

ACTION ITEM MEMORANDUM

Date: June 14, 2024

To: Cherry Creek Basin Water Quality Authority Board of Directors
Jane Clary, CCBWQA Technical Manager

From: Erin Stewart, LRE Water

Subject: Acceptance of the 2023 Wetland Harvesting Project Update and Authorization to Proceed with the Wetland Harvesting Project in 2024

Request

Acceptance of the 2023 Wetland Harvesting Project Update and authorization to proceed with the Wetland Harvesting Project in 2024, an expenditure not to exceed \$90,000, with the direct selection of L&M Enterprises to perform the harvesting.

Wetland Harvesting Project Background and Summary

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 nutrient loads reaching Cherry Creek Reservoir.

The project objective was to harvest wetland plants 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 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 has reviewed instream water quality monitoring data during the pilot project to evaluate if measurable changes were achieved as a result of the harvesting efforts. These 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.

A memo and presentation on 2023 Wetland Harvesting Project updates was provided at the May TAC meeting. A discussion followed regarding completing the full pilot study based on the funds allocated in the CIP budget, completing one additional year and reviewing the water quality analysis again, and



evaluating options for harvesting in different areas of the watershed. Efforts to review findings with Alpine Eco, SEMSWA’s consultant for prior wetland harvesting studies, is in progress but could not be completed before this meeting.

Project Findings

The CCBWQA Wetland Harvesting has been completed on Cottonwood Creek for the last 3 years as part of the 6-year pilot project.

2023 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 1. Outlines the original pilot design estimates along with the actual costs for the last 3 years. The project cost has gone up, but the removal efforts have been more effective in terms of biomass removed. There has also been a significant reduction in the cost/lb of phosphorus removed from the estimated values.

Table 1. 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



Budget:

CCBWQA's 2024 budget includes \$90,000 for the pilot project.

Motion:

I move that the Board accepts the 2023 Wetland Harvesting Project Update and authorizes the Wetland Harvesting Project to continue in 2024, an expenditure not to exceed \$90,000, and the direct selection of L&M Enterprises to perform the harvesting.