



Colorado Water Conservation Board

Water Plan Grant – Statement of Work – Exhibit A

Statement Of Work

Prepared Date:	April 28, 2023
Name of Grantee:	Chaffee County Community Foundation as the Fiscal Agent for Envision Chaffee County
Name of Water Project:	Chaffee County Fourmile Creek Multi-Benefit Restoration
Funding Source:	Watershed Health and Recreation
Water Project Overview:	
<p>This grant will fund restoration treatment, monitoring, and adaptive management of the 0.7-mile, 14.2-acre reach of Fourmile Creek as a pilot project to demonstrate low-tech restoration of degraded stream-wetland beaver complexes to reestablish natural ecological processes that deliver multiple benefits. The project will restore natural infrastructure by using simple structural and vegetation treatments to repair a damaged riverscape ecosystem for the benefit of both nature and people. This pilot project is the first phase of a greater restoration opportunity in the Fourmile Creek/Sevenmile Creek watershed, which is one of many similarly degraded riverscapes where the approach could be applied in Chaffee County and regionally.</p> <p>Since this ecosystem is critically dependent on beavers to maintain ecological function and the targeted Stage-0 (i.e., floodplain connected) condition, and since degradation of the ecosystem is directly linked to the absence of this keystone species, the Grantee's restoration treatments (Task 1) are designed to mimic beaver activity and to promote long-term reoccupation of beavers on Fourmile Creek. Project objectives will be scientifically monitored to report on the effectiveness of this strategy and to document hydrological changes to groundwater levels and streamflow (Task 2). The combination is intended to not only restore this stream reach but to also provide a model with documented benefits that can be applied at landscape scale.</p>	
Project Objectives:	
<p>The project goal is to reestablish normal rates and magnitudes of physical, chemical, and biological processes typical of the pre- disturbance natural condition. The project's main objectives are:</p> <ol style="list-style-type: none">1. Sediment retention—mitigate the observed high sediment influx caused by historical land use and potential future sediment influx.2. Water detention—attenuate flash flood peaks, support aquifer recharge, and enhance/maintain aquatic and wetland habitat quantity and quality.3. Fluvial activity (a.k.a. floodplain connectivity)—maintain aquatic and wetland diversity, riparian vegetation, floodplain roughness, and floodplain activation frequency4. Beaver activity—Beaver activity must be present (or effectively mimicked) at a sufficient level to sustain the other processes and functions.	



Tasks
Task 1 – Restoration Treatments
Description of Task: <p>Task 1 is the implementation of prescribed restoration treatments which have been laid out over 8 complexes (segments) in the project restoration plan.</p> <p><u>Subtask 1a: Vegetation treatments</u> Approximately 3600 willow stems will be harvested and planted in 2024.</p> <p><u>Subtask 1b: Structural treatments</u> Approximately 96 structures will be built in 2023 and 2024.</p> <p><u>Subtask 1c: Adaptive management</u> Annual surveys will be conducted to evaluate and maintain structures in 2024 and 2025.</p> <p>All restoration treatments will be supervised and carried out by EcoMetrics and subcontractors and will involve assistance from volunteers organized by Envision Chaffee County and US Forest Service staff. All National Environmental Protection Act (NEPA) surveys are complete, and the NEPA document was scheduled to be completed in December 2022. An Army Corps 404 permit application was made in January 2023.</p>
Method/Procedure: <p><u>Subtask 1a: Vegetation treatments</u> Willow stems will be harvested locally from the treatment site and will include the diversity of willow species present. Harvesting will take place when the plants are still dormant in April 2024, and the stems will be stored in water to stimulate the development of roots until it is time to plant them in June 2024.</p> <p><u>Subtask 1b: Structural treatments</u> Woody material structures and beaver dam analogs (BDAs) will be installed using native materials to mimic the structure and function of beaver dams. Ongoing maintenance of these structures is anticipated if beavers do not immediately move into these structures.</p> <p><u>Subtask 1c: Adaptive management</u> An estimated 2/3 or more of the proposed structures will be installed in 2023, with the remaining installations to be done in 2024. Treatments will be inspected and adaptively managed by EcoMetrics annually through 2025. Longer-term monitoring and adaptive management will be supported by the Chaffee Recreation Adopters program, who will recruit and train volunteers to perform maintenance with a labor crew and hand tools.</p>
Deliverable: <p><u>Subtask 1a: Vegetation treatments</u> Approximately 3600 willow stems cut and planted in 2024</p> <p><u>Subtask 1b: Structural treatments</u> Approximately 96 low-tech structural treatments (woody material structures and BDAs) built in 2023 and 2024</p> <p><u>Subtask 1c: Adaptive management</u> Adaptive management of treatments through 2025 by EcoMetrics and longer term by Chaffee Recreation Adopters.</p>



Tasks
Task 2 – Monitoring and Evaluation
Description of Task:
<p>Monitoring is an essential component of this pilot project. The primary purpose is to provide data that stakeholders can use to objectively and critically evaluate the effectiveness of the project and its effect on streamflow. This information will be critical as project partners decides whether and how to expand this restoration approach and strategy in Chaffee County.</p> <p>Tasks include:</p> <p><u>Subtask 2a:</u> Streamflow monitoring Continuous monitoring of stream stage at two stations on Fourmile Creek, one upstream and one downstream of the project reach</p> <p><u>Subtask 2b:</u> Water table elevation/depth monitoring Continuous monitoring of water table elevation May-October 2023-2025 at approximately 16 locations within the project reach</p> <p><u>Subtask 2c:</u> Aerial surveys Two unmanned aerial vehicle (UAV) flights of the site per year from 2023-2025 to capture high-resolution aerial imagery, combined with Real-Time Kinematic Global Positioning System (RTK GPS) for orthorectification and digital elevation data</p> <p><u>Subtask 2d:</u> Ground photopoints Approximately 16 established photopoints to be repeated two times per year 2023-2025;</p> <p><u>Subtask 2e:</u> Ground surveys Two ground surveys with GPS per year 2023-2025 to map the extent of surface water and observed sediment deposition</p> <p><u>Subtask 2f:</u> Beaver surveys One survey with experienced beaver biologists per year in fall 2023-2025 to map dams, lodges and caches</p> <p><u>Subtask 2g:</u> Colorado River Health Assessment Framework (CoRHAF) evaluation Pre-project variable grades will be reassessed in 2025 to document observable trends</p> <p><u>Subtask 2h:</u> Evaluating objectives Monitoring data will be used to evaluate and report on the 4 primary objectives by comparing observations against expected outcomes.</p> <p>All monitoring and evaluation activities will be supervised and carried out by EcoMetrics with help from subcontractors and US Forest Service staff. The Grantee welcomes any input or technical assistance from Colorado Water Conservation Board (CWCB). Volunteers will be recruited to monitor long term impacts including beaver activity post-2025.</p>



Method/Procedure:

Subtask 2a: Streamflow monitoring

The Grantee will set up two permanent stations for routine measurement of streamflow using standard procedures for measuring velocity and depth of cells on a cross section. The stations will also be equipped for the continuous measurement of stage height using a pressure transducer and/or staff gauge with camera from May through October. A stage-discharge rating curve will be calculated for each station. The Grantee would also consider the installation of flumes at these stations to improve precision and accuracy, if this method is preferred by water administrators, stakeholders, or CWCB.

Subtask 2b: Water table elevation/depth monitoring

The Grantee will install approximately 16 shallow monitoring wells arrayed in approximately 4 valley-wide cross sections. These wells will be 1.5-2.0-inch slotted and capped Polyvinyl chloride (PVC) pipes, approximately 2.5-3.0-feet deep, equipped with Onset HOBO U20L-04 pressure transducer dataloggers for measurements to be made May through October.

Wells will be surveyed with RTK GPS for location and elevation. An additional pressure transducer will be used to log real-time atmospheric pressure at the site so that pressure data in the wells can be accurately converted to water depth using Onset HOBO software modules.

Subtask 2c: Aerial surveys

Aerial surveys will be conducted with a UAV equipped with RTK GPS antenna and high-resolution camera and an RTK GPS base station. UAVs will also be used to capture aerial video and still shots of the project area.

Subtask 2d: Ground photopoints

Photopoint locations will be identified to capture subjects of interest, recorded with GPS, and marked with fiberglass rods. Photos will be taken twice annually.

Subtask 2e: Ground surveys

Ground surveys of the project site and a control site will be made once per year in summer to map the extent of surface water and/or saturated ground by walking the perimeters with GPS. Surveyors will also map observations of significant sediment accumulation.

Subtask 2f: Beaver surveys

Wildlife biologists will survey the project site and a control site to identify and map the locations of functional beaver dams, active beaver lodges, and caches. Surveys will be conducted annually in fall after beavers have been observed building caches in the area.

Subtask 2g: CoRHAF evaluation

Pre-project riverscape health assessment grades have been made for the project and control reaches for each of the Colorado Stream Health Assessment Framework (COSHAF) variables. These will be reevaluated in 2025 to report on trends observed following restoration treatments.

Subtask 2h: Evaluating objectives

Each of the 4 main project objectives will be considered in an evaluation of the effectiveness of restoration treatments toward the process-based restoration goal of reestablishing normative rates and magnitudes of physical, chemical, and biological processes typical of the pre-disturbance natural condition.

Deliverable:

Subtask 2a: Streamflow monitoring

Data files with at-a-station discharge measurements, data files with continuous stage measurements from May through October 2023-2025.



Subtask 2b: Water table elevation/depth monitoring

Data files with continuous water elevation measurements from May through October 2023-2025 from approximately 16 locations.

Subtask 2c: Aerial surveys

Orthorectified aerial image files (2 per year, 2023-2025) and Digital Elevation Model (DEM) files (1 per year, 2023-2025) of the site.

Subtask 2d: Ground photopoints

Photo files (2 sets per year, 2023-2025) from approximately 16 established photopoints.

Subtask 2e: Ground surveys

Geographic Information System (GIS) files (1 per year, 2023-2025) of ground-mapped surface water extent and observed sediment deposits.

Subtask 2f: Beaver surveys

GIS files (1 per year, 2023-2025) of ground-mapped beaver dams, lodges, and caches.

Subtask 2g: CoRHAF evaluation

CoRHAF tables with pre-project variable assessment grades, observed trends, and short discussion on the evidence of trends.

Subtask 2h: Evaluating objectives

A report on the effectiveness of restoration treatments that includes the assessment of each of the 4 project objectives with evidence/observations laid out in data summaries, tables, graphs, and photos.

Tasks
Task 3 – Stakeholder/Volunteer Engagement and Administration
Description of Task:
Envision Chaffee County (Envision) will ensure that project stakeholders remain apprised of project progress and outcomes and that the project remains connected to landscape-scale treatments to manage wildfire risk and watershed health. Envision Chaffee County also manages the Chaffee Recreation Adopters Program; through the Recreation Adopters program, Envision will recruit volunteers and partner with EcoMetrics to train volunteers to support vegetation treatments, monitoring and maintenance tasks and will track volunteer hours.
The Project will be administered by Envision Chaffee County using the Chaffee County Community Foundation (CCCF) as a fiscal agent. Envision will provide overall project management and ensure reporting. CCCF will perform project accounting, contractor payment, invoicing and ensure required reporting is completed.



Method/Procedure:	
<u>Subtask 3a: Stakeholder/Volunteer Engagement</u>	Envision will recruit volunteers through established and proven networks. Envision will partner with EcoMetrics to provide volunteers with required training to complete assigned tasks in treatment, monitoring and adaptive management.
<u>Subtask 3b: Project Administration</u>	Chaffee County Community Foundation will provide project financial administration, accounting, invoicing, contractor payment and ensure required project reporting is delivered. Envision Chaffee County will administer contractors.
Deliverable:	
<u>Subtask 3a: Stakeholder/Volunteer Engagement</u>	Volunteers will deliver 400 total hours of service supporting treatments, maintenance, and monitoring during organized work days and the project areas will be “adopted” for longer term maintenance and adaptive management. The Chaffee Recreation and Forest Health Councils will remain informed about and engaged in project deliverables and landscape-scale treatment connectivity.
<u>Subtask 3b: Project Administration</u>	Completion of project accounting, administration, invoicing and required reporting.

Budget and Schedule

This Statement of Work shall be accompanied by a combined Budget and Schedule that reflects the Tasks identified in the Statement of Work.

Reporting Requirements

Progress Reports: The applicant shall provide the CWCB a progress report every 6 months, beginning from the date of issuance of a purchase order, or the execution of a contract. The progress report shall describe the status of the tasks identified in the statement of work, including a description of any major issues that have occurred and any corrective action taken to address these issues.



Final Report: At completion of the project, the applicant shall provide the CWCB a Final Report on the applicant's letterhead that:

- Summarizes the project and how the project was completed.
- Describes any obstacles encountered, and how these obstacles were overcome.
- Confirms that all matching commitments have been fulfilled.
- Includes photographs, summaries of meetings and engineering reports/designs.

The CWCB will pay out the last 10% of the budget when the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the purchase order or grant will be closed without any further payment.

Payment

Payment will be made based on actual expenditures and must include invoices for all work completed. The request for payment must include a description of the work accomplished by task, an estimate of the percent completion for individual tasks and the entire Project in relation to the percentage of budget spent, identification of any major issues, and proposed or implemented corrective actions.

Costs incurred prior to the effective date of this contract are not reimbursable. The last 10% of the entire grant will be paid out when the final deliverable has been received. All products, data and information developed as a result of this contract must be provided to as part of the project documentation.

Performance Measures

Performance measures for this contract shall include the following:

(a) Performance standards and evaluation: Grantee will produce detailed deliverables for each task as specified. Grantee shall maintain receipts for all project expenses and documentation of the minimum in-kind contributions (if applicable) per the budget in Exhibit B. Per Grant Guidelines, the CWCB will pay out the last 10% of the budget when the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the purchase order or grant will be closed without any further payment.

(b) Accountability: Per Grant Guidelines full documentation of project progress must be submitted with each invoice for reimbursement. Grantee must confirm that all grant conditions have been complied with on each invoice. In addition, per Grant Guidelines, Progress Reports must be submitted at least once every 6 months. A Final Report must be submitted and approved before final project payment.

(c) Monitoring Requirements: Grantee is responsible for ongoing monitoring of project progress per Exhibit A. Progress shall be detailed in each invoice and in each Progress Report, as detailed above. Additional inspections or field consultations will be arranged as may be necessary.

(d) Noncompliance Resolution: Payment will be withheld if grantee is not current on all grant conditions. Flagrant disregard for grant conditions will result in a stop work order and cancellation of the Grant Agreement.