appendix H Cherry Creek State Park" of the March 2024 Cherry Creek Southwest Tributaries Major Drainageway Plan: Cottonwood, Lone Tree, Windmill, and Dove Creeks. Seconded by Joseph Marencik. The motion carried.

5. Discussion Items (9:20) (45 minutes)

a. Muller Engineering on Cherry Creek Reach 1 Alternatives Analysis (John Yager, links attached)

i. Alternative Exhibits

a. [Alternative 1](#)

b. [Alternative 2](#)

c. [Alternative 3](#)

d. [SMS Velocity Results Alternative 2](#)

ii. Conceptual Level [Cost Estimate](#) for Each Alternative

iii. Existing Conditions [Site Map](#) and [Photo Log](#)*

iv. Summary Tables for the [Water Quality Assessment of Alternatives](#)*

v. [Cost Benefit Analysis](#) (matrix and summary of pros, cons, and costs)*

John Yager and Jim Wulliman, with Muller Engineering, [presented](#) the Cherry Creek Reach 1 Alternatives Analysis (links above) to the TAC and provided an opportunity for discussion and questions.

Discussion included:

- The TAC will have the opportunity to review a Draft Alternatives Report and provide feedback and a recommendation to the CCBWQA Board.
- The project alternatives generally include creating a stable main channel, with secondary and tertiary flow paths for higher flows. The project will also help reduce the current incised eroded deep channel and activate adjacent riparian areas for additional water quality benefits.
- Configuration of culverts under Lakeview Drive is an important aspect of the project, but the initial phase of the project will try to minimize improvements to Lakeview Drive due to cost. The project will also need to include some work on Shop Creek.
- The estimated phosphorus load reduction benefit of this project ranges from 1700 to 3000 pounds per year when considering channel stabilization and floodplain reconnection benefits.
- Given the substantial cost of the project, Muller is working to identify the “minimum” first phase of the project.
- Gene Seagle noted that the project timeline should include ample time for Section 404 and 408 permitting (estimated 9 months to 1 year).
- CCBWQA is working on grant funding for this project and requested Muller provide additional phasing options and risks of possible phasing as CCBWQA works with partners to fund the project.
- Cherry Creek State Park has funding available for trail projects, but the overall project is not currently included in the Park’s 5-year CIP.

6. Presentations (10:05) (20 minutes)

a. Wetland Harvesting Update

Moved to May TAC Meeting

7. TAC Member Updates (As Needed)

8. Updates (20 minutes)

a. Manager (Clary)

i. Congressionally-Directed Spending Submittal for Cherry Creek Reach 1 (Clary, enclosed)

An application for Congressionally Directed Spending to support the Cherry Creek Reach 1 project was submitted to Senators Bennett and Hickenlooper. Letters of support were provided by the City of Centennial, Arapahoe County and the U.S. Army Corps of Engineers.

ii. Status Update on Other Funding Sources for Cherry Creek Reach 1

Staff have participated in several calls to explore additional grant funding sources to support the project, including a call with the Colorado Water Conservation Board and GOCO. Staff are coordinating with legal counsel to better understand TABOR implications for grant funds.

iii. Watershed Planning Workshop - April 18, 2024 8:30-11:30 am

iv. Progress Update on the Reservoir Model

Hydros will provide an update on the linked watershed-reservoir model at the May 2024 TAC meeting.

b. Cherry Creek Stewardship Partners (Davenhill)

i. Conference Planning

[May 18, 2024 Be Dam Aware](#) Event

c. [TAC Subcommittees](#) (As Needed)

i. Modeling Subcommittee

ii. Watershed Plan Subcommittee

iii. Cherry Creek Reach 1 Reservoir to Lakeview Drive Alternatives Analysis Subcommittee

iv. Lone Tree, Windmill, and Cottonwood Creek Subcommittee (Recommended closure)

v. CIP Subcommittee

d. Contractors (As Needed)

- i. [Water Quality Update](#) (Stewart)
- ii. **Pollution Abatement Projects - CIP Status Report** (Loewen, enclosed)
- iii. **In-Park PRF and RDS Maintenance and Operations** (Goncalves)

RDS startup scheduled for April 15, 2024.

- iv. **Regulatory (DiToro)**
- v. [Land Use Referral Tracking](#) (Endyk)

9. **Adjournment**

[Board Binder](#) and [2024 Timeline](#)



ACTION ITEM MEMORANDUM

To: CCBWQA Technical Advisory Committee (TAC)
From: Elysa Loewen, Pollution Abatement Project Manager
Date: May 2, 2024
Subject: Piney Creek Reaches 4 & 5 IGA

Request: *Move that the TAC recommends that the Board authorize the execution of the IGA for Stream Improvements at Piney Creek Reaches 4 & 5 pending satisfactory resolution of CCBWQA's comments, if any, with an expenditure not to exceed \$75,000 for 2024 and project transfer of 11,023.13 from Piney Creek at Caley Avenue Project excess funds.*

Project/Issue:

The Project is located on Piney Creek upstream of Orchard Road and approximately 2,000-ft downstream of the Tower Road crossing in the City of Centennial and Arapahoe County (Project) see figure in the **Enclosure**. This reach of Piney Creek is just over 2.2 miles upstream of the confluence with Cherry Creek within the State Park. It is a partner project with the Mile High Flood District (MHFD) and Southeast Metro Stormwater Authority (SEMSWA); MHFD is the project lead. The proposed stream reclamation benefits the water quality in Piney Creek and the Cherry Creek Reservoir by reducing bed and bank erosion which immobilizes Phosphorus in the adjacent soils. It is estimated that this 0.72 mile long-project will immobilize 65 pounds of phosphorus annually.



Figure 1: *Upstream at approximately 500ft downstream of upstream project limits.*



Figure 2: *Looking Downstream at approximately 500ft downstream of upstream project limits.*

Funding:

The IGA for Piney Creek Reaches 4 & 5 would include funding of \$300,000.00 (\$75,000 CCBWQA which is in the 2024 approved budget, \$150,000 MHFD \$75,000 SEMSWA) and additional funding from a transfer of leftover funding from Piney Creek at Caley Avenue Project of \$81,131.15 (\$11,023.13 CCBWQ, \$24,672.90 MHFD \$45,435.12 SEMSWA). The IGA would include total funding of \$381,131.15. The table below provides a breakdown of funding by sponsors and shows CCBWQA's participation is 22.5% which is consistent with the limit historically used on partner projects. IGA Amendments are anticipated to bring in future funding from the sponsors' capital improvement programs which currently include funding through 2033.

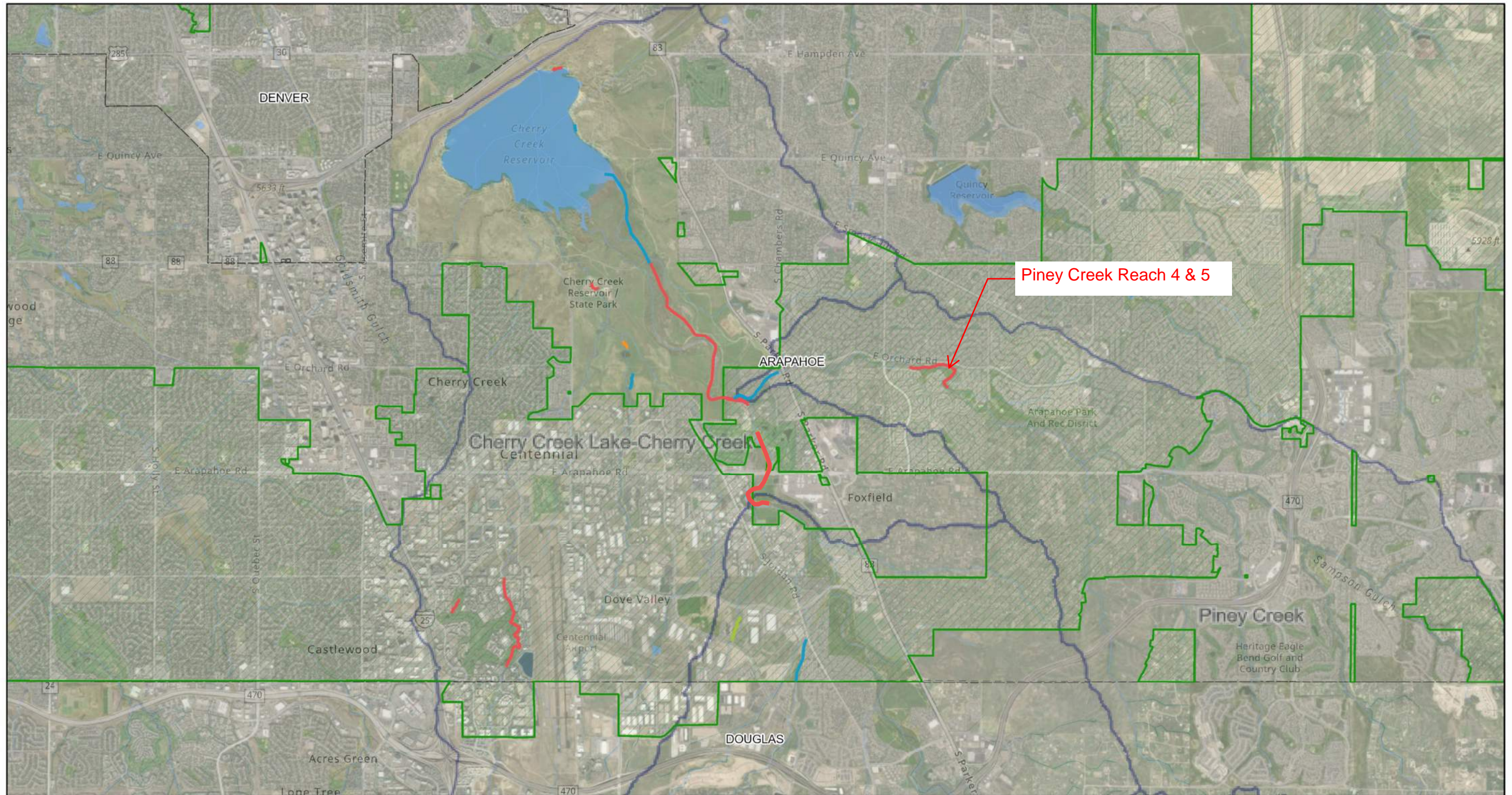
Funding Source	Funding Contributions for 2024	Additional Funding (Transfer from Leftover Funds at Piney Creek and Orchard Project)	Planned Contributions + Past Project Fund Transfer	Project Sponsor %
MHFD	\$150,000	\$24,672.90	\$174,672.90	45.8%
SEMSWA	\$75,000	\$45,435.12	\$120,435.12	31.6%
CCBWQA	\$75,000	\$11,026.13	\$86,026.13	22.6%
Total	\$300,000	\$81,134.15	\$381,134.15	100%

Budget: The Project is within CCBWQA’s 2024 Budget of \$75,000 Additionally leftover funding in the Total amount of \$81,134.15 (CCBWQA share of \$11,026.13) from the previous upstream project (Piney Creek at Caley Avenue Project) will be utilized to help fund this project.

Motions: *Move that the TAC recommends that the Board authorize the execution of the IGA for Stream Improvements at Piney Creek Reaches 4 & 5 pending satisfactory resolution of CCBWQA’s comments, if any, with an expenditure not to exceed \$75,000 for 2024 and project transfer of 11,023.13 from Piney Creek at Caley Avenue Project excess funds.*

Enclosure: Project Location Exhibit

Cherry Creek Basin

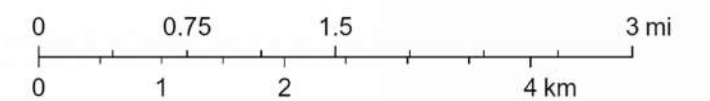


4/22/2024, 11:38:38 AM

CCB PAP Projects - MASTER

- Pre-Design
- Design
- Construction
- Planning

1:75,000



Esri, NASA, NGA, USGS, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, City of Aurora, CO, City of Centennial, County of Arapahoe, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, USFWS

AGREEMENT REGARDING
DESIGN AND CONSTRUCTION
OF DRAINAGE AND FLOOD CONTROL IMPROVEMENTS FOR
PINEY CREEK AT ORCHARD ROAD

Agreement No. TBD
Project No. 110081

THIS AGREEMENT, by and between URBAN DRAINAGE AND FLOOD CONTROL DISTRICT D/B/A MILE HIGH FLOOD DISTRICT (hereinafter called "DISTRICT"), SOUTHEAST METRO STORMWATER AUTHORITY (hereinafter called "SEMSWA"), and CHERRY CREEK BASIN WATER QUALITY AUTHORITY (hereinafter called "CCBWQA"). SEMSWA and CCBWQA shall singularly and collectively be known as PROJECT SPONSOR. PROJECT SPONOR and DISTRICT shall collectively be known as "PARTIES";

WITNESSETH:

WHEREAS, DISTRICT, in a policy statement previously adopted, (Resolution No. 14, Series of 1970 and Resolution No. 11, Series of 1973) expressed an intent to assist public bodies which have heretofore enacted floodplain regulation measures; and

WHEREAS, PARTIES participated in a joint planning study titled "Piney Creek Major Drainageway Plan, by WRC Engineering, INC., dated February 2012 (hereinafter called "PLAN"); and

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

WHEREAS, DISTRICT has adopted at a public hearing a Five-Year Capital Improvement Program (Resolution No. 90, Series of 2023) for drainage and flood control facilities in which PROJECT was included in the 2024 calendar year; and

WHEREAS, DISTRICT has heretofore adopted a Special Revenue Fund Budget for calendar year 2024 subsequent to public hearing (Resolution No. 87, Series of 2023) which includes funds for PROJECT; and

WHEREAS, PARTIES completed the Piney Creek at Caley Avenue, Project No. 100363, Account No. 5605, Agreement No. 06-08.03 as amended, and desire to transfer the remaining balance to PROJECT; and

WHEREAS, DISTRICT's Board of Directors has authorized DISTRICT financial participation for PROJECT (Resolution No. 39, Series of 2024); and

WHEREAS, the governing board (officials) of PROJECT SPONSOR has budgeted, by appropriation or resolution, all of its share of PROJECT costs; and

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

Part 1

1.01 SCOPE OF AGREEMENT

This Agreement defines the responsibilities and financial commitments of PARTIES with respect to PROJECT.

CCBWQA does not have floodplain authority, property ownership interest or maintenance responsibility for PROJECT and therefore shall not be subject to the requirements of Section 2.01, 2.02, and 2.03 of this Agreement.

1.02 SCOPE OF PROJECT

A. Final Design. PROJECT shall include the final design of improvements in accordance with the recommendations defined in PLAN. Specifically, the final design of facilities shall extend from approximately E. Lake Avenue (extension) to S. Buckley Road, as shown on Exhibit A, attached hereto and incorporated by this reference.

B. Construction. PROJECT shall include construction by DISTRICT of the drainage and flood control improvements as set forth in the final design including vegetation establishment.

1.03 PUBLIC NECESSITY

PARTIES agree that the work performed pursuant to this Agreement is necessary for the health, safety, comfort, convenience, and welfare of all the people of the State, and is of particular benefit to the inhabitants of PARTIES and to their property therein.

1.04 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 \$381,134.15 without amendment to this Agreement.

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

<u>ITEM</u>	<u>AMOUNT</u>
1. Final Design	\$ 381,134.15
2. Construction*	\$ -
3. Contingency	\$ -
Grand Total	\$ 381,134.15

* It is anticipated that funds for construction shall be added to this Agreement at a future date.

This breakdown of costs is for estimating purposes only. Costs may vary between the various PROJECT elements without amendment to this Agreement provided the total expenditures do not exceed the maximum contribution by all PARTIES plus accrued interest, if applicable.

- C. At the request of PROJECT SPONSOR, the following funds will be transferred to PROJECT from a separate special fund held by DISTRICT:

Transfer from: Piney Creek at Caley Avenue

Project No. 100263 Account No. 5605 Agreement No. 06-08.03

Amount: \$81,134.15 (SEMSWA - \$45,435.12; CCWQBA - \$ 11,026.13; DISTRICT - \$24,672.90)

DISTRICT's Board of Directors has authorized Special Funds Transfer of DISTRICT funds for PROJECT (Resolution No. 39, Series of 2024)

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

	<u>Percentage Share</u>	<u>Capital Funds Contribution</u>	<u>Special Funds Transfer</u>	<u>Maximum Contribution</u>
DISTRICT	45.83%	\$150,000	\$24,672.90	\$174,672.90
SEMSWA	31.60%	\$75,000	\$45,435.12	\$120,435.10
CCBWQA	22.57%	\$75,000	\$11,026.13	\$86,026.13
TOTAL	100.00%	\$300,000	\$81,134.15	\$381,134.15

1.05 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 PROJECT SPONSOR'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 each party's full share (SEMSWA - \$120,435.10; CCBWQA - \$86,026.13; DISTRICT - \$174,672.90) shall 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 accounting of PROJECT funds as well as a notification to PROJECT SPONSOR of any unpaid obligations upon request. 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 2.05).

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

1.06 FINAL DESIGN

The contracting officers for PARTIES, as defined under Paragraph 2.05 of this Agreement, shall select an engineer mutually agreeable to PARTIES. DISTRICT shall contract with selected engineer and shall supervise and coordinate the final design including right-of-way delineation subject to approval of PROJECT SPONSOR. Payment for final design shall be made by DISTRICT as the work progresses from the PROJECT fund established as set forth above.

Final design services shall consist of, but not be limited to, the following:

- A. Preparation of a work plan schedule identifying the timing of major elements in the design;
- B. Preparation of detailed construction plans and specifications;
- C. Preparation of an estimate of probable construction costs of the work covered by the plans and specifications; and
- D. Preparation of an appropriate construction schedule.

DISTRICT shall provide any written work product by the engineer to PROJECT SPONSOR.

1.07 MANAGEMENT OF CONSTRUCTION

- A. Costs. Construction costs shall consist of those costs as incurred by the contractor(s) including detour costs, licenses and permits, utility relocations, and construction related engineering services as defined in Paragraph 1.04 of this Agreement.
- B. Construction Management and Payment
 - 1. DISTRICT, with the concurrence of PROJECT SPONSOR, shall administer and coordinate the construction-related work as provided herein.
 - 2. DISTRICT, with concurrence of PROJECT SPONSOR, shall select and award construction contract(s).
 - 3. DISTRICT shall require the contractor to provide adequate liability insurance that includes PROJECT SPONSOR. The contractor shall be required to indemnify, defend, and hold harmless PROJECT SPONSOR. Copies of the insurance coverage shall be provided to PROJECT SPONSOR upon request.
 - 4. DISTRICT, with assistance of PROJECT SPONSOR, shall coordinate field surveying; staking; inspection; testing; acquisition of right-of-way; and engineering as required

to construct PROJECT. DISTRICT, with assistance of PROJECT SPONSOR, shall assure that construction is performed in accordance with the construction contract documents including approved plans and specifications and shall accurately record the quantities and costs relative thereto. Copies of all inspection reports shall be furnished to PROJECT SPONSOR on a weekly basis upon request. DISTRICT shall retain an engineer to perform all or a part of these duties.

5. DISTRICT, with concurrence of PROJECT SPONSOR, shall contract with and provide the services of the design engineer for basic engineering construction services to include addendum preparation; survey control points; explanatory sketches; revisions of contract plans; shop drawing review; as-built plans; weekly inspection of work; and final inspection.
 6. PARTIES shall have access to the site during construction at all reasonable times to observe the progress of work and conformance to construction contract documents including plans and specifications.
 7. DISTRICT shall review and approve contractor billings. DISTRICT shall remit payment to contractor based on billings.
 8. DISTRICT, with concurrence of PROJECT SPONSOR, shall prepare and issue all written change or work orders to the contract documents.
 9. PARTIES shall jointly conduct a final inspection and accept or reject the completed PROJECT in accordance with the contract documents
 10. DISTRICT shall provide PROJECT SPONSOR a set of reproducible "as-built" plans.
- C. Construction Change Orders. In the event that it becomes necessary and advisable to change the scope or detail of the work to be performed under the contract(s), such changes shall be rejected or approved in writing by the contracting officers. No change orders shall be approved that increase the costs beyond the funds available in the PROJECT fund, including interest earned on those funds, unless and until the additional funds needed to pay for the added costs are committed by all PARTIES.

1.09 RESPONSIBILITIES OF PARTIES

DISTRICT shall be responsible for coordinating with PROJECT SPONSOR the information developed by the various consultants hired by DISTRICT and for obtaining all concurrences from PROJECT SPONSOR needed to complete PROJECT in a timely manner. PROJECT SPONSOR agrees to review all concept plans, preliminary design plans, and final plans and specifications; and to provide comments within 21 calendar days after the drafts have been provided by DISTRICT to PROJECT SPONSOR.

1.10 PUBLIC RELATIONS

It shall be at PROJECT SPONSOR's sole discretion to initiate and to carry out any public relations program to inform the residents in PROJECT area as to the purpose of PROJECT and what impact it may have on them. Technical information shall be presented to the public by the selected engineer, if requested by PROJECT SPONSOR. In any event DISTRICT shall have no responsibility for a public relations program but shall assist PROJECT SPONSOR as needed and appropriate.

1.11 EXECUTION IN COUNTERPARTS – ELECTRONIC SIGNATURES

Electronic signatures shall be permitted to bind the PARTIES to this Agreement, and all subsequent documents requiring the signatures of the PARTIES to this Agreement. Documents requiring notarization may also be notarized by electronic signatures. All use of electronic signatures shall be governed by the Uniform Electronic Transactions Act, CRS §§ 24-71.3-101 to 121. However, the PARTIES agree that only electronic signatures created by electronic signature software including but not limited to DocuSign shall be permitted.

Part 2

2.01 OWNERSHIP OF PROPERTY AND LIMITATION OF USE

PARTIES acknowledge that, if PROJECT SPONSOR owns the property on which PROJECT is constructed either in fee or non-revocable easement, PROJECT SPONSOR shall be responsible for same including but not limited to fully complying with the remaining provisions of this Paragraph 2.01. It is specifically understood that the right-of-way is being used for drainage and flood control purposes. The properties upon which PROJECT is constructed shall not be used for any purpose that shall diminish or preclude its use for drainage and flood control purposes. PROJECT SPONSOR may not dispose of or change the use of the properties to diminish or preclude its use for drainage and flood control purposes without approval of DISTRICT, which shall not be unreasonably withheld. If, in the future, PROJECT SPONSOR disposes of any portion of or all of the properties acquired upon which PROJECT is constructed pursuant to this Agreement; changes the use to diminish or preclude its use for drainage and flood control purposes of any portion or all of the properties upon which PROJECT is constructed pursuant to this Agreement; or modifies any of the improvements located on any portion of the properties upon which PROJECT is constructed to diminish or preclude its use for drainage and flood control purposes pursuant to this Agreement; and PROJECT SPONSOR has not obtained the written approval of DISTRICT prior to such action, PROJECT SPONSOR shall take any and all action necessary within their legal authority to reverse said unauthorized activity and return the properties and improvements thereon, acquired and constructed pursuant to this Agreement, to the ownership and condition they were in immediately prior to the unauthorized activity at no expense to DISTRICT. However, PROJECT SPONSOR shall not be responsible for the actions of third parties that would violate the provisions of this Paragraph who may have legal rights in the property as long as PROJECT SPONSOR has

taken reasonable action to stop those actions. In the event PROJECT SPONSOR breaches the terms and provisions of this Paragraph 2.01 and does not voluntarily cure as set forth above, DISTRICT shall have the right to pursue a claim against PROJECT SPONSOR for specific performance of this portion of the Agreement.

2.02 MAINTENANCE

PARTIES agree that PROJECT SPONSOR shall own and be responsible for maintenance of the completed and accepted PROJECT. PARTIES further agree that DISTRICT, at PROJECT SPONSOR's request, shall assist PROJECT SPONSOR with the maintenance of all facilities constructed or modified by virtue of this Agreement to the extent possible depending on availability of DISTRICT funds. Such maintenance assistance shall be limited to drainage and flood control features of PROJECT. Maintenance assistance may include activities such as keeping flow areas free and clear of debris and silt, keeping culverts free of debris and sediment, repairing drainage and flood control structures such as drop structures and energy dissipaters, and clean-up measures after periods of heavy runoff. The specific nature of the maintenance assistance shall be set forth in a memorandum of understanding from DISTRICT to PROJECT SPONSOR, upon acceptance of DISTRICT's annual Maintenance Work Program.

DISTRICT shall have right-of-access to right-of-way and storm drainage improvements at all times for observation of flood control facility conditions and for maintenance when funds are available.

2.03 FLOODPLAIN REGULATION

PROJECT SPONSOR agrees to regulate and control the floodplain of Piney Creek within their jurisdiction in the manner prescribed by the National Flood Insurance Program and prescribed regulations thereto as a minimum.

PARTIES understand and agree, however, that PROJECT SPONSOR cannot obligate itself by contract to exercise its police powers. If PROJECT SPONSOR fails to regulate the floodplain of Piney Creek within their jurisdiction in the manner prescribed by the National Flood Insurance Program and prescribed regulations thereto as a minimum, DISTRICT may exercise its power to do so and PROJECT SPONSOR shall cooperate fully.

2.04 TERM OF AGREEMENT

The term of this Agreement shall commence upon execution and shall terminate three (3) years after the final payment is made to the construction contractor and the final accounting of funds on deposit at DISTRICT is provided to all PARTIES pursuant to Paragraph 1.05 herein, except for Paragraph 2.02. FLOODPLAIN REGULATION, Paragraph 2.01. OWNERSHIP OF PROPERTY AND LIMITATION OF USE, and Paragraph 2.02. MAINTENANCE.

2.05 LIABILITY

Each party hereto shall be responsible for any suits, demands, costs or actions at law resulting from its own negligent or wrongful acts or omissions and may insure against such liabilities as appropriate.

2.06 CONTRACTING OFFICERS

- A. The contracting officer for SEMSWA shall be Executive Director, 7437 South Fairplay Street, Centennial, Colorado, 80112-4486
- B. The contracting officer for CCBWQA shall be the Manager, or any Acting Manager, P.O. Box 3166, Centennial, Colorado 80161.
- C. The contracting officer for DISTRICT shall be the Executive Director, 12575 W. Bayaud Avenue, Lakewood, Colorado 80228.
- D. The contracting officers for PARTIES each agree to designate and assign a PROJECT representative to act on the behalf of said PARTIES in all matters related to PROJECT undertaken pursuant to this Agreement. Each representative shall coordinate all PROJECT-related issues between PARTIES, shall attend all progress meetings, and shall be responsible for providing all available PROJECT-related file information to the engineer upon request by DISTRICT or PROJECT SPONSOR. Said representatives shall have the authority for all approvals, authorizations, notices or concurrences required under this Agreement. However, in regard to any amendments or addenda to this Agreement, said representative shall be responsible to promptly obtain the approval of the proper authority.

2.07 AMENDMENTS

This Agreement contains all of the terms agreed upon by and among PARTIES. Any amendments to this Agreement shall be in writing and executed by PARTIES hereto to be valid and binding.

2.08 SEVERABILITY

If any clause or provision herein contained shall be adjudged to be invalid or unenforceable by a court of competent jurisdiction or by operation of any applicable law, such invalid or unenforceable clause or provision shall not affect the validity of the Agreement as a whole and all other clauses or provisions shall be given full force and effect.

2.09 APPLICABLE LAWS

This Agreement shall be governed by and construed in accordance with the laws of the State of Colorado. Jurisdiction for any and all legal actions regarding this Agreement shall be in the State of Colorado and venue for the same shall lie in the county where PROJECT is located.

2.10 ASSIGNABILITY

No party to this Agreement shall assign or transfer any of its rights or obligations hereunder without the prior written consent of the other party or parties to this Agreement.

2.11 BINDING EFFECT

The provisions of this Agreement shall bind and shall inure to the benefit of PARTIES hereto and to their respective successors and permitted assigns.

2.12 ENFORCEABILITY

PARTIES hereto agree and acknowledge that this Agreement may be enforced in law or in equity, by decree of specific performance or damages, or such other legal or equitable relief as may be available subject to the provisions of the laws of the State of Colorado.

2.13 TERMINATION OF AGREEMENT

This Agreement may be terminated upon thirty (30) days' written notice by any party to this Agreement, but only if there are no contingent, outstanding contracts. If there are contingent, outstanding contracts, this Agreement may only be terminated upon the cancellation of all contingent, outstanding contracts. All costs associated with the cancellation of the contingent contracts shall be shared between PARTIES in the same ratio(s) as were their contributions.

2.14 NO DISCRIMINATION IN EMPLOYMENT

In connection with the performance of work under this Agreement, PARTIES agree not to refuse to hire, discharge, promote or demote, or to discriminate in matters of compensation against any person otherwise qualified because of race, color, ancestry, creed, religion, national origin, gender, age, military status, sexual orientation, gender identity, marital status, or physical or mental disability and further agree to insert the foregoing provision in all subcontracts hereunder.

2.15 APPROPRIATIONS

Notwithstanding any other term, condition, or provision herein, each and every obligation of the PARTIES stated in this Agreement is subject to the requirement of a prior appropriation of funds therefore by the appropriate governing body of the respective PARTIES.

2.16 NO THIRD PARTY BENEFICIARIES

It is expressly understood and agreed that enforcement of the terms and conditions of this Agreement, and all rights of action relating to such enforcement, shall be strictly reserved to PARTIES, and nothing contained in this Agreement shall give or allow any such claim or right of action by any other or third person on such Agreement. It is the express intention of PARTIES that any person or party other than PARTIES receiving services or benefits under this Agreement shall be deemed to be an incidental beneficiary only.

2.17 GOVERNMENTAL IMMUNITIES

PARTIES hereto intend that nothing herein shall be deemed or construed as a waiver by any party of any rights, limitations, or protections afforded to them under the Colorado Governmental Immunity Act (§ 24-10-101, *et seq.*, C.R.S.) as now or hereafter amended or otherwise available at law or equity.

2.18 INTENT OF AGREEMENT

Except as otherwise stated herein, this Agreement is intended to describe the rights and responsibilities of and between PARTIES and is not intended to and shall not be deemed to confer rights upon any person or entities not named as PARTIES, nor to limit in any way the powers and responsibilities of PROJECT SPONSOR, DISTRICT or any other entity not a party hereto.

WHEREFORE, PARTIES hereto have caused this instrument to be executed by properly authorized signatories as of the date and year first above written.

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

By _____

Name Laura A. Kroeger

Title Executive Director

Date _____

Checked By

SOUTHEAST METRO
STORMWATER AUTHORITY

By _____

Name _____

Title _____

Date _____

CHERRY CREEK BASIN
WATERQUALITY AUTHORITY

CCBWQA checked by: _____

By _____

Name _____

Title _____

Date _____

Attest:

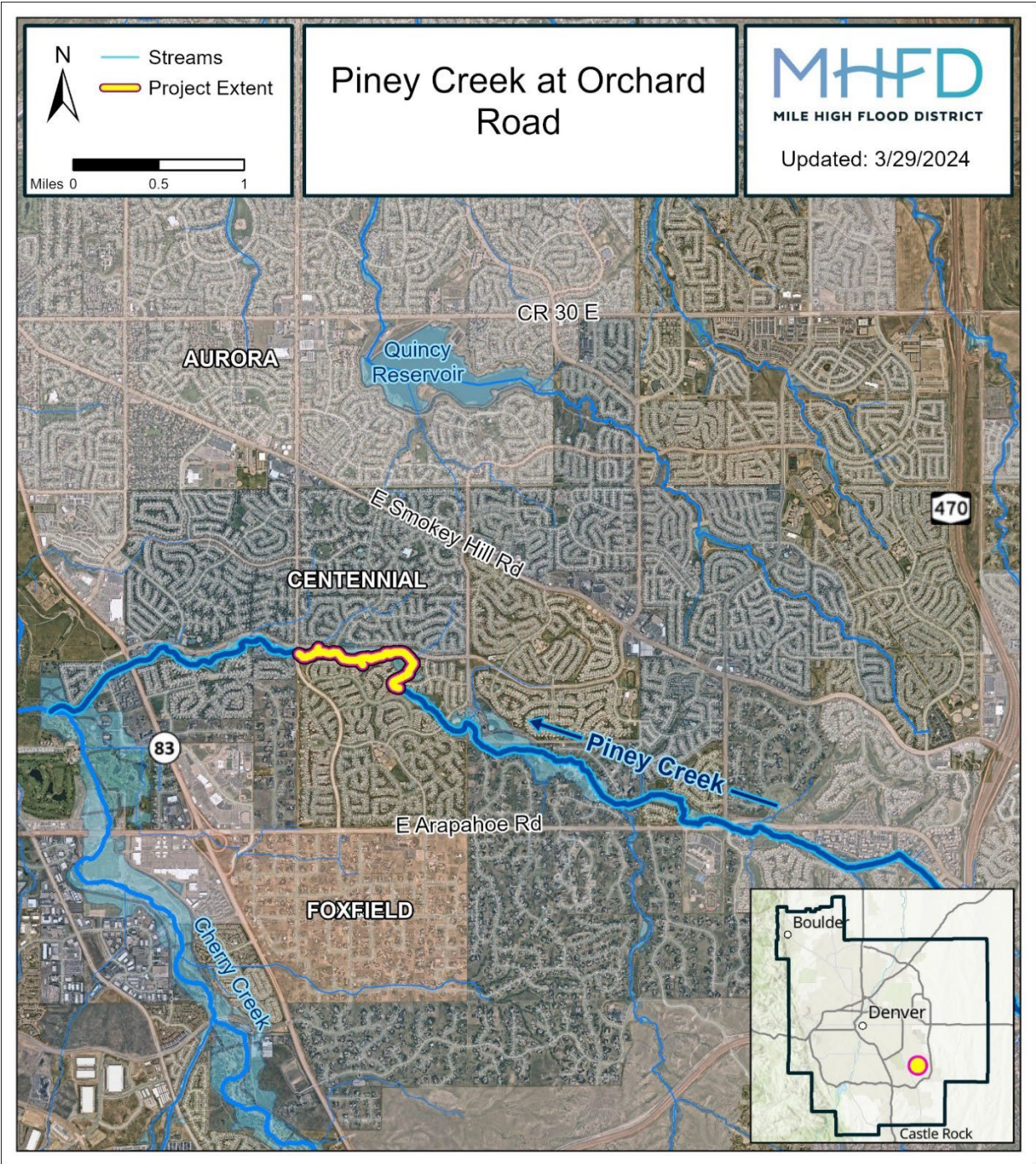
APPROVED AS TO FORM:

Timothy J. Flynn, General Counsel for CCBWQA

AGREEMENT REGARDING
DESIGN AND CONSTRUCTION
OF DRAINAGE AND FLOOD CONTROL IMPROVEMENTS FOR
PINEY CREEK AT ORCHARD ROAD

Project No. 110081

Exhibit A





ACTION ITEM MEMORANDUM

To: CCBWQA Technical Advisory Committee (TAC)
From: Elysa Loewen, Pollution Abatement Project Manager
Date: May 2, 2024
Subject: Cherry Creek at Arapahoe Road

Request: *Move that the TAC recommends that the Board authorize the execution of the 3rd Amendment to the IGA for Stream Improvements at Cherry Creek at Arapahoe Road pending satisfactory resolution of CCBWQA's comments, if any, with an expenditure not to exceed \$165,000 for 2024.*

Project/Issue:

The Project is located on Cherry Creek approximately 2,000 feet downstream of Arapahoe Road to approximately 3,000 feet upstream of Arapahoe Road in the City of Aurora and Arapahoe County (Project) see figure in the **Enclosure**. The downstream limits of the project are just over three (3) miles upstream of the Reservoir. This project is a partner project with the Mile High Flood District (MHFD), Southeast Metro Stormwater Authority (SEMSWA), and City of Aurora; MHFD is the project lead. The proposed stream reclamation benefits the water quality in Cherry Creek and the Reservoir by reducing bed and bank erosion which immobilizes phosphorus in the adjacent soils. It is estimated that this 0.98 mile long-project can immobilize 88 pounds of phosphorus annually.

This project will also tie into two previously completed channel stabilization projects at the downstream limits (Cherry Creek at Valley Country Club) and at the upstream limits (Cherry Creek Improvements at the Soccer Complex) resulting in a continuous stretch of improved channel between the three projects.



Figure 1: Bank Erosion Upstream of Arapahoe Road



Figure 2: Bank Erosion Downstream of Arapahoe Road

Funding:

The IGA Amendment for Cherry Creek at Arapahoe Road would include funding of \$665,000.00 (\$165,000 CCBWQA included in the 2024 approved budget, \$300,000 MHFD and \$200,000 SEMSWA). The 2024 Budget did include a fund contribution of \$300,000 which has been adjusted/reduced to \$165,000 to coincide with reduced funding from Partners and to keep consistent with the limit historically used on partner projects of 25%. IGA Amendments are anticipated to bring in future funding from the sponsors’ capital improvement programs which currently include funding through 2027.

Funding Source	Funding Contributions for 2024	Previously Contributed Funds	Planned Contributions + Past Project Fund Transfer	Project Sponsor %
MHFD	\$300,000	\$740,531.32	\$1,040,531.32	36.3%
SEMSWA	\$200,000	\$171,790.74	\$371,790.74	13.0%
CCBWQA	\$165,000	\$551,247.40	\$716,247.40	24.9%
City of Aurora	-----	\$740,258.84	\$740,258.84	25.8%
Total	\$665,000	\$2,203,828.30	\$2,868,828.30	100%

Budget:

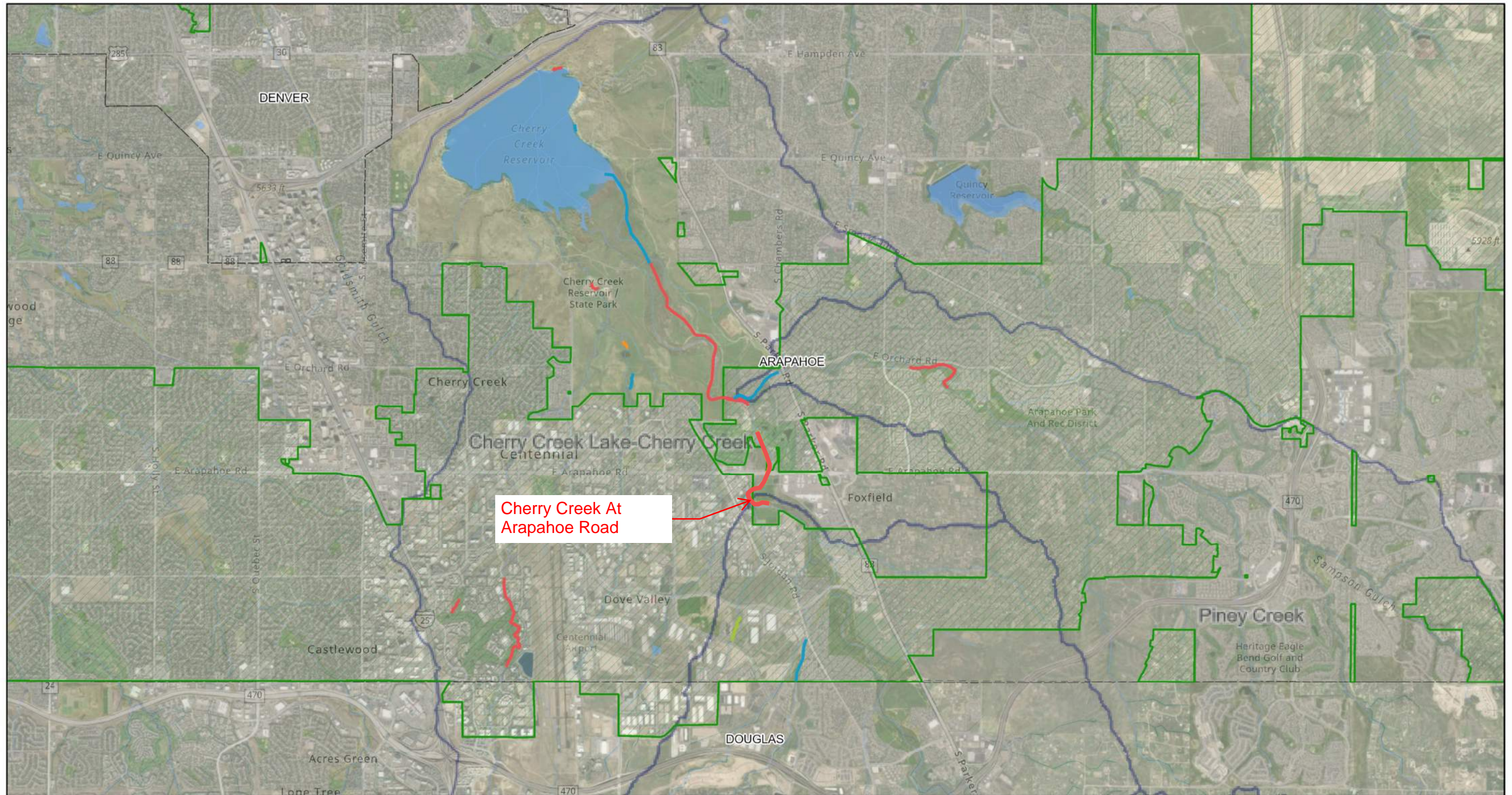
The Project is within CCBWQA’s 2024 Budget; which included funding of \$300,000; the contribution has been adjusted/reduced to \$165,000 to coincide with reduced funding from other partners for this year.

Motions:

Move that the TAC recommends that the Board authorize the execution of the 3rd Amendment to the IGA for Stream Improvements at Cherry Creek at Arapahoe Road pending satisfactory resolution of CCBWQA’s comments, if any, with an expenditure not to exceed \$165,000 for 2024.

Enclosure: Project Location Exhibit

Cherry Creek Basin

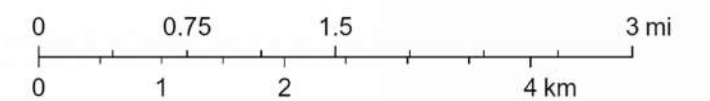


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CCB PAP Projects - MASTER

- Pre-Design
- Design
- Construction
- Planning

1:75,000



Esri, NASA, NGA, USGS, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, City of Aurora, CO, City of Centennial, County of Arapahoe, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, USFWS

THIRD AMENDMENT TO
AGREEMENT REGARDING
FINAL DESIGN, RIGHT-OF-WAY ACQUISITION, AND CONSTRUCTION
OF DRAINAGE AND FLOOD CONTROL IMPROVEMENTS FOR CHERRY CREEK
RESTORATION AT ARAPAHOE ROAD

Agreement No. 21-06.17C
Project No. 108670

THIS THIRD AMENDMENT TO AGREEMENT (hereinafter called "THIRD AMENDMENT"), by and between URBAN DRAINAGE AND FLOOD CONTROL DISTRICT D/B/A MILE HIGH FLOOD DISTRICT (hereinafter called "DISTRICT") and CITY OF AURORA, Colorado, a Colorado home rule municipal corporation of the counties of Adams, Arapahoe, and Douglas acting by and through its Utility Enterprise (hereinafter called "CITY"); SOUTHEAST METRO STORMWATER AUTHORITY (hereinafter called "SEMSWA"); CHERRY CREEK BASIN WATER QUALITY AUTHORITY (hereinafter called "CCBWQA") and collectively known as "PARTIES"; and ARAPAHOE COUNTY, Colorado (hereinafter called "Arapahoe County") ONLY as to Paragraphs 10 and 11 of the original AGREEMENT;

WITNESSETH:

WHEREAS, PARTIES have entered into " Agreement Regarding Final Design, Right-of-Way Acquisition and Construction of Drainage and Flood Control Improvements for Cherry Creek Restoration at Arapahoe Road " (Agreement No. 21-06.17) dated December 21, 2021, as amended (hereinafter called "AGREEMENT"); and

WHEREAS, PARTIES now desire to proceed with the design, right-of-way acquisition and construction of drainage and flood control improvements for Cherry Creek Restoration at Arapahoe Road (hereinafter called "PROJECT"); and

WHEREAS, PARTIES desire to increase the level of funding by \$665,000; and

WHEREAS, DISTRICT's Board of Directors has authorized additional DISTRICT financial participation for PROJECT (Resolution No. 45, Series of 2024); and

WHEREAS, the City Council of City; Board of Directors of SEMSWA; Board of Directors of CCBWQA; and the Board of Directors of DISTRICT have authorized, by appropriation or resolution, all of PROJECT costs of the respective PARTIES.

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. Delineation, description and acquisition of required rights-of-way/ easements;
 3. Construction of improvements;
 4. Contingencies mutually agreeable to PARTIES.
- B. It is understood that PROJECT costs as defined above are not to exceed \$2,868,828.30 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	\$ 1,000,000	\$ 845,500
2. Right-of-way	\$ -0-	\$ -0-
3. Construction	\$ 1,668,828.30	\$ 1,158,828.30
4. Contingency	\$ 200,000	\$ 200,000
Grand Total	\$ 2,868,828.30	\$ 2,203,828.30

* It is anticipated that additional funding for construction will be added through future amendments.

This breakdown of costs is for estimating purposes only. Costs may vary between the various elements of the effort without amendment to this Agreement provided the total expenditures do not exceed the maximum contribution by all PARTIES plus accrued interest, if applicable.

- C. At the request of the CITY, SEMSWA, and CCBWQA, the following CITY, SEMSWA, CCBWQA, and DISTRICT funds pursuant to a prior amendment have been transferred to PROJECT from a separate special fund held by DISTRICT:
 Transfer from: Cherry Creek at Arapahoe Road; Project No. 100407; Account No. 5603; Agreement No. 12-08.04 Amendment E; Amount: \$288,828.30.

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

	Percentage Share	Previously Contributed	Special Funds Transfer from Account No. 5603	Additional Contribution	Maximum Contribution
DISTRICT Special Funds Transfer	36.3%	\$625,000	\$115,531.32	\$300,000	\$1,040,531.32
CITY Special Funds Transfer	25.8%	\$650,000	\$90,258.84	\$0	\$740,258.84
SEMSWA Special Funds Transfer	13.0%	\$170,000	\$1,790.74	\$200,000	\$371,790.74
CCBWQA Special Funds Transfer	24.9%	\$470,000	\$81,247.40	\$165,000	\$716,247.40
TOTAL	100.00%	\$1,915,000	\$288,828.30	\$665,000	\$2,868,828.30

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 \$716,247.40 without CCBWQA's prior express written consent.

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 each PARTY's full share (CITY - \$740,258.84; SEMSWA - \$371,790.74; CCBWQA - \$716,247.40; DISTRICT - \$1,040,531.32), to the extent not previously paid, shall 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 COUNTY 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).

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

3. All other terms and conditions of this AGREEMENT shall remain in full force and effect.

WHEREFORE, PARTIES hereto have caused this THIRD 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

CHERRY CREEK BASIN
WATER QUALITY AUTHORITY

By _____

Name _____

Title _____

Date _____

CCBWQA Checked By

ATTEST:

APPROVED AS TO FORM FOR CCBWQA:

Timothy J. Flynn, General Counsel

Date: _____

SOUTHEAST METRO STORMWATER
AUTHORITY

By_____

Name_____

Title_____

Date_____

ARAPAHOE COUNTY

By _____

Title _____

Authorized by Resolution Number 22-049
As to the obligations contained in
Paragraphs 10 and 11 only

Date _____



ACTION ITEM MEMORANDUM

To: CCBWQA- TAC
From: RG and Associates, LLC(RGA); Rick Gonçalves, Water/Wastewater Manager
Date: April 24, 2024
Subject: Site Location Application Review of Castle Pines North Lift Station 1

Request: Consideration for Approval of Castle Pines North Lift Station 1 Site Location Application.

Informational Data:

- Submittal Review: Performed by Rick Gonçalves, CCBWQA Water/Wastewater Manager
- Location of Project: In City of Castle Pines, 2 miles NW of I-25/Hess Road Interchange, 9 miles SW of Cherry Creek
- Applicant: Castle Pines North Metropolitan District
- Service Area:
 - Services 1,219 SFEs
 - Service area is totally built out
- Application:
 - To replace existing CPN LS 1 with new 872 gpm increased capacity pumps
 - Increase necessary because LS 2 will be decommissioned, its flows being added to LS 1
 - Replace a portion of existing, aged 10-inch force main.
 - Add overflow storage.
 - Add emergency power generation.
 - Add differential flow meters.
- CDPHE **Regulation 22 Lift Station Site Location Application Form Section 22.9**
 - Correctly filled out
 - Requires approval or disapproval of CCBWQA as the 208 Management Agency
- CDPHE **Wastewater Receiving Entity Certification Section 22.9 – Lift Station** form
 - Correctly filled out
 - Approved and signed by Plum Creek Water Reclamation Authority

Basin Specific Criteria:

- Project adequately meets the specific criteria as outlined in CCBWQA Guidance Document
 - Differential flowmeters
 - Redundant pumps, control floats, and alarms
 - Emergency generator
 - Overflow storage
 - Clear maintenance plan
 - Well defined Emergency Response Plan
 - All of which are protective of the water quality in the watershed and the reservoir.

Suggested Motion:

- **Motion to approve the Castle Pines North Lift Station 1 Site Location Application and recommend to the board that it approve and sign said Site Location Application as the 208 Management Agency for the basin.**



Memorandum

Date: April 23, 2024

To: Lisa Knerr, PE- CCBWQA Technical Advisory Chairman (TAC)

CC: Bill Ruzzo, John McCarty; Executive Committee Managers; Jane Clary-Technical Manager

From: Ricardo (Rick) Gonçalves, PE

Subject: Castle Pines North Lift Station 1

Introduction:

An Application for Site Location Approval for an upgrade to the existing Castle Pines North Lift Station 1 was submitted on March 19, 2024 for review as a referral to Colorado Department of Health and Environment (CDPHE). The Cherry Creek Basin Water Quality Authority (CCBWQA) is the 208 Management Agency for the Cherry Creek Basin. Regulation 22 requires that 208 Management Agencies review, either approve or disprove all Site Location Applications for Lift Stations and indicate that approval or disapproval on the site application form along with the authority manager's signature.

Location:

Lift Station 1 is located on Serena Drive between Hidden Point Boulevard and Arco Iris Lane in the City of Castle Pines, two miles northwest of the I-25/ Hess Road Interchange, near Oak Hills Tributary, which is a tributary to Happy Canyon Creek, itself tributary to Cherry Creek, nine miles to the north-northeast. The Lift Station is not located in or near a floodplain. Figure 1 demonstrates the location of Lift Station 1 along with the rest of the lift stations.

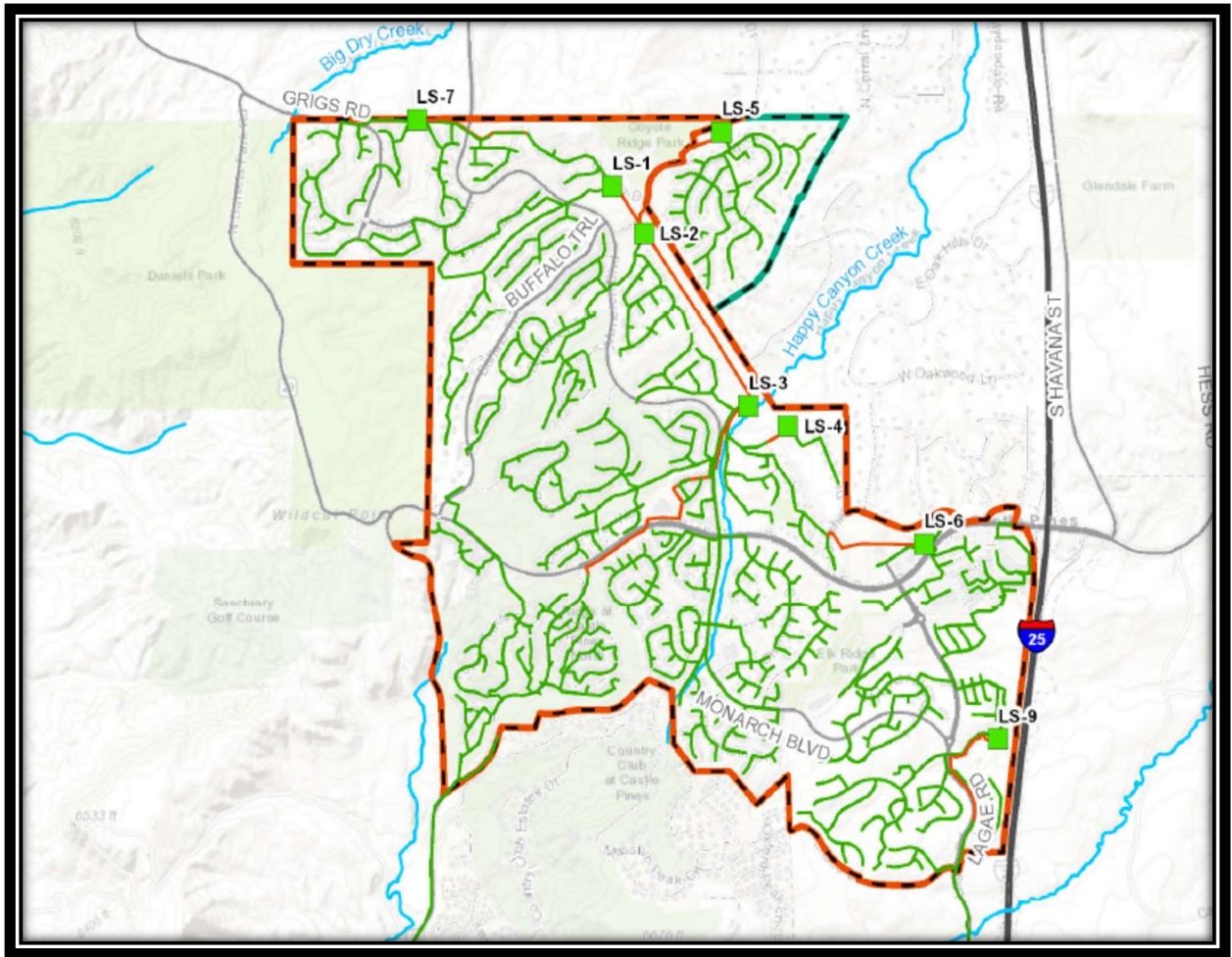


Figure 1

The Project:

Castle Pines North Metropolitan District (CPNMD) owns and operates eight (8) wastewater lift stations within the district boundary. The lift stations are named 1-7 and 9. Refer to Figure 1 for an overall map showing the location of each lift station. CPNMD has contracted with Kennedy Jenks Consultants (KJ) to design improvements at Lift Stations 1-7 to bring them into compliance with current CDPHE regulations. Lift Station No. 1 is one of those that is to be upgraded to bring it into compliance.

As a part of its upgrade, the capacity of Lift Station 1 will be increased to accept gravity flows from existing Lift Station 2's drainage area, then Lift Station No. 2 will be decommissioned. As the drainage basin of Lift Station No. 1 is fully built out, there will be no additional flows from that drainage basin. The total number of SFEs served by Lift Station 1 will be 1,219, with the addition of the 467 SFEs currently served by Lift Station 2.

The existing pumps at Lift Station 1 will be replaced with a new Gorman-Rupp pump package that will include two suction-lift pumps designed to operate in a lead/lag

configuration at 872 gpm peak flow each. The new pumps will be designed to pump to Lift Station 3 in a shared force main with flows from Lift Station 5. New differential flow meters will be installed on the force main, and the station will receive a new control panel.

A backup generator will be located outside the existing building. Two emergency overflow vaults will be added to the site to increase the amount of emergency overflow storage. The vaults will be 8-inch diameter at 18 ft deep. Approximately 700 ft of the incoming gravity sewer line from Lift Station 2 will be upsized to 24-inch diameter to allow for additional emergency overflow storage.

The first 1,970 linear feet of shared force main between Lift Station 2 and Lift Station 3 is plastic pipe with a history of breaks. It will be replaced with 10-inch C900 PVC as part of this project. The last 1,770 linear feet of shared force main to Lift Station 3 is 10-inch C900 PVC that will remain in service.

Receiving Wastewater Facility:

The Plum Creek Water Reclamation Authority (PCWRA) is the wastewater treatment plant for the area which will ultimately treat the wastewater from Lift Station 1. The increase in capacity at Lift Station 1 will not have an impact on the PCWRA treatment plant's capacity, since Lift Station 2 will be decommissioned and the aggregate of flows from all the lift stations to the treatment plant will not be increased.

Basin Specific Criteria:

The project meets the CCBWQA specific criteria for lift stations as outlined in the basin authority's Guidance Document, including differential flowmeters, redundant pumps, overflow storage, a clear maintenance plan and well-defined Emergency Response Plan, all of which will be protective of the water quality in the watershed and the reservoir.

Findings:

We find after thorough review of the Site Location Application for the upgrades to the Castle Pines North Lift Station 1 and its force main, that the application is complete, with the required Engineering Report, and CDPHE forms **Regulation 22 Site Location Application Form Section 22.9-Lift Station**, and CDPHE **Wastewater Receiving Entity Certification Section 22.9 – Lift Station** correctly completed and signed, and all ready for Authority approval.

Recommendation:

On the basis of the information that we have reviewed in the Site Location Application and its attendant Engineering Report for the Castle Pines North Lift Station 1, we recommend that the TAC approve said Site Location and recommend to the board that it approve the Site Location Application, sign it, and forward it to CDPHE.



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: DRAFT Results for Phase I Linked Reservoir Model Runs
DATE: April 23, 2024

In accordance with the Scope of Work for linked model runs in 2024 (Hydros, 2024), Hydros has conducted reservoir model runs corresponding to baseline conditions and two watershed modeling scenarios conducted by RESPEC (RESPEC, 2024):

- **Baseline Run** - Simulates observed conditions from 2003-2016;
- **Watershed Model Run 6** - Simulates 2030 development and wastewater treatment facility (WWTF) flows; and
- **Watershed Model Run 13** - Simulates 2030 development and WWTF flows, pollution reduction facilities, low impact development, 40% volume reduction, diversion of Parker wastewater flows from future development to Rueter-Hess Reservoir, and WWTF total nitrogen discharges limited to 8 mg/L in winter and 6 mg/L in summer.

These watershed model runs were selected because they broadly represent extremes in terms of anticipated future watershed management and corresponding effects on reservoir inflows. There are two objectives for this analysis:

- To evaluate the pre-established modeling linkage approach with realistic modeling scenarios; and
- To examine the anticipated range of influence of watershed management activities on water quality in Cherry Creek Reservoir.

This technical memorandum summarizes the findings of this effort and is organized in four sections:

1. Findings on Linkage Approach;
2. Run 6 and Run 13 Results Compared to Baseline;
3. Summary; and
4. References.

1 Findings on Linkage Approach

This modeling effort comprises the first full test of the model linkage approach developed in 2020 (Hydos, RESPEC, and Kilgore, 2020) to support combined use of the watershed and reservoir models for the Cherry Creek basin. As part of this effort, a tool was developed to efficiently translate HSPF watershed model outputs (flow and water quality) into CE-QUAL-W2 reservoir model inputs. In accordance with the linkage approach, translated inputs reflect adjustments to the observation-based, daily Cherry Creek Reservoir inflow water quality (i.e., reservoir baseline water quality). In general, the adjustments reflect the relative percent change¹ in monthly inflow loading simulated by the HSPF model.

Watershed model results were provided to Hydos by RESPEC (Lupo, 2024) for development of reservoir model inputs. Flow and water quality inputs for the reservoir model were then developed from the watershed model results, following the linkage approach. To evaluate the linkage approach, reservoir inputs were reviewed graphically compared to baseline and graphically compared to direct watershed model outputs. Reservoir model simulation results were also reviewed for reasonableness.

In general, the linkage approach appears to perform well with one exception, which required a modification to the linkage steps. For Run 6, the watershed model simulated large increases in total suspended solids (TSS) relative to the watershed baseline simulation, and the reservoir model predictions based on this input were unrealistic. The watershed model, for Run 6, predicted an average monthly percent increase in TSS load of 246 % for the combined inflows, which corresponds to a 77 % increase in average TSS concentration. This change, when translated into reservoir model inputs, resulted in a dramatic loss of light penetration in the reservoir (Figure 1). As a result, algal growth was significantly limited in Run 6 (Figure 2), in spite of increased nutrient availability and minimal change in water temperature. These results for Run 6 were considered to be nonsensical and therefore invalid.

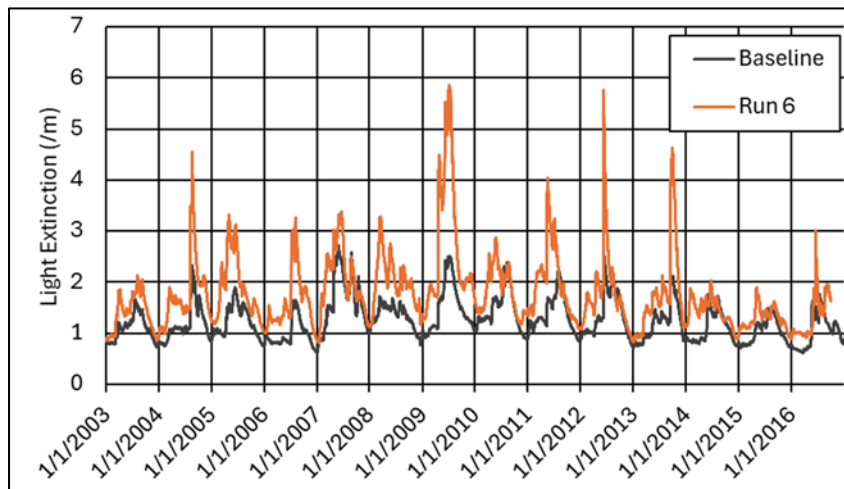


Figure 1. Light Extinction Results at CCR-2 from Initial Model Runs (Note: Higher light extinction values correspond to lower light levels in the water column.)

¹ This refers to the monthly percent change relative to the HSPF modeling baseline.

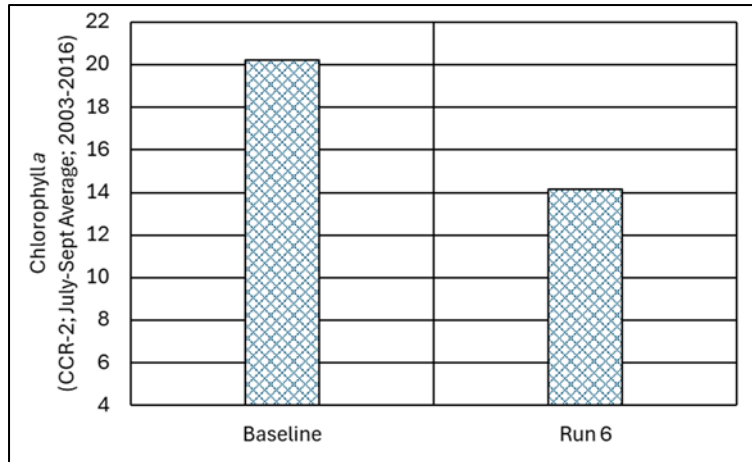


Figure 2. Summer Average Chlorophyll a at CCR-2 from Initial Model Runs

The increase in monthly TSS load and concentration simulated by the watershed model is not specifically in question here. Instead, it is thought that the behavior of the increased TSS concentrations is not well reflected in the reservoir model as translated by the linkage approach. The calibrated reservoir model has two input groups for inorganic suspended solids (ISS). Through calibration to observed data, the settling rates for those two groups differ but are both relatively low, corresponding to the behavior of relatively small particles. It is likely that major increases in suspended solids loading to the reservoir, such as those predicted by the watershed model for Run 6, would include significant fractions (in terms of mass) of larger particles. Such particles would be expected to settle out quickly. Instead, with the current linkage approach, the increased TSS loading enters the reservoir as small particles (in the only two ISS groups available) which settle slowly. In the reservoir, the large increase in slow-settling ISS results in sharply limited light transmission and inhibited algal growth, which is not expected to occur in reality.

This finding is considered a limitation of the current model linkage approach, particularly for runs with major increases in TSS concentrations relative to baseline. To allow for further evaluation of the watershed model run results, a modification to the linkage approach was developed. The modification consists of conducting the original linkage approach steps for all input parameters except TSS (i.e., no load-based adjustments are made to the baseline TSS concentrations for reservoir inflows). This approach effectively assumes that any increases in TSS load to the reservoir for a given scenario are comprised primarily (by mass) of larger particulates that would settle out rapidly (i.e., in less than a day). Model run results presented in the following section (Section 2) reflect this modified linkage approach. Addressing the issue more directly for future runs would require adding at least one more ISS group (with a higher settling rate) to the reservoir model and developing and testing new linkage steps for TSS. Collection of additional information on observed (and anticipated) TSS particle size distributions in the inflows would also be helpful to support the model update and guide redevelopment of TSS linkage steps.

2 Run 6 and Run 13 Results Compared to Baseline

Applying the modified linkage approach described in Section 1, HSPF watershed model results from RESPEC were translated into daily reservoir model input for Cherry Creek, Cottonwood Creek, and the direct reservoir watershed. The resulting inputs reflect the watershed model simulated effects of development in the watershed by 2030 in the absence of various water-quality mitigation efforts (Run 6) and with extensive mitigation efforts (Run 13). As such, the runs broadly represent estimates of the current best-case and worst-case predictions of future watershed conditions.

Run 6 and Run 13 also include increased flows into the reservoir relative to baseline. Inflows were an average of 116 % higher for Run 6 and 25 % higher for Run 13. Most of the increases in inflow occur in Cherry Creek, as opposed to Cottonwood Creek or the direct watershed. Due to the increased inflows, the annual residence time in the reservoir was 44 % lower for Run 6 and 16 % lower for Run 13 (Figure 3). These differences are notable because they affect flushing through the reservoir, which, in turn, affects the water-quality response.

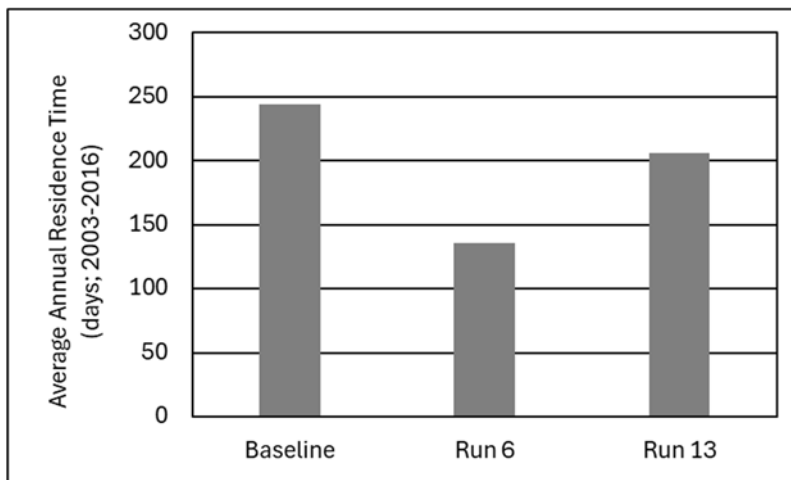


Figure 3. Average Residence Time in Cherry Creek Reservoir for Phase I Linked Model Runs

Average monthly percent changes in load (relative to baseline) for the combined inflows to the reservoir roughly doubled for Run 6 and increased by ~5 to 25 % for Run 13, though percentages varied by constituent (Table 1). Much of the increases in load are directly associated with the increases in flow rate. Additionally, increased inflows in the linkage approach lead to increased outflows, which increase loading out of the reservoir. Therefore, it is helpful to also review the resulting inflows in terms of volume-weighted average concentrations (VWACs). While inflow loads increase notably for the scenario runs, the concentrations of inflows exhibit much smaller differences relative to baseline. For Run 6, inflow VWACs vary by less than 10% relative to baseline, with the exception of a 22% increase in nitrate-plus-nitrite (Table 2). For Run 13, inflow VWACs actually decrease slightly for most constituents (Table 2).

Table 1. Average Percent Changes in Load in the Combined Inflows to Cherry Creek Reservoir

Constituent	% Change in Load from Baseline	
	Run 6	Run 13
Total Organic Carbon (TOC)	+85 %	-2 %
Nitrate plus Nitrite (NO2+NO3)	+138 %	+15 %
Ammonia	+98 %	+26 %
Total Nitrogen (TN)	+109 %	+15 %
Orthophosphate (OrthoP)	+101 %	+11 %
Total Phosphorus (TP)	+99 %	+4 %

Table 2. Average Percent Changes in Volume-Weighted Average Concentration in the Combined Inflows to Cherry Creek Reservoir

Constituent	% Change in Volume Weighted Average Concentration	
	Run 6	Run 13
TOC	-5 %	-19 %
NO2+NO3	+22 %	-6 %
Ammonia	-1 %	+4 %
TN	+7 %	-6 %
OrthoP	+3 %	-9 %
TP	+2 %	-14 %

Cherry Creek Reservoir model results for Run 6 and Run 13 are compared to baseline and summarized in the following subsections for nutrients (TN, TP, orthoP, and TIN) and chlorophyll *a*. Results focus on summer months, corresponding to the averaging periods for the relevant standards/future standards.

2.1 Nutrients

Simulated summertime (July–September) TN and TP concentrations in the reservoir show higher concentrations for Run 6 and lower concentrations for Run 13, as compared to baseline (Figure 4 and Figure 5). Similar patterns are seen for the fractions of TN and TP that are readily available for algal uptake (Figure 6 and Figure 7). The relative direction of difference in nutrient concentrations matches expectations for the scenarios. The magnitude of the differences is relatively small, generally reflecting the relative differences in VWACs.

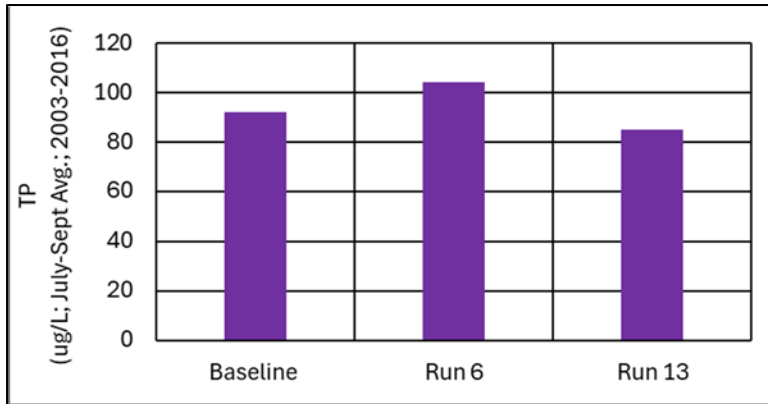


Figure 4. Simulated July–September Average Total Phosphorus Concentrations in Cherry Creek Reservoir for Run 6 and Run 13 Compared to Baseline, 2003-2016

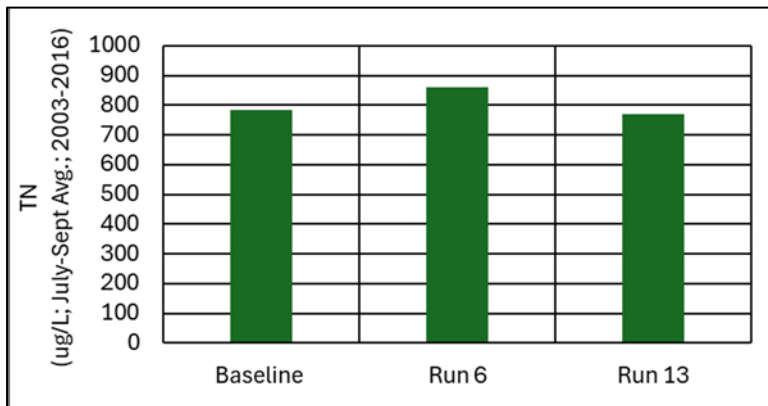


Figure 5. Simulated July–September Average Total Nitrogen Concentrations in Cherry Creek Reservoir for Run 6 and Run 13 Compared to Baseline, 2003-2016

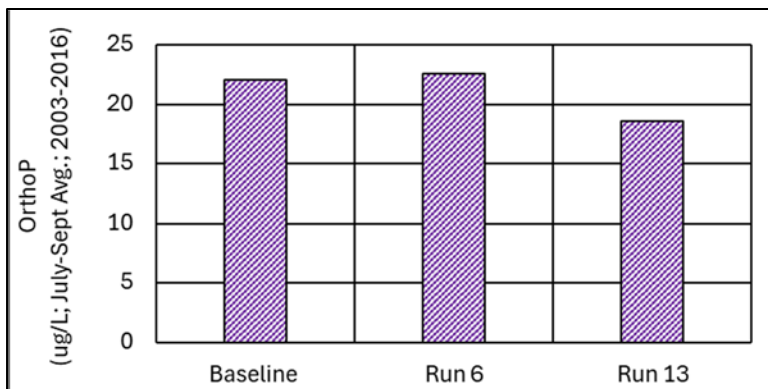


Figure 6. Simulated July–September Average Orthophosphate Concentrations in Cherry Creek Reservoir for Run 6 and Run 13 Compared to Baseline, 2003-2016

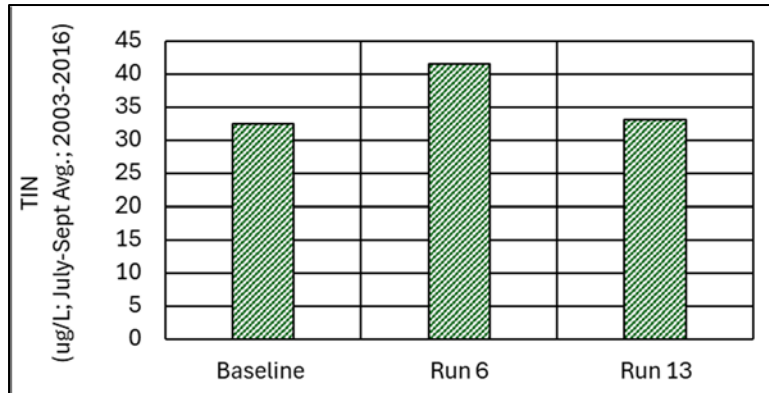


Figure 7. Simulated July–September Average Total Inorganic Nitrogen (Ammonia plus Nitrate and Nitrite) Concentrations in Cherry Creek Reservoir for Run 6 and Run 13 Compared to Baseline, 2003-2016

2.2 Chlorophyll *a*

The model simulated a relatively small effect ($< \pm 1$ ug/L) on long-term average summertime (July–September) chlorophyll *a* concentrations in the reservoir across the scenarios (Figure 8). As expected, the highest average chlorophyll *a* is simulated for Run 6, and the lowest is simulated for Run 13. The relatively small difference in long-term average chlorophyll *a* across runs reflects the relatively small differences in VWACs for inflowing nutrients and the corresponding small differences in simulated in-reservoir nutrient concentrations (see Section 2.1).

The relatively small variation in nutrient (and chlorophyll *a*) concentrations across scenarios can also be attributed in part to internal loading of nutrients from sediments in the reservoir. Both internal and external loading of nutrients are important drivers of algal response in Cherry Creek Reservoir (Hydros 2015). Internal loading of nutrients from sediments varies in the model as a function of DO and temperature at the bottom of the reservoir. Neither DO nor temperature vary notably at the bottom of the reservoir across these simulations; therefore, internal loading of nutrients was similar across the scenarios.

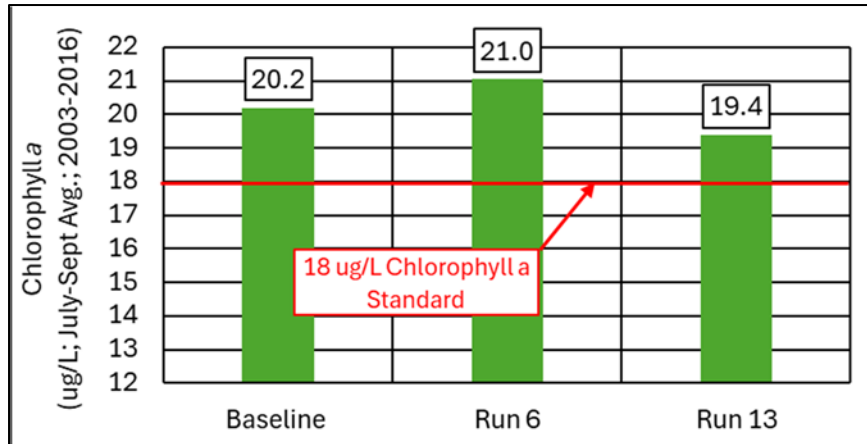


Figure 8. Simulated Long-Term Average Summertime Chlorophyll a Concentrations in Cherry Creek Reservoir for Run 6 and Run 13 Compared to Baseline, 2003-2016

While the long-term average summertime chlorophyll a response for 2003-2016 shows only a small variation, there is more simulated variability across individual years (Figure 9). The year-to-year variability occurs in response to time-varying input concentration differences and, to some extent, the time-varying effects on residence time. None of the scenarios routinely meet the site-specific chlorophyll a standard (18 ug/L summer average, with a one- in five-year allowable exceedance frequency). On a yearly basis, the baseline run exceeds the chlorophyll a standard in 64% of the years, Run 6 exceeds the standard in 71% of the years, and Run 13 exceeds the standard in 57% of the years (Figure 9). This pattern is consistent with the differences in nutrient loads and concentrations among the three model runs.

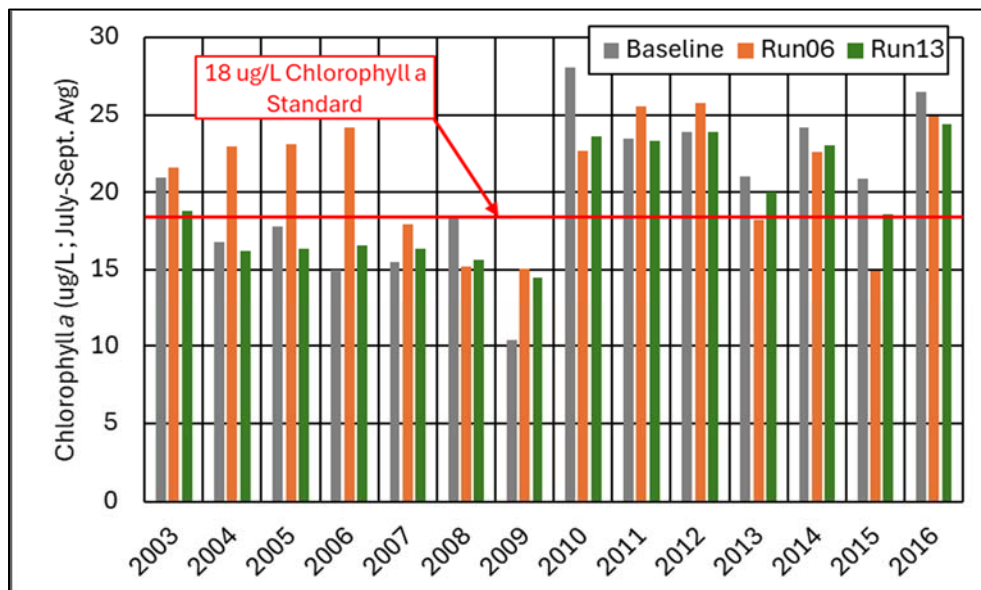


Figure 9. Simulated Annual Summertime Chlorophyll a Concentrations in Cherry Creek Reservoir for Run 6 and Run 13 Compared to Baseline, 2003-2016

The reservoir model also indicates that increases relative to baseline summer cyanobacteria (blue-green algae) biomass concentrations would occur under Run 6 and Run 13 (Figure 10). Increases in cyanobacteria are minimal for Run 13 and more notable for Run 6, with effects varying from year to year.

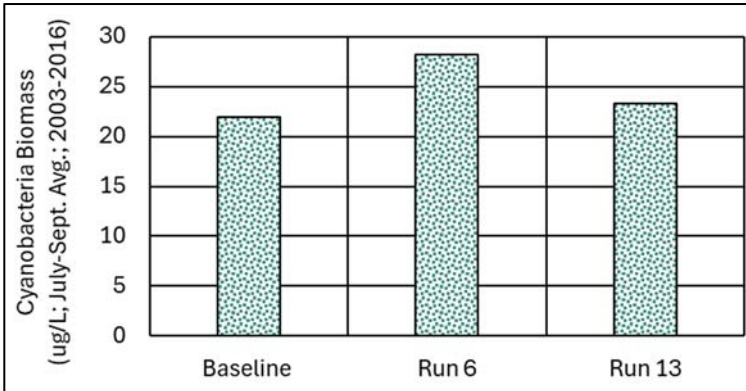


Figure 10. Simulated Average Summertime Cyanobacteria Biomass Concentrations in Cherry Creek Reservoir for Run 6 and Run 13 Compared to Baseline, 2003-2016

3 Summary

The Cherry Creek Reservoir model was used to simulate the effects of two watershed management scenarios on reservoir water quality. The selected watershed model runs broadly represent the worst-case (Run 6) and best-case (Run 13) predictions of future watershed conditions in terms of watershed management. Flow and water-quality results from the HSPF watershed model (RESPEC, 2024) were translated into inputs to the reservoir model using the linkage approach developed in 2020 (Hydros, RESPEC, and Kilgore, 2020). These simulations were conducted to evaluate the linkage approach and to gain insights into the potential range of reservoir water-quality response to future watershed conditions.

The analysis indicated that the linkage approach needs refinement for one constituent, TSS. The issue occurs primarily in cases where the watershed model predicts large increases in TSS inflow concentrations. For the purposes of this analysis, a modified linkage approach was developed in which TSS load adjustments were not made for reservoir model simulations of Run 6 and Run 13, effectively assuming that increased TSS loading reflected larger particle sizes that settle rapidly. This is considered a reasonable approximation and is not expected to adversely affect interpretation of the results. The modification applied should be further considered for future linkage runs².

² Revision of the linkage approach is recommended to address the TSS issue. The effort will likely require adding at least one additional ISS group (with a higher settling rate) to the reservoir model and developing and testing new linkage steps for TSS. Collection of additional information on observed (and anticipated) TSS particle size distributions in the inflows would also be helpful to support the model update and guide redevelopment of TSS linkage steps.

The reservoir modeling results indicate the following:

- The watershed scenarios decrease reservoir residence times and increase nutrient loading; however, inflow concentrations show only relatively small variations compared to baseline.
 - Worst-case watershed scenario (Run 6) inflows to the reservoir would cut residence time by 44% and generally double the loading rates for most key constituents. Inflow concentrations, however, would be similar to baseline for TP and only ~7 % higher for TN.
 - Best-case watershed scenario (Run 13) inflows to the reservoir would cause a small decrease in residence times (~16% decrease) and increases in inflow nutrient loading ranging from ~5 to 25 %. Inflow concentrations, however, would slightly decrease for most key constituents.
- Reservoir model results indicate that summertime chlorophyll *a* and cyanobacteria concentrations would increase relative to baseline for the worst-case watershed management (Run 6). Correspondingly, chlorophyll *a* is simulated to decrease relative to baseline for the best-case watershed management scenario (Run 13). The effects vary from year to year; however, the long-term average effects are relatively small (on the order of +1 ug/L chlorophyll *a* for Run 6 and –1 ug/L chlorophyll *a* for Run 13).
 - The relatively small simulated effects on the long-term average chlorophyll *a* concentrations agree with the relatively small changes in inflow concentrations. This finding underscores the importance of considering inflow concentration changes in addition to inflow loading.
 - The relatively small simulated effects on the long-term average chlorophyll *a* concentrations also makes sense given the minimal change in internal loading of nutrients across scenarios. Internal loading did not vary significantly across scenarios because simulated DO and temperature at the bottom of the reservoir did not vary significantly across scenarios.

The best-case watershed management scenario (Run 13) indicates an overall reduction in summertime chlorophyll *a* in Cherry Creek Reservoir, indicating that watershed management can suppress additional degradation of water quality in spite of anticipated development in the watershed. The improvement, however, is small relative to baseline and would not lead to compliance with the site-specific chlorophyll *a* standard. In contrast, Run 6 indicates that reservoir conditions would be worse in terms of chlorophyll *a* and cyanobacteria in the absence of the watershed management activities included in Run 13.

In summary, the simulation results indicate that watershed management is an important focus to protect reservoir water quality; however, in-reservoir management approaches may also need to be considered to meet the current chlorophyll *a* standard. This finding agrees with previous modeling results indicating that management approaches focused exclusively on either internal or external nutrient sources are unlikely to result in compliance with the current chlorophyll *a* standard (Hydros 2015, 2019, and 2023).

4 References

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- Hydros Consulting. 2023. Technical Memorandum from C. Hawley (Hydros) to J. Clary (CCBWQA) Re: Rev. 1 DRAFT Development of Site-Specific Standard Values for TP and TN in Cherry Creek Reservoir. October 23, 2023.
- Hydros Consulting. 2024. Technical Memorandum from C. Hawley (Hydros) to J. Clary (CCBWQA) Re: Scope of Work for Linked Reservoir Model Runs in 2024. January 25, 2024.
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TECHNICAL MEMORANDUM

Date: May 2, 2024
To: Cherry Creek Basin Water Quality Authority TAC
Jane Clary, CCBWQA Technical Manager
From: Erin Stewart, LRE Water
Subject: 2023 Wetland Harvesting Project Update

Wetland Harvesting Project Background

The Cherry Creek Basin Water Quality Authority (CCBWQA) works to accomplish its mission and vision of improving water quality and protecting the beneficial uses in Cherry Creek Reservoir through Pollution Abatement Projects (PAPs). In 2021, a pilot project for Wetland/Cattail Harvesting was authorized (R2R Engineers, CHPPM memo [Appendix A](#)) to evaluate the effectiveness of removing plant biomass to reduce nutrients reaching Cherry Creek Reservoir.

The project objective was to harvest wetland plants when near the end of their growth season when nutrient concentrations are high. This action removes the biomass containing the nutrients that would otherwise decompose releasing nutrients into the water which flows directly into the Reservoir.

The project proposed harvesting about 2.1 acres of cattails annually at an estimated cost of \$60,000 per year for 6 years, removing an estimated 60 pounds of phosphorus from the Cottonwood Creek system at an estimated \$1,000 per pound of phosphorus removed based on biomass. The project includes harvests annually: on the left bank (facing downstream) in odd years and on the right bank (facing downstream) in even years, which allows for one side of the creek to remain for habitat, minimizes the visual impact of harvesting, and improves visibility to the creek during regrowth. Harvesting leaves the root/overwintering structure (tuber) for regrowth the following year and maintains stream stability. Harvesting is ideally completed in late summer/ early fall (September/ October) after cattails have absorbed nutrients during the growing season but are still standing up to facilitate cutting and but have not transported nutrients down to the tuber for overwintering.

The pilot project includes annual updates, intermediate milestones (about 2-year intervals), and a final report after 6 years to review effectiveness/costs/efficacy, optimization (i.e. maximizing nutrient removal while efficiently using resources allocated for harvesting), and if needed, changes, reductions, or elimination of the pilot project.

Multiple factors may affect the fraction of this nutrient load that would have reached the Reservoir in the absence of wetland harvesting. The CCBWQA will review instream water quality monitoring data during the pilot project to see if the water quality shows measurable changes achieved as a result of the

harvesting efforts and results have been inconclusive so far due to the limited data set, already low phosphorus concentrations in Cottonwood Creek and other variables in the watershed.



Figure 1. Area 1 - 0.9 Acres

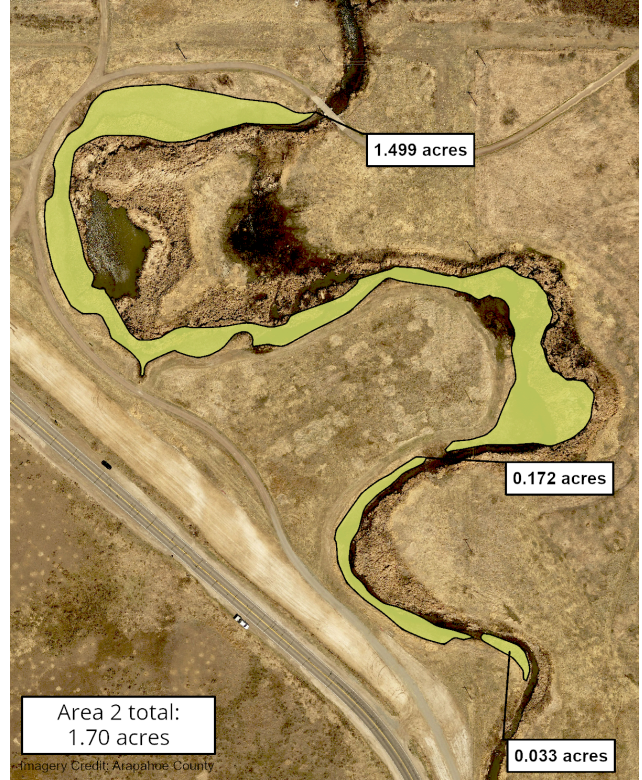


Figure 2. Area 2 - 1.7 Acres

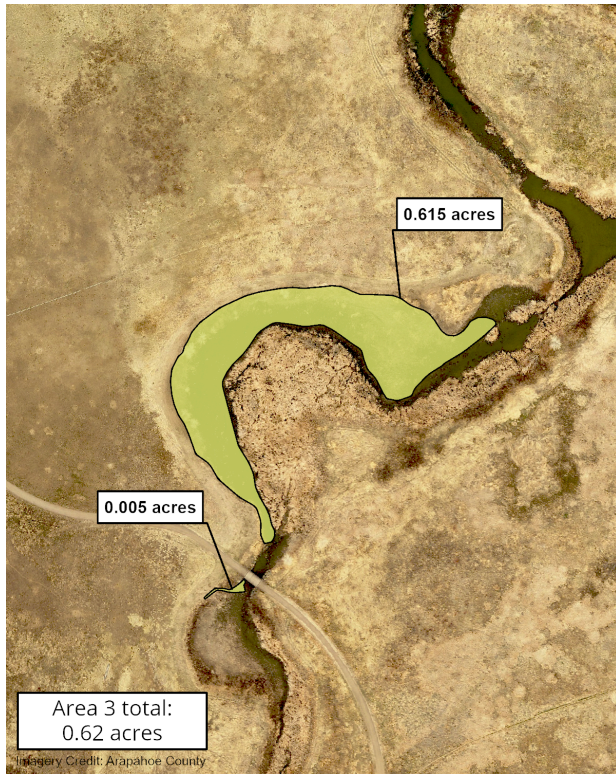


Figure 3. Area 3 - 0.62 Acres

Project Sampling and Analysis Details

The CCBWQA Wetland Harvesting has been completed on Cottonwood Creek for the last 3 years as part of the 6-year pilot project. Before cutting and removal, wetland plants from areas within planned areas of wetland harvesting are sampled to determine the composition and are analyzed to calculate the nutrient mass removed. Annually, multiple sites are sampled to determine plant density, distribution, and average length and weights are measured. Samples from each area are sent to an analytical laboratory for processing and analysis of total phosphorus and total nitrogen content. Figures 1-3 Outline the areas harvested in 2023.

Wetland Plant Analysis

LRE Water sampled and collected data from six (6) sites in the area scoped to be harvested. (see map)

At each site area, all plants within equal (0.5 m²) plots were counted, identified by type, and lengths and weights were measured and recorded. One sample from each zone, six (6) samples total, was sent to ACZ Laboratory for processing to analyze moisture content, and concentrations of total phosphorus (TP), nitrate and nitrite (NO₂+NO₃), and total Kjeldahl nitrogen (TKN). Total nitrogen (TN) was calculated as the sum of NO₂+NO₃-N and TKN.

Table 1. Laboratory Analysis of Wetland Plant Samples Collected

ANALYTE	Site					
	WH #1-6	WH #2-18	WH #3-8	WH #4-15	WH #5-7	WH #6-21
Moisture Content (%)	72.1	76.7	72.7	73.7	65.4	65.1
Nitrogen, Total Kjeldahl (%)	3.81	3.71	2.40	2.11	0.850	0.947
Phosphorus, Total (%)	0.432	0.702	0.327	0.523	0.190	0.372
Nitrate/Nitrate as N, (mg/kg)	6.92	10.5	7.26	4.11	2.64	6.46

Two methods were used to calculate the total pounds of nitrogen and phosphorus removed. For each method, the weight of the sample before processing and the dry weight were used to convert mg/Kg concentrations to mg/g. Then a weighted total was calculated using one of the following methods:

1. using the percent density of each type of plant or
2. the percentage of each plant based on the average weight of each type of plant weighed during the field measurements

For the 2023 calculations, the 2021 and 2022 densities of each type of plant were also incorporated to represent the variability of plant distribution, mass, and nutrient content more accurately. The total mass removed was based on the average (Table 2). The status of the project is detailed in Table 3.

Wetland Harvesting Summary

- Total material disposed: 329,400 lbs
- Total area harvested: 3.22 acres
- Total phosphorus removed: 240-298 lbs
- Total nitrogen removed: 1,767-2,327 lbs

Table 2. Wetlands Harvesting Summary Averages

Analysis	Total removed (lbs)	
	Nitrogen	Phosphorus
Based on density	2,327	298
Based on weight	1,767	240
Average	2,047	269

Table 3. Wetland Harvesting Project Progress Comparison

Year	ESTIMATED					ACTUAL				
	Area (Acres)	N (#)	P (#)	Cost (\$)	Cost (\$) / P #	Area (Acres)	N (#)	P (#)	Cost (\$)	Cost (\$) / P #
2021	2.11	409	59	59,800	\$1,000	2.46	561	69	82,500	\$1,200
2022	2.15	417	60	59,900	\$1,000	3.79	1527	207	90,000	\$435

2023	2.11	409	59	59,800	\$1,000	3.22	2,047	269	90,000	\$335
2024	2.15	417	60	59,900	\$1,000					
2025	2.11	409	59	59,800	\$1,000					
2026	2.15	417	60	59,900	\$1,000					
Total =	12.78	2477	356	359,100	\$1,000	6.25	4,135	545	262,000	\$481

CHERRY CREEK BASIN WATER QUALITY AUTHORITY
2024 Capital Project Status Report
April 25, 2024

RESERVOIR PROJECTS

1. East Shade Shelters Phase III and Tower Loop Phase II Shoreline Stabilization (CCB-17.5.1 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 1st 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. RESPEC was provided by the US Army Corps of Engineers' guidance on cut and fill and asked to prioritize the 408 application and review; they are coordinating with Gene Seagle in preparation for this submittal. RESPEC has provided a draft plan of action for the 408 permit submittal to be discussed with Gene (1/15). A meeting was held with Gene on (01/25/2024) to discuss the 408 requirements, subsequently RESPEC followed up with a submittal package PDF of the summary of impact for the project via email to Gene and Joe with USACE on (02/02/2024). Per email from Joe at USACE the proposed bank stabilization proposal is approved under routine operations and maintenance for 408 permitting. The project team is moving forward with preparation of 90% Design completion by end of April. Per discussion with CPW (Michelle), there will be shared funding available in July 2024 for the project.

Tower Loop Phase II –

2. Final design and construction are currently scheduled for 2032 and 2033.

STREAM RECLAMATION PROJECTS

1. Cherry Creek Stream Reclamation at Arapahoe Rd. - Valley Country Club to Soccer Fields, Reaches 3 to 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, an 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). Muller was selected as the consultant (12/28/23). A scoping meeting for the project was held on (01/30/2024), a design scope is anticipated in the next month. Muller provided a scope and fee, a meeting with the project stakeholders is scheduled for April 3rd to discuss. *Muller provided a scope and fee for the work and the project stakeholders collaborated to refine the scope (04/03/2024). The IGA Amendment 3 is being reviewed and will be presented at the May TAC/Board meetings for recommendation of board approval (04/25/2024).*

2. Cherry Creek - Reservoir to Lake View Drive Alternatives Analysis and Development of Preferred Alternative (CCB-5.16A)

- 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. It was verbally reported at the 11/16/23 Board meeting that Colorado Parks and Wildlife's repair of Lake View Drive is underway which includes the alternatives of concrete pipe and trash racks, cleaning out of culverts 1-9 and the beaver debris, and it is scheduled for completion by mid-December. Muller was provided US Army Corps of Engineers' guidance on cut and fill for consideration in their alternatives analysis (12/1/23). Muller is working through the Alternative Analysis and is coordinating a meeting (02/02/2024) to discuss alternatives in late February with the team. Muller presented a design alternatives overview in a meeting held on (02/28/2024) and is working to compile the alternatives analysis with costs to present at the April TAC meeting. Muller presented their alternatives analysis at the April TAC meeting (04/04/2024). *Muller is scheduled to provide a final alternatives analysis report by (05/10/2024) to be included in the next board packet and a scope and fee to continue design efforts by end of May.*

3. 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 16th 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). *The project Schedule has been updated to have Naranjo start construction in September 2024.*

4. 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 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 Individual Permit Authorization has been received (11/10/23). CEI has sent final contract pricing to MHFD via email (01/26/2024) updated from pricing in October 2023. The Individual Permit authorization under section 404 of the Clean Water Act for the project was received on (02/29/2024). The construction kickoff meeting was held on 03/18/2024. CEI mobilized onsite the week of 04/08/2024; the first onsite progress meeting was held on 04/11/2024. *CEI was pouring concrete trail the week of 04/22/2024.*

5. Piney Creek - Cherry Creek to Parker Road, Reaches 1 to 2 (SEMSWA) (CCB-6.5)

- 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). Olsson's scope of work and fee have been finalized and SEMSWA is planning on contracting for the initial design phase in early 2024 (12/1/23). The design contract with Olsson was completed on (01/19/2024). A site visit is set with Nicole with SEMSWA for 02/12/2024 to observe and discuss the project. The project design kickoff meeting was held on (02/29/2024). IGA 2nd Amendment was authorized by the Board on (03/21/2024) for funding of \$39,000 for 2024. A coordination meeting was held on (04/04/2024) with the Muller team working on Cherry Creek (Reaches 1-3 in the park) to ensure the coordination for the Piney Creek /Cherry Creek confluence was occurring and teams were working together.

6. Piney Creek south of Orchard Rd., Reaches 4 to 5 (SEMSWA) (CCB-6.6)

- a. Description: This project includes approximately 3,800 liner feet of stream reclamation on Piney Creek. The project partners are MHFD, SEMSWA and CCBWQA.
- b. Status: A site visit is set with Nicole with SEMSWA for 02/12/2024 to observe and discuss the project. A meeting was held with SEMSWA and MHFD to discuss IGA and potential consultants for design (03/07/2024). *The IGA between MHFD, SEMSWA and CCBWQA*

is being reviewed and will be presented at the May TAC/Board meetings for recommendation of board approval (04/25/2024).

7. McMurdo Gulch Priority 3 Stream Reclamation (CCB-7.4)

- 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. A meeting was held on 01/24/2024 to help determine the approach for obtaining 404 permitting (including Muller, ERO, Castle Rock and CCBWQA). Wetland mitigation under a nationwide permit was recommended by ERO and potential cost impacts for this approach were discussed. Muller's is working on updating estimated construction costs but anticipates being able to move forward with one complete project instead of phasing into two (separating the work on the upstream reach). Muller provided a breakdown of the estimated construction cost versus budget in a meeting with Castle Rock on (02/08/2024) showing the potential to construct both projects in one phase.

8. Lone Tree Creek in CCSP downstream of Pond (CCBWQA Only) (CCB-21.1)

- a. Description: *New Project 2024 – Description TBD*
- b. Status:

9. Lone Tree Creek in Cherry Creek State Park (CCB-21.3)

- 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). UASCE is currently reviewing this project as of a letter requesting comments dated (12/15/2023). 100% Construction Documents were submitted (02/20/2024).

10. Happy Canyon Creek at Jordan Road (SEMSWA) (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). A 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. A project site walk with the project team is scheduled for 1/31/2024. A site walk was held on 01/31/2024 with SEMSWA, MHFD and the design team to discuss the study and observe the changes in the project since the 2023 storms. MHFD has performed sediment removals, and that quantity information was shared with the project team. (01/31/2024). A design progress meeting was held on (02/26/2024) to discuss the direction moving forward in the alternatives analysis from the assessment phase of the project. The IGA 3rd Amendment for additional \$50,000 funding is scheduled for the April 2024 TAC/Board. The IGA 3rd Amendment was approved for an additional \$50,000 funding at the April Board Meeting (04/18/2024). An agreement has been made with Jacobs to begin drone survey of the project area (04/22/2024).

11. 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 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 the Board in September (9/9/21). 2021 IGA Amendment has been executed (11/11/21). Coordination with CDOT and Amendment at their June 16th 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). Asphalt repairs have been made and the project summary has been prepared (12/1/23). Post construction LOMR services agreement amendment for Muller draft has been prepared by MHFD and sent to CCBWQA for review (03/06/2024). Post construction services for wetland monitoring, permitting closeout and revegetation has been submitted by ERO resources, an agreement has been sent to project partners by MHFD and reviewed.

12. 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 the 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). Project summary has been prepared (12/1/23). A warranty walk for Phase 1 improvements was held on (04/09/2024) with CEI, SEMSWA, RESPEC and Corvus.

13. 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). A progress meeting was held on 01/23/204 and construction is expected to start on 02/05/2024 completing 07/2024. GESC and State Stormwater Permitting was obtained week of the 02/05/2024 allowing the work to commence. Potholing for the project has been completed and results of waterline depths in the project area, appear to reduce encasements required throughout the project reach as reported in the progress meeting (02/06/2024). Water diversion is in place as of (02/20/2024). Forebay Slabs at Digicomm and Fairplay forebays have been poured as of (03/12/2024). Channel riffle – pool features have been completed in the channel as off week ending 03/22/2024. Western States mobilized to the site the week of 04/08/2024 to begin revegetation of the channel starting upstream. *The Punchlist walk for the project is scheduled for (04/30/2024)*

14. Mountain and Lake Loop Shoreline Stabilization Phase II (OM-)

- 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). A site meeting with CPW is being scheduled to determine the feasibility of the project after the 2023 storm damage (12/1/23). The 12/20/23 site meeting with Michelle Seubert identified 2 possible alternatives to address 2023 storm damage and meet USACOE cut and fill requirements while maintaining access to the swim beach. An updated project cost is about \$90,000 which is over the \$65,000 budgeted in 2024 (12/28/23). After discussion with Gene at USACE, further analysis to determine project feasibility is necessary and will be provided. *Soil samples have been collected at the project site (03/7/2024) for further analysis of the project benefits.*