

**Mancos Watershed Resiliency Project:
Riparian Restoration and Infrastructure Improvements to Better the
Ecological Processes of the Mancos Watershed**



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Executive Summary

March 28th, 2023

Mancos Conservation District

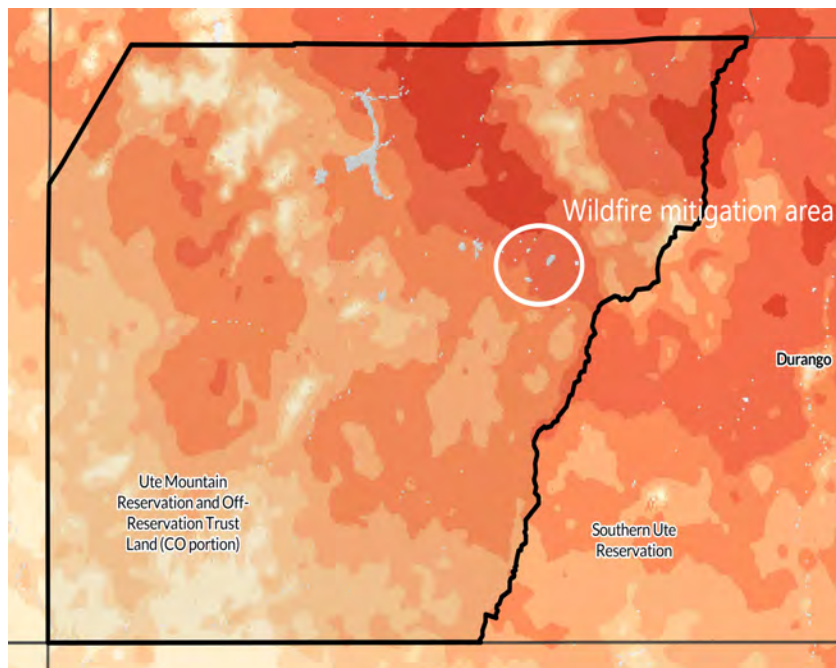
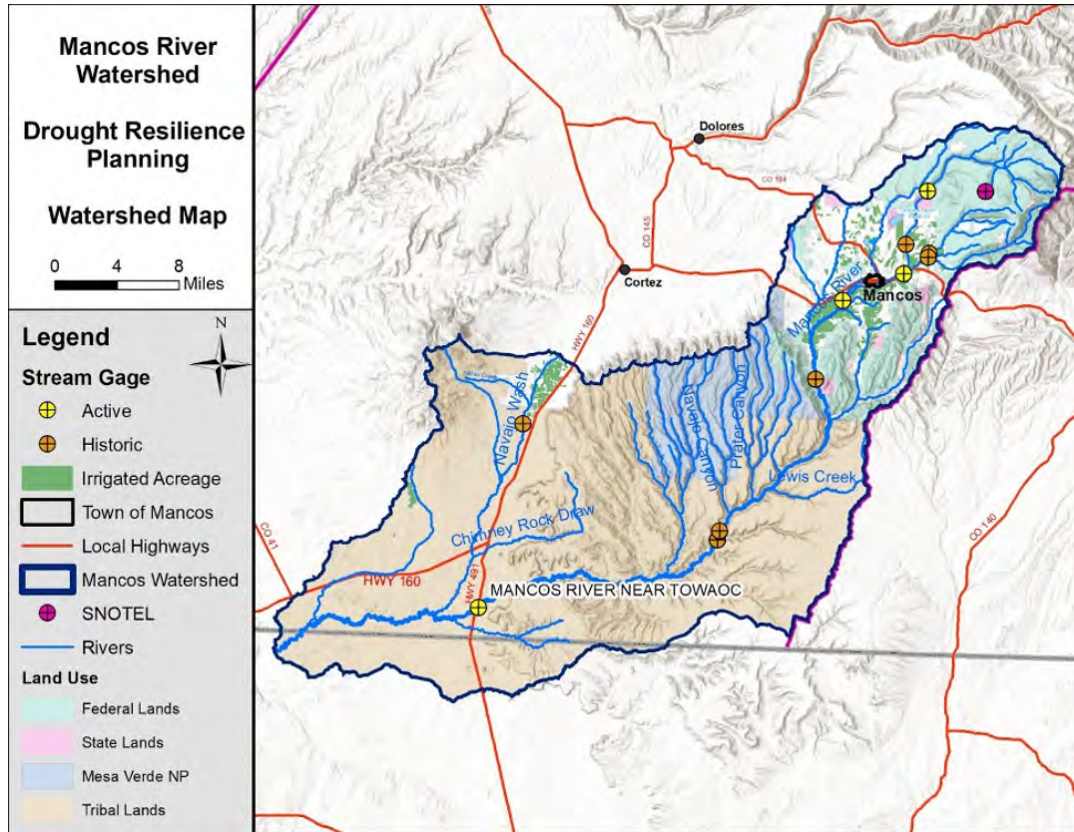
Mancos, Montezuma County, Colorado

Timeline: October 1, 2023 - December 31, 2026

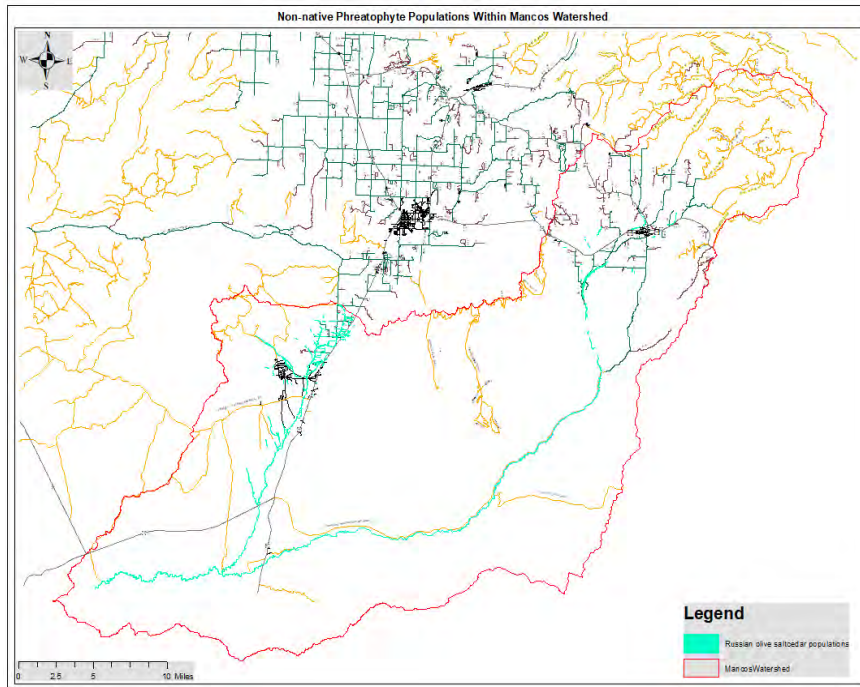
The Mancos River watershed is home to a diverse group of water users; agricultural producers, the Town of Mancos, recreational water users, Mesa Verde National Park and the Ute Mountain Ute Tribe all rely on this water for their livelihoods and community health. The Mancos River, a tributary of the San Juan River, is also a home to a diverse ecological system that supports cold and warm water fisheries and the culturally significant cottonwood and willow trees that comprise healthy riparian zones throughout our watershed. Drought and climate change continuously pose new challenges throughout southwest Colorado, Mancos, Colorado included. As was outlined in the report Prioritized Drought Resilience for the Mancos Watershed, MSI, March 2021 Montezuma County has experienced abnormally dry conditions within the last year and Colorado is likely to continue experiencing climate related stressors. Drought, wildfire, and flooding have been identified as community concerns during Phase I of the Mancos Watershed Stream Management Planning (MWSMP) effort. In partnership with the Town of Mancos (ToM), the Mancos Watershed Resiliency Project proposes to improve watershed health and climate change resiliency through improving three agricultural diversion structures, installing remote metering and telemetry equipment on ten agricultural pipeline headgates, completing forest mitigation work on 650 acres, and replacing invasive riparian phreatophytes with native species along 15 properties of the Mancos river. These restoration and infrastructure improvements to private lands throughout the Mancos Watershed enacted through this funding opportunity will support the ecological processes and water resources management throughout the Mancos Watershed holistically, enabling the prioritization of wildlife as well as the agricultural, municipal, and tribal communities that rely on the river.

Project Location

The Mancos Watershed Resiliency Project will take place at various locations in the Mancos Watershed, which is located in Montezuma County, Colorado.



Montezuma County has a high risk of fire--higher than 79% of other counties in the US. The Mancos area has a 86% higher risk of wildfire compared to other communities in the US (source: USDA USFS Wildfire Risk to Communities, <https://wildfirerisk.org/explore/overview/08/08083/>).



The Mancos Watershed has an estimated 1,131.56 acres of Russian olive and tamarisk, primarily along riparian areas. Map Courtesy of the Montezuma County Noxious Weed Department, Bonnie Loving, March 9, 2023.

Technical Project Description

The Mancos River is a unique tributary of the San Juan and Colorado Rivers that supports a thriving agricultural community, provides critical habitat for imperiled native warm water fish species, and is the sole source of municipal water for the Town of Mancos, Mancos Rural Water Company, and Mesa Verde National Park. The Mancos Watershed Resiliency Project employs a multifaceted approach to improve watershed health and climate change resiliency through restoration and infrastructure improvements that will support the ecological processes and water resources management in the Mancos Watershed.

The Mancos Watershed Resiliency Project will provide infrastructure improvements that will increase the efficiency of managing water resources in the Mancos Watershed. The funds requested in this application will improve three aging agricultural diversions and support the installation of meters and telemetry equipment on 10 agricultural irrigation ditches. Irrigation diversions on the Mancos River are critical for providing water to crops and livestock; unfortunately, many of the diversions in the watershed are aging. They currently do not divert water efficiently and improvements to these diversions will aid irrigators and support healthy riparian ecosystems by preventing erosion and sedimentation that can occur with aging diversion structures. This project will design,

engineer, and construct three in-stream structures that efficiently divert water for irrigators while maintaining fish passage. It is anticipated that each diversion will require a new steel diversion box with sluice, rocks and boulders will be used to create cross-vanes and step-pools below the diversion to allow for adequate fish passage while ensuring efficient diversion of allocated water.

In addition to upgrading diversion structures this project will work with local ditch companies to install remote metering devices and telemetry equipment on 10 agricultural ditches. These will send water flow data to a local server. Each ditch diversion will require the installation of a compatible metering device and data transmission equipment. Solar panels and a battery bank will provide power for the equipment at each river diversion site and the meters will feed data to a central location using cellular LTE service so that water managers can easily access all the data in one central location.

The second component of this project will provide funding to support fire mitigation activities on private lands within the watershed. Drought affected forests in southwest Colorado, specifically Ponderosa Pine, have substantial departure from historical structure and fire regime. Legacies of fire suppression, grazing, and timber harvesting have led to increased stand density and smaller diameter trees resulting in an increase in overall wildfire risk. This project will focus on mid-sized parcels with stand-level thinning and strategically placed larger thinning projects and fuel breaks to alter fire behavior and transmission.

Thinning projects will reduce basal area and tree density on private properties. Properties with higher density Ponderosa Pine overstory will be prioritized. Treatments done in pinyon-juniper stands will emphasize reducing fuel loads and will be focused on lands adjacent in the wildland-urban interface to best protect lives and homes. Areas with high density Gambel Oak understories will also be treated to reduce ladder fuels while also retaining heterogeneity in oak structure that is important for wildlife habitat. Treatments in this project will prioritize properties over 15 acres in size. A variety of funding mechanisms will be used to match COSWAP funds dependent on property size. Matching funds include NRCS EQIP, CSFS Forest Ag Program, FRWRM, and others in order to broadly implement treatments. A professional forester will write management plans and prescriptions for these projects in order to ensure treatments meet collaborative resilience and wildfire risk reduction standards as well as facilitate acquisition of outside funding sources.

Large fuel-breaks will be created using thinning and/or mastication to alter fire behavior. The approach will be based on Dennis (1999), Fuelbreak Guidelines for Forested Subdivisions and Communities. The goal being an increase in crown spacing and

higher crown basal heights rather than a specific basal area, although basal area goals will be relatively low. This approach involves creating 10 feet spacing between crowns, removing ladder fuels within the fuelbreak, and pruning up remaining vegetation. Fuel break width will be ~200 ft. Pinyon and juniper will be pruned up about 5 feet and small trees and shrubs under the residual tree crowns will be removed to keep flame lengths low. There can be clumps of trees and shrubs (including oak) left in Pinon-juniper fuel breaks, but the 10-foot crown spacing between clumps and individual trees remains key.

The forestry work will occur on private property located in a high wildfire risk area. This project will work synchronistically with work being performed with the recently awarded COSWAP grant (for more information, see Criterion B: Collaborative Planning) projects that target the critical community resilience fuels treatment gaps - namely on private lands. The Jackson Gulch area has over 9,000 acres of private lands identified as a high priority for wildfire mitigation work due to high fire risk. Located in the upper Mancos Watershed, wildfires in this area will have disproportionate impacts to the agricultural and drinking water of the Mancos Watershed and to overall watershed health. The COSWAP project will treat 330 acres in the Jackson Gulch area, and this proposal will treat 300 acres. Some private landowners have completed larger thinning projects, yet treatments on non-federal forested lands and defensible space work are the greatest need and opportunity to reduce wildfire risk to lives and property. The project proposed here stitch together a cohesive cross-boundary risk reduction strategy and play a critical role to enhance resilience across this multi-jurisdictional landscape.

The final part of the Mancos Watershed Resilience Project will provide funding for invasive species removal and subsequent restoration of riparian areas within the Mancos Watershed. To improve ecosystem services of riparian vegetation, such as bank stabilization, support of wildlife habitat, and water quality protection, invasive riparian corridor species will be replaced with native cottonwood and willow species on private lands throughout the Mancos Valley. The riparian restoration will occur on private property.

Evaluation Criterion A: Project Benefits (25 points)

Sub Criterion A.1: Project Benefits

General Project Benefits

The Mancos River watershed hosts a diverse group of water users; agricultural producers, the Town of Mancos, recreational water users, Mesa Verde National Park and the Ute Mountain Ute Tribe all rely on this water for their livelihoods. There are

close to fifty ditches that all divert water for various beneficial uses along the Mancos River and its tributaries. Within the Mancos watershed there are numerous small reservoirs mixed in with a slew of water rights from the 1800's all the way to present day filings.

Drought and climate change are posing new challenges for water users in southwest Colorado. Montezuma County has experienced abnormally dry conditions within the last few years and Colorado is likely to continue experiencing climate related stressors, such as drought, wildfire, and catastrophic flooding. MCD is in the process of creating the MWSMP to better understand the needs and future desires of the water managers and land owners in the watershed. This continuing effort, led by agricultural producers, along with various other outreach efforts, have uncovered physical needs in the river and management changes that may greatly improve the drought resiliency of the whole watershed.

While impacts of the current drought are still being assessed, droughts of these levels have historically impacted the area by reducing flows in rivers and reducing reservoir storage. Drought has the potential to impact the Mancos Valley by reducing flows in rivers, reducing reservoir storage, decreasing the overall amount of water available, and by changing the timing of runoff. Understanding and improving flow patterns, including the diurnal fluctuations of the river caused by snowmelt and freezing in the high country in the watershed have the potential to support not only the municipal, agricultural and recreational water users in the Mancos Valley, but also the health and wellbeing of the riparian ecosystem as well.

Through a grant from the Southwestern Water Conservation District (SWCD), the Mancos Conservation District partnered with three local ditches to pilot the Mancos Valley Smart Metering Project in 2022. The work accomplished through this grant established a local network of water meters and telemetry equipment that sends real-time water flow data to a local server. The Mancos Watershed Resiliency Project expands upon the Mancos Valley Smart Metering Project, by providing funds to purchase and install additional meters in the valley that will support water managers and the ecological well-being of the watershed, by providing needed information to help the community better manage this complex system. Innovative solutions that provide strategies to better manage the river may also help decrease streamflow fluctuations and improve instream flows for aquatic organisms, allowing the community to better protect this vital resource. Promoting proactive steps that support a more efficient, drought resilient water delivery system in order to protect agricultural, municipal, environmental and recreational uses of Colorado's water is imperative to maintaining river health and a viable agricultural industry in the face of these changes.

In addition to the potential impacts of drought and climate change mentioned above these threats also have the potential to impact the Mancos Watershed by shifting water temperatures in aquatic ecosystems, all of which have the potential to impact the aquatic ecosystems in the Valley. The Mancos River provides ideal long-term habitat for both warm and cold-water fish species due to in-stream flows for irrigation, senior priority of water rights, current riparian habitat, suitable water quality standards and tolerable water temperature. Several species of warm water fish are found in the Mancos River, including Bluehead Sucker (*Catostomus discobolus*), Flannelmouth Sucker (*Catostomus latipinnus*), and Roundtail Chub (*Gila robusta*). These fish are known as the ‘three species’ and are identified as species of concern by the State of Colorado. The Mottled Sculpin (*Cottus bairdi*) is also found in the Mancos River. These warm water fish are highly vulnerable to low summer stream flows, frequency of drought and habitat fragmentation and rely on habitat that is connected by flow and tolerable water temperatures. Climate change and fragmentation caused by aging infrastructure have the potential to impact warm water fish habitat connectivity.

Warm water species such as the ‘three species’ differ from those of cold-water fish. With warm-water fish having the potential inability to navigate the same barriers that cold water fish can. The *Prioritized Drought Resilience for the Mancos Watershed Report* found that these warm water fish are highly vulnerable to climate change and low summer stream flows, frequency of drought and habitat connectivity are all factors that contribute to this ranking. Warm water fish require habitat that is connected by flow and tolerable water temperatures and climate change induced drought has the potential to impact warm water fish habitat connectivity due to the impact on in-stream dry-up in historic wet points.

The Mancos River also has established presence of cold water species such as Rainbow Trout (*Oncorhynchus mykiss*), and Brown Trout (*Salmo trutta*) are present and Cutthroat Trout (*Oncorhynchus clarkii*), a species of special concern has expected but not confirmed presence. Climate models predict that stream flows will continue to decrease, matched with water temperature’s having a predicted increase; it is predicted that the current warm-cold transition zones will shift to higher altitudes. This will impact aquatic habitats and require cold-water and warm-water fish populations to move upstream. This disconnection and shift in populations will reduce abundance and diversity of native fish populations as the Mancos River becomes uninhabitable due to physical disconnect at dry-up points and temperature requirements not being met.

Through partnerships with irrigators and other watershed partners, many of the fish barriers in the watershed have been rectified, opening miles of habitat to fish species. However, our aging infrastructure that is in need of maintenance is at risk of becoming fish barriers if irrigators take on those projects themselves as many have to prioritize cost efficiency over ecological benefits when it comes to handling these projects.

Therefore, if MCD is able to help provide funding and expertise then that risk is reduced throughout the watershed and we are better able to meet the holistic priorities of our stakeholders.

Improving diversions will help ensure that agricultural producers who rely on these diversions for crops and livestock can efficiently divert water now and throughout the future. Inefficient divisions contribute to bank erosion and increase sedimentation in the river channel, which degrades water and habitat quality for aquatic organisms and water users. Diversion improvements are frequently more expensive than irrigators can afford on their own. This leads to them choosing cost efficiency over proper engineering design, these “homemade” structures do not offer a holistic solution for irrigation construction and frequently have negative impacts on fish passage and riparian buffer zones. Through providing financial assistance to water managers, we can ensure that stakeholders interests are better met by accounting for habitat impacts creating structures that meet the needs of irrigators and environmental users. As climate change continues to impact southwest Colorado, it is important to ensure that the ‘three species’ have access to tolerable habitats while continuing to support the livelihood of the agricultural producers who are also negatively impacted by drought. These threats have ensured that partnerships with landowners to improve diversions is a crucial component of the MWSMP process.

Through focusing on fuels management on mid-sized parcels the watershed will receive the benefit of fire risk alleviation. In addition to community risk reduction treatment will also reduce post-fire risk to the watershed. From fluvial hazard mapping conducted on the watershed by Round River Design, it is evident that a fire would bring heavy sedimentation to the Mancos River and our water storage pools. The sedimentation would impact all watershed users, as the Mancos River is the only water source in the Mancos Watershed. The risk is at its highest around Jackson Gulch Reservoir which is the primary water storage reservoir for ToM, Mesa Verde National Park, and Mancos Rural Water. If wildfire occurs around Jackson Gulch Reservoir the sediment loading would have disastrous impacts on all of these stakeholders and those that use this water. Therefore, addressing this risk is of utmost importance for human and environmental users.

Ponderosa pine and pinyon-juniper forest types dominate the focal areas, with a Gambel oak component. The Ponderosa Pine forest structure is fire dependent yet it has not burned in a substantial amount of time. This is due in part to a history of early unregulated logging and unregulated early-grazing matched with heavy fire suppression throughout the forest. The Ponderosa dominant stands are also exhibiting higher risk due to the impacts of beetle kill and dense stands present in the watershed. This forest structure is dominant surrounding Jackson Gulch Reservoir which supports almost all

water users in the region. As stated above the catastrophic impacts of wildfire on Jackson Gulch Reservoir would wipe out all water stores in the Mancos Valley. Through prioritizing the treatment of this area, we will see a reduction of risk to Jackson Gulch Reservoir and water users in the region. In addition, we will promote a healthy functioning forest ecosystem that is better able in its ability to sequester carbon, as a reduction of resources and better water and sun access of the understory allowing secondary forest layers to also play a role in acting as a carbon sink.

In the lower reaches of the watershed pinyon-juniper becomes the dominant forest type. While this forest structure is not fire dependent it burns severely when wildfire occurs. Historically, it received prescribed burning and had a 2,700-acre fire in 2020. There have been no prescribed burns in the Mancos Area in some time meaning this structure type is also at high-risk for fire. This forest type is an important food source for many bird and mammal species in the area. Our forest management strategies for Pinyon-Juniper forest structures addresses the role this forest structure plays as the dominant stand type in the wildland-urban interface in the Mancos Watershed. Treatment of pinyon-juniper forests will not only maintain their ecological role but also protect the homes and lives of the residents of the watershed.

Through engaging in thinning management practices that alter the movement of wildfire through our watershed we will be able to mitigate the current wide scale harm expected from wildfire in our forests. With the aim being to protect forest floors and lower runoff potential following wildfires. This will aid in lowering the impacts of sedimentation and jumping across the wildland-urban interface to protect homes and lives throughout the Mancos Watershed.

From an analysis of all Rapid Stream Riparian Assessments done by the Conservation District we found an increase in presence of non-native vegetation from 2006 to 2018 - 2022 from 70% to 100%. This increase coalesces with historic grazing impacts and channelization having negative impacts on bank vegetation composition and erosion of our stream banks. To address these issues we will begin replanting efforts along river stretches. We will remove invasive species, such as Russian Olive (*Elaeagnus angustifolia*) and Tamarisk (*Tamarix spp.*) and replant native cottonwoods and willows. This project would enhance bank stabilization on private lands reducing sedimentation in the Mancos River and its tributaries. It would also increase shading of the river stretches which would aid in temperature control and evaporation.

Riparian restoration would have benefits to both our native plant communities, and our water resources in the Mancos Valley. Increasing cottonwood and willow presence would support beaver presence throughout the watershed. It would also support regenerative natural processes in the Mancos Watershed. In addition, willows are

commonly used for phytoremediation partially due to their heavy metal tolerance and capacity for accumulation (Yang et.al., 2015). This would be beneficial to water health along the East Mancos River and Chicken Creek which are degraded from heavy copper and manganese presence in the river. Expanding our riparian zone along degraded banks would not only help with heavy metal accumulation but also create a beneficial and effective pollutant buffer for our water resources. Riparian buffer zones in heavy land-use areas are promising in their abilities for removing pollutants such as nitrogen, and phosphorus (Stutter et.al., 2012), which is a risk in water sources in heavy agricultural communities like Mancos. An additional benefit for riparian restoration with native cottonwood and willow species is their cultural significance to the Ute Mountain Ute Tribe.

Water Conservation and Efficiency Project Benefits

Outreach efforts during Phase I of the MWSMP produced an Agricultural Action Plan that indicated the need for more accurate and timely measurement of water diversions. The Agricultural Action Plan suggested that a measurement network, composed of water meters and data loggers on flumes and weirs all transmitted at frequent intervals to a central website would greatly increase the efficiency of water changes. This need was addressed by the Mancos Valley Smart Metering Project, and will be expanded upon with funding from this proposal. The ability to quickly and efficiently measure diverted water has the potential to more effectively provide water to multiple users, and increase and stabilize instream flows. Currently many irrigators, land owners, lake managers, ditch riders, and other water managers expect to see priority and flow changes daily with river fluctuations, yet the inaccuracy of current measurement techniques matched with the time sink required for personal measurement is resulting in an ineffective water measurement system.

With a network of cost-effective metering devices, water priorities could be set appropriately to account for short term events like massive summer rain events. Water use could be documented more effectively, and lake diversions and releases could be better timed to demand and to better work with nature rather than against it. Many diversions in the Mancos Watershed are outdated and only have a flume or weir with a staff gauge for manual reading. This method does not provide an accurate record of water usage to protect the water rights of current and future users. It also requires a water official to physically travel to the site to read the water flow. This process is time intensive and does not provide a record of daily and hourly use. In addition to metering diversions, upgrading aging diversion structures will allow irrigators to divert water more efficiently, enabling them to divert at both high and low flows, while reducing time spent cleaning and maintaining aging infrastructure. More efficient diversions allow for more efficient irrigation, and reduce salinity loads as well. The benefits of data increase and

improved infrastructure will allow for better access to water for irrigators, while maintaining water flows in the river for an extended period allowing the Mancos Watershed to become more drought resilient and better maintain riparian corridors.

Water Management and Infrastructure Improvements Benefits

The Mancos Watershed has been experiencing exceptional to extreme drought through the past three irrigating seasons. Irrigators have already begun to face the impacts of drought on our watershed and their livelihoods, for example, the 2021 irrigation season in the Mancos Valley was an extremely challenging year for many farmers and ranchers. On an average year, the Mancos River produces 40,000 acre-feet of water, but in 2021, adjudicated water from river flows was very limited and due to low storage; for the first time in memory, Jackson Gulch Reservoir did not release any water for supplemental irrigation. This should have been disastrous but while there was very little water overall, the water that was there was so simple to manage in regards to priority, that high-priority users had no issues accessing their allocated water while lower priorities struggled. The daily fluctuations in river flows were smoothed out almost completely by the simplicity of the situation, whereas in a 'normal' year, lower ditches, while senior in priority, catch much of the up and down fluctuations in flow volume and have no water at some point almost daily.

By installing remote metering devices, water managers will be able to improve their understanding of how water moves through the Valley. 2021's irrigating season showcased that an improved understanding of flow patterns including the diurnal fluctuations of the river caused by snowmelt and freezing in the high country in the watershed are necessary. The Mancos River is supporting not only the municipal, agricultural and recreational water users in the Mancos Valley, but also environmental users including our river channel, riparian corridor, and forests. Better understanding how to translate the good parts of a very tough year into future years could have an incredible impact on enabling holistic management.

Evaluation Criterion A: Restoration Project Benefits

A healthy vegetation component is crucial to riparian health as the plant community provides bank stabilization, wildlife habitat, increased pollutant and nutrient buffering, and water quality due to temperature control. To improve the ecosystem services provided from riparian zones invasive riparian corridor species, such as Russian Olive (*Elaeagnus angustifolia*) and Tamarisk (*Tamarix sp.*) will be replaced with native cottonwood and willow species on private lands throughout the Mancos Valley. By removing invasive phreatophytes and replacing them with native riparian species, the project will improve bank stability, leading to improved habitat and water quality

benefitting aquatic species, such as the native warm-water fish the ‘three species’ and Mottled Sculpin (*Cottus bairdii*). Native plant community restoration will also provide habitat for terrestrial species who live in the riparian corridor, and improve the buffering capacity of riparian vegetation, leading to improved water quality and a healthier riparian corridor.

Russian Olive and Tamarisk are invasive phreatophytes, favoring riparian communities and other moist environments. These nonnative, deep-rooted trees pull up large amounts of water, crowd out native grasses, willow and cottonwood, and increase wildfire danger. With dense populations, these species reduce flora and fauna species diversity. The phreatophyte infestations congest river banks and canals, affect wildlife habitat, and can interfere with irrigation equipment. Because of their ability to colonize streambanks, Russian Olive and Tamarisk can alter the natural flooding regime and reduce availability of nutrients and moisture. Russian Olive tolerates a wide range of environmental conditions including high winds, flooding, drought, extreme temperatures (- 50 °F to 115 °F), saline or alkaline soil conditions, and competition from other trees and shrubs. Russian Olive can become the dominant species in areas after invasion due to its adaptability, aggressive reproduction, and rapid growth rate. Stands of Tamarisk, also known as salt cedar, create an alkaline soil that blocks establishment of native plants and increases salinity to water and soil. Tamarisk roots extend deep into the ground and pull up salt into their leaves. When those leaves drop to the ground, the soil is induced with salt loading. High salinity areas in soils may experience an increase in erosion and long-term salinity contamination. Additionally, the increased salinity can affect downstream water users and communities. High salinity levels are a problem for agricultural production as well. Tamarisks consume dozens of gallons of water per day, especially during summer months. Estimates range from about 32 gallons of water per day for an average sized Tamarisk, according to the 2007 U.S. Geological Survey, to as high as 200 gallons daily for a larger tree. Russian Olives consume up to 75 gallons of water per day. These high levels of water consumption reduce soil moisture in riparian areas and is a risk in high wildfire risk areas.

According to the [Montezuma County Phreatophyte Project 2020 Ten-Year Project Plan 2019-2028](#), data collected from 2019 and 2020 show the water savings per acre comes to about 1.08 acre-feet per acre due to Russian Olive and Tamarisk removal projects within the county. Maritza Maciaas-Corral studied water consumption by classes of riparian vegetation in the Middle Rio Grande Region of New Mexico. This study found that one acre of land infested with russian olives and/or tamarisk would consume 3.8-to-4.5-acre feet of water per year. The Saltcedar Coalition did a Colorado River Basin tamarisk and Russian olive assessment, which estimated that the water usages of tamarisk and Russian olives in their study area consumed 2.3 to 4.6 acre-feet per acre per year. Replanting cottonwood and willow trees will not destroy the water savings. In

revegetation projects, native trees are planted at a much lower density than the typical phreatophyte stands. While the native plants may lower the average 1.08-acre feet to 0.9-acre feet, it is not considered a significant impact to the overall water savings goal.

The Montezuma County Noxious Weed Department (MCNWD) used data collected from 2019 and 2020 on average phreatophyte density and size, the water savings per acre comes to about 1.08 acre-feet per acre. MCNWD has mapped 6,551 acres of Russian olive and 6,772 acres of Saltcedar (Saltcedar) on wetland/waterways within Montezuma County. Specifically, there are 1,131.56 estimated acres of Russian olives and tamarisk within the Mancos Watershed, primarily found along waterways (see map in 'Project Location' section). These species overlap in many areas so the total infested areas in Montezuma County comes to 8,853 acres. Using MCNWD's average water savings per acre, MCNWD estimates Montezuma County is losing 9,561.2 acre-feet per year (or 3,115,530,663.8 gallons per year). The Saltcedar Coalition study estimated 50-60% of the water that would have been used by tamarisk could be salvaged. An example that the Saltcedar Coalition mentioned in their study report, was by having an area that has 60% saltcedar canopy cover, there would be approximately 1 acre-foot that would be able to be salvaged for every 1.85 acres managed. With these water consumption considerations in mind, it is clear that native plant communities have lowered access to deep groundwater resulting in the benefits of a plant community's natural role in riparian ecosystems while pointing to a future increase in long-term water savings as they consume less water than the current spread of invasive species in these regions.

To address the phreatophyte issues, the Mancos River Resiliency Project will initiate the removal of Russian Olive and Tamarisk along streambank stretches of cooperating private landowners. Native cottonwood, willows, and understory species will be replanted in areas where the invasive species have been removed. Riparian restoration has benefits to both native plant communities, and water resources in the Mancos Valley. Increasing cottonwood and willow presence supports beaver presence throughout the watershed. It also supports regenerative natural processes in the Mancos Watershed. In addition, willows are commonly used for phytoremediation partially due to their heavy metal tolerance and capacity for accumulation (Yang et.al., 2015). This would be beneficial to water health along the East Mancos River and Chicken Creek as they are degraded from heavy copper and manganese presence in the river. Expanding our riparian zone along degraded banks would not only help with heavy metal accumulation but also create a beneficial and effective pollutant buffer for our water resources. Riparian buffer zones in heavy land-use areas are promising in their abilities for removing pollutants such as nitrogen, and phosphorus (Stutter et.al., 2012), which are a risk in water sources in heavy agricultural communities like Mancos. An additional benefit for riparian restoration with native cottonwood and willow species

is their cultural significance to the Ute Mountain Ute Tribe which comprises the lower portions of the Mancos Watershed).

Using the United States Drought Monitor map archive, Montezuma County has experienced “exceptional drought” in 2002, 2018, and 2020. Montezuma County has been in the D3 Intensity category documenting extreme drought in 2003, 2012, 2013, 2021, and 2022 and “severe drought” in 2014. Montezuma County has been in the D1 Intensity category documenting moderate drought in 2004, 2006, 2007, 2019, and 2021. Lastly, the D0 Intensity category documenting abnormally dry was recorded in 2010, 2011, 2017, and 2021. In conclusion, since 2002, Montezuma County has had 15 years of reported drought and only 5 years reporting no drought. In Montezuma County, water is a scarce resource.

According to NASA’s soil moisture condition maps, groundwater percentiles in Montezuma County were fairly consistent from 2011 through 2017, but from 2018 into the current year of 2022, groundwater percentiles have dropped significantly. These conditions combined with significant variability in winter snowpack which has been experiencing melts earlier in the spring posing a significant stressor to Southwest Colorado forests and make it very difficult for trees to employ their natural defenses against insect and disease outbreaks. Drought impacted forests in Southwest Colorado, specifically Ponderosa Pine, have substantial departure from historical structure and fire regime. Legacies of fire suppression, grazing, and timber harvesting have led to increased stand density and smaller diameter trees increasing overall wildfire risk. The 2022 [Montezuma County Community Wildfire Protection Plan](#) states Montezuma County recorded fire history goes back as far as the early 1900’s. There are 58 total records for fires in Montezuma County, with 43 of the events having happened since 2000. The three largest wildfires in County history have been over the last 20 years. All three occurred primarily on public lands and were over 10,000 acres.

High-severity wildfires remove forest vegetation from trees, shrubs and grasses, including discarded needles, decomposed roots and other elements of ground cover or duff that protect forest soils. A severe wildfire may also cause certain types of soil to become hydrophobic by forming a waxy, water-repellent layer that prevents water from penetrating the soil, dramatically amplifying the rate of runoff. The loss of surface vegetation leaves forest slopes vulnerable to large-scale soil erosion and flooding during subsequent storm events. These risks threaten the health, safety and integrity of communities and natural resources that are downstream. The likelihood that such a post-fire event will occur is increased by the prevalence of highly erodible soils in the Mancos watershed, along with weather patterns (such as monsoon rains) that frequently bring heavy rains on the heels of fire season.

The 2022 Mancos Valley Source Water Protection Plan draft has identified wildland fire as a high risk with major impacts to the Mancos watershed water system. In cases of high severity fire, runoff and erosion processes can be dramatically altered and magnified with post-fire sediment potentially filling or otherwise damaging reservoirs and streams. Also, the post-fire ash, debris, and sediment can change water chemistry and complicate water treatment and conveyance, as well as decreasing water storage for the downstream community of Mancos and surrounding residents. Studies have shown that, in the first year following a wildfire, the volume of sediment and water runoff in streams greatly increases. People living, working, or traveling near such streams could be killed or injured by floods that contain enormous amounts of debris and mud washed off burned hillsides. In the Mancos area watersheds, fine sediment, organic, and floatable debris could become major issues where irrigation and water intakes can get clogged and become inoperable until repaired. The Mancos watershed municipal water providers depend solely on surface water resources to provide drinking water to residents therefore the effects of sediment would decimate municipal water supply.

The Colorado Forest Atlas Wildfire Risk Viewer provides a comprehensive view of wildfire risk, and in 2022, showed forest conditions in the Mancos watershed as having a moderate to high wildfire risk, moderate to high burn probability, and moderate to very high fire intensity scale. Due to climate change impacts, such as drought, high winds, lower soil moisture levels, increased temperatures, and historic forest management practices, the Ponderosa Pine forests in the Mancos watershed have a high risk of wildfire. Ponderosa Pine and Pinyon-Juniper forest types dominate the proposed project areas.

Post-fire sediment and ash can overwhelm habitat requirements for fish, amphibians, and insects that depend on water for their life cycle. Ponds and streams are vulnerable to an influx of ash, sediment, fire retardants, nutrients and other contaminants. Livestock water may also be impacted negatively by poor water quality as many livestock farmers utilize their stream reaches for livestock water. Irrigation infrastructure can be clogged with post-fire sediment, restricting head gates and diversion structures, settling in irrigation canals and ditches, and reducing flow.

In response to the negative effects wildfire will have on our watershed the Mancos Watershed Resiliency Project proposes thinning projects and fuel breaks to alter fire behavior and transmission in high-risk private lands. Thinning alters the way the fire interacts with the forest by reducing the number of small diameter trees and separating overstory tree canopies, making it more difficult for fire to spread from tree crown to tree crown and reducing the catastrophic effects of fire. Treatments will help reduce postfire risk (sedimentation) to critical water resources for the Town of Mancos, Ute Mountain Ute Tribe, and rural users and irrigators. A 2022 study in Ponderosa forests shows

evidence that forest thinning significantly reduced drought impacts, lowered water stress, and had a greater soil moisture availability compared to non-thinned Ponderosa forests (Sankey, 2022). The Sankey study showed thinning can improve drought resiliency by increasing summer canopy moisture content for the remaining trees, and increasing winter snow accumulation on the ground.

Sub criterion A.2: Multiple Benefits

The components of the Mancos Watershed Resiliency Project are a combination of necessary infrastructure improvements and watershed restoration projects that have the potential to greatly increase the drought resiliency of the Mancos watershed, aid agricultural production locally, and create opportunities to utilize holistic strategies that incorporate natural ecosystems, rather than ignoring them, to ensure a healthy well-established river, riparian, and forest ecosystems.

Additional metering devices in the watershed will aid water managers in understanding water patterns. They will have better knowledge of where dry-ups occur in the Mancos River and how the timing of water changes impacts flows throughout the watershed. These capabilities will greatly aid in water management practices throughout the Mancos Valley. Better understanding our water sources for dry-ups, reappearance locations and timing is a powerful tool for river planning and even day to day usage. Currently, the MWCD manages Jackson Gulch Reservoir to help reduce massive diurnal swings to aid water users and the timing of release changes and snowmelt peaks greatly alters daily river operations. To better understand how diurnal fluctuations in flows affects irrigation diversions is necessary because it will greatly benefit all river management by potentially expanding water availability through the year and potentially increase instream flows throughout the watershed. Increased water for longer periods would benefit agricultural, municipal, recreational, and environmental water users and better support the existing riparian ecosystems.

Upgrading aging diversion structures will allow agricultural water users to more efficiently divert and utilize allocated water while supporting a healthy riparian ecosystem. Improved irrigation efficiency supports reduced salinity, improving the soil quality throughout the Mancos Watershed as well. Improved diversion structures will reduce sedimentation and bank erosion. While also allowing fish improved access to critical habitat refugia enabling them to respond to and become more resilient in the face of climate change.

Supporting the health of the watershed through the forest mitigation activities and riparian restoration projects outlined in this proposal will benefit multiple-uses and the

ecological functioning of the watershed. The Mancos River is the sole source of water for the Town of Mancos, Mancos Rural Water, and Mesa Verde National Park. It also supports the livelihoods of agricultural producers in the Mancos Watershed, provides a wealth of ecosystem services to our community, and holds value for recreationalists, environmentalists, and is crucial culturally for tribal members. By deploying invasive species removal and replacing them with native species to improve riparian corridors and undertaking fire mitigation activities in the watershed, we are supporting a more healthy, resilient, and wildfire-ready watershed that can continue to support these multiple-uses now and throughout the future.

This multi-benefit project enables both the watershed and agricultural producers to better prepare for and respond to climate change. Through improving the health and functioning capacity of the Mancos Watershed and supporting the creation of a healthy, wildfire-ready watershed. While also assisting the ditch companies by updating infrastructure allowing more efficient access to their water. These project benefits support both the Colorado Water Plan and the Southwest Basin Implementation Plan.

Evaluation Criterion B: Collaborative Planning (20 Points)

Collaborative History of Accomplishments. Mancos Conservation District (MCD) (applicant) has taken a leading role in watershed planning and projects in the Mancos Watershed since its conception in 1948. The Mancos Watershed Group (MWG) began in 2006 and is a collaboration of Mancos Valley landowners, community partners, nonprofits, and federal, state, local agencies involved in the watershed. The partnership began with the development of the Mancos Source Water Protection Plan in 2009. In 2011, with the support of the Colorado Nonpoint Source Program, MCD worked with the MWG to develop the Mancos Watershed Plan, and the Colorado Water Trust to complete an Instream Flow Report. MCD has worked with multiple partners to implement projects identified within these plans. With support from CWCB, Southwest Basin Roundtable, Colorado State Conservation Board, National Resource Conservation Service (NRCS), Southwest Water Conservation District (SWCD), Trout Unlimited, Bureau of Reclamation and local irrigators, we have designed and implemented 11 diversion improvements and helped fund 2 additional diversions for implementation in 2022. These projects are testaments to our commitment to secure and improve irrigators' access to decreed water, all the while improving fish passage, channel stability and riparian habitat.

The Mancos Watershed Resiliency Project supports several existing watershed plans and projects described in the following paragraphs.

Mancos Stream Management Plan (MWSMP): The [Mancos Watershed Stream Management Plan](#) seeks to improve water security for all water uses and values in the

Mancos Watershed by protecting existing uses, meeting user shortages, and maintaining a healthy riverine ecosystem. The geographic focus of this effort is the entire Mancos River Watershed and its main tributaries. This diverse area encompasses Forest Service lands and Bureau of Reclamation facilities at the top end of the watershed, a productive irrigated valley in the middle, and Tribal and National Park lands in the lower portions of the watershed.

Phase 1 of the MWSMP was completed in 2020. The overarching goals of Phase I are to ensure protection of existing water rights, continued outreach and engagement, and to identify river health, recreational, and management opportunities on private lands throughout the watershed through modeling, assessments, and monitoring coordination. Phase II is currently in development and will use data and information gathered during Phase I and beyond to assess, identify, and prioritize projects that further the goals of the MWSMP. The objectives for Phase II propose building upon Phase I to provide recommendations for increased flows and restoration opportunities, identifying potential projects for new and improved infrastructure, and facilitating changes to irrigation uses during below average run-off years.

[2021 Prioritized Drought Resilience for the Mancos Watershed Report](#): The diverse stakeholders and communities of the Mancos Watershed have a historic past of collaborative work that ensures the development of locally driven solutions in regards to natural resources concerns. The “Prioritized Drought Resilience Framework” for the Mancos Watershed built upon individual efforts and these relationships to develop an understanding of resilience in the Mancos River, working in conjunction with the needs of all people, wildlife, and ecosystems in the watershed. The [2021 Prioritized Drought Resilience for the Mancos Watershed](#) report expanded the watershed health values to include Pinyon-Juniper Woodlands and Ponderosa Pine Forests. Recommendations to increase resiliency were produced in 2020 by members of the Mancos Watershed Group, with representatives from the agriculture, recreation, Federal lands, municipal, and environmental communities. The report identified value specific and cross-cutting drought resilience strategies such as:

- Promote research, education, and monitoring
- Identify and protect climate refugia for fish and riparian plant species
- Promote landscape connectivity
- Maintain and enhance hydrologic processes
- Maintain and restore riparian vegetation
- Reduce the risk and long-term impacts of severe disturbances
- Sustain fundamental functions of soil and water
- Facilitate adjustments through community species transition.

In the report, stakeholders identified their priority goals for riparian habitat health in the Mancos Watershed which are directly supported by the Mancos Watershed Resiliency project, including to maintain and restore riparian vegetation and to maintain and enhance hydrologic processes and water quantity and quality. Additionally, the report identified Ponderosa Pine Forest as at risk from drought and climate change and recommended various strategies directly supported by this proposal including fire breaks and fire preparation to mitigate impacts from wildfire.

Mancos Valley Source Water Protection Plan: The Mancos Valley Source Water Protection Plan was finalized in 2009 and is in the process of being updated (completion expected in late spring of 2023). The Source Water Protection Plan (**SWPP**) is a tool for the Mancos Valley community to ensure clean and high-quality drinking water sources for current and future generations. The SWPP is designed to:

- Create an awareness of the community's drinking water sources and the potential risks to water quality within the watershed
- Encourage education and voluntary solutions to alleviate pollution risks
- Promote management practices to protect and enhance their drinking water supply
- Provide for a comprehensive action plan in case of an emergency that threatens or disrupts the community water supply.

The SWPP effort consisted of a series of public planning meetings. The information discussed at the meetings helped the Mancos Valley water providers develop an understanding of the issues affecting source water protection for the community. The Steering Committee then made recommendations for best management practices (BMPs) to be incorporated into the SWPP. In addition to the planning meetings, data and other information pertaining to the SWPP was gathered via public documents, internet research, phone calls, emails, and a site visit to the protection area.

The draft SWPP has identified wildfire as an issue of concern and a high risk to source water contamination. The Mancos Watershed Resiliency Project addresses this concern by proposing to thin high-risk areas in the watershed, such as the Jackson Gulch area.

The Montezuma County Community Wildfire Protection Plan: [The Montezuma County Community Wildfire Protection Plan](#) (CWPP) was finalized in 2022 and emphasizes landscape scale mitigation and forest health projects that work across jurisdictions at sufficiently large scales to alter fire behavior. The CWPP was the result of an ongoing collaborative effort that was started in 2002. The 2022 update builds upon the continued collaboration between stakeholders that has been fostered over the last 20 years. The plan provides a comprehensive review and update of the existing community risk analysis using the best available data, and ensures broad collaboration by bringing together diverse federal, state and local interests to identify essential community values,

discuss their mutual concerns for public safety, community resiliency, and natural resources. The plan's best management practices include reducing wildfire risk including fuels reduction strategies, and identifies the Jackson Gulch area as a priority area. The Mancos Watershed Resiliency Project directly supports the best management practices and priorities identified in the CWPP.

Colorado Strategic Wildfire Action Program (COSWAP): The [COSWAP grant proposal was awarded](#) to MCD in 2022. The COSWAP funding will provide targeted wildfire risk mitigation on private lands in the Mancos and Dolores watershed to increase community resilience and protect life, property, and infrastructure. Project activities include reducing fuels and increasing defensible space around homes, reducing fuels along important access and evacuation routes, supporting pile burning on private lands, thinning projects on private and Ute Mountain Ute lands, and strategic fuel breaks on private lands for community safety. The project areas and activities were developed by a broad group of stakeholders through the Dolores Watershed Resilient Forest Collaborative and Rocky Mountain Restoration Initiative - SW Colorado and will complement forest resilience and fuels reduction work on adjacent federal, tribal, and state lands. The projects identified tie into larger landscape-scale initiatives to restore our local ecosystems and reduce wildfire risk, including the Rocky Mountain Restoration Initiative (RMRI), the Collaborative Forest Landscape Restoration Program (CFLRP), and the Colorado Forest Action Plan (CFAP). Much of geography within this proposal is considered a high priority for implementing the Living with Wildfire goals of the CFAP. The CFAP proposes promoting community fire adaptation and directly reducing the risk of uncharacteristic wildfire - both directly supported by this proposal.

The Mancos Watershed Resiliency Project proposal directly builds off of the projects identified in the COSWAP grant, providing additional funding and resources to continue wildfire mitigation activities in high priority areas within the Mancos Watershed.

Montezuma County Phreatophyte Project 2020 Ten-Year Project Plan 2019-2028: The [Montezuma County Phreatophyte Project](#) was designed to control Russian Olive and Salt Cedar or Tamarisk (phreatophytes) in an effort to conserve water, improve wildlife habitat, and promote healthy ecosystems. Taking the high amount of low income and poverty in Montezuma County into account as well as the extent of the phreatophyte populations Montezuma County Noxious Weed Department (MCNWD) has created a plan to manage them in the most feasible and efficient way possible. The Mancos watershed is identified as a treatment area within the 10-year removal timeframe, and the Mancos Watershed Resiliency Project will collaborate with the County to facilitate phreatophyte removal on 15 properties at an estimated 5 acres per property within the watershed.

Mancos Conservation District Long Range Plan: The [MCD Long-Range Plan](#) was updated in 2023 for years 2023 through 2026. The plan identifies prioritized natural resource concerns and goals. The Mancos Watershed Resiliency Project directly supports the stated goals and objectives for watershed health, water quality and availability, and forest health. Applicable goals and objectives are focused on watershed health, water quality and availability, and forest health. During this assigned period MCD will address Watershed Health through providing education and outreach, maintaining and pursuing collaborative partnerships, and identifying strategies and projects that will help build resiliency in the watershed. MCD will lead the MWG to ensure that we maintain and support community led conservation for future generations, continue to address the identified projects of the 2011 Mancos Watershed Plan, continue to lead a collaborative effort to create the MWSMP, and create and facilitated educational and outreach opportunities that inform our community on Mancos specific Watershed Literacy. MCD will support our Water Quality and Health goal via appropriate conservation practices, education, and on-the-ground projects. MCD will continue existing education and outreach through partnerships, programs, and workshops with local and state-wide collaborators. MCD has committed to improving irrigation infrastructure and researching future projects that can be done in collaboration with ditch and reservoir irrigation companies and continuing to monitor the water quality and availability throughout the watershed through our partnership with Colorado Parks and Wildlife's River Watch Program. MCD is also committed to reporting these water conditions to our community and stakeholders. Additionally, we will continue and pursue partnerships and opportunities for built and natural additional water storage in the Mancos Watershed. For Forest Health MCD aims to improve forest health through conservation practices that prioritize fire adaptation and natural resiliency. MCD will collaborate with partners to create a holistic framework for treatment in the Mancos Watershed-Forest ecosystem. MCD will facilitate the creation of conservation plans that promote healthy forest stands and will prioritize and implement projects that prioritize cross-boundary benefits to both private landowners and public lands.

Evaluation Criterion C: Stakeholder Support for Proposed Project (15 points)

MCD is in the process of creating a community-driven MWSMP to ensure continued monitoring, protection and restoration of agricultural, environmental, and recreational water assets throughout the Mancos River watershed. This project aligns with the goals outlined in the Southwest Basin Roundtable's Basin Implementation Plan (SWBRT BIP Goal A2). During Phase I of the MWSMP Planning process, stakeholders identified the need for holistic water management that will protect existing agricultural water rights and uses while also supporting riparian ecosystems and aquatic organisms with the growing threat of climate change and drought. The Mancos Watershed Resiliency

Project is designed to address these priorities designated by the MWSMP Phase 1 process and is supported by a diverse group of stakeholders that are dedicated to a holistic watershed management approach that addresses the improvement of water distribution, noxious weed removal, fire mitigation activities, and restoration of the riparian and river channel health.

MCD's historic presence assisting and supporting local landowners and water rights holders with in-stream diversion improvements has resulted in thirteen structures receiving improvement. These improvement projects began in 2012 and since then all thirteen have maintained their ability to allow fish to move throughout the stream while assisting the ditch companies with updated infrastructure and better access to their water. In conjunction with diversion improvements ditch companies that participated in the Mancos Valley Smart Metering Project have been satisfied with the benefits provided by metering devices throughout their first year of use during the irrigating season. As we continue to work to improve metering throughout the Mancos Watershed we have been able to garner the support of The Upper Bauer Lake Company and East Mancos Highline Ditch Company. Both companies believe that the Project will lead to improved water resources management and improved ecological and watershed health to ensure a sustainable water supply for the Mancos Valley. These ditch companies understand the benefits of upgrading their infrastructure and are willing to assist the project manager in the time required to oversee the project and are also willing to take on the responsibility for the long-term operations and maintenance costs that are incurred with the proposed infrastructure.

Phase I of the MWSMP also identified the prioritization of the protection of the upper watershed as it is the sole source of water for municipal and agricultural users throughout the Mancos Valley. Stakeholders have already begun to take action in creating a burn-ready watershed that is resilient to climate change, drought and wildfire. This is evident through the MWSMP providing a pathway to conduct Fluvial Hazard Mapping to allow for prioritization of necessary actions to protect our vital water resources. The Town of Mancos has prioritized this need as well as seen through their work in updating their Source Water Protection Plan and Federal Emergency Management Agency Maps over the past nine months. The forest mitigation component proposed in the Mancos Watershed Resiliency Project will complement these actions, and support the mitigation work that has been identified through a Colorado Strategic Wildfire Action Program Grant (COSWAP) which is being completed in partnership with the Dolores Watershed Resilient Forest Collaborative (DWRP). Due to the urgency and earlier collaboration on forest mitigation work we have been able to garner the support of the Town of Mancos and DWRP.

The 2012 Weber Fire and resulting post-fire debris flows greatly impacted the Mancos River. and Paired with the effects on water supply caused by the 2012 and

2018 droughts have united Mancos stakeholders in understanding the importance of an integrated and holistic approach to watershed health. One that recognizes and responds to the potential impacts of drought, fire, and climate change. MCD's partnership with the MWG, a diverse group of partners and stakeholders working collaboratively at the watershed-scale to advance and achieve economic, cultural, and ecological resilience for the entire watershed with representatives from federal land management agencies, local municipalities, the Ute Mountain Ute Tribe, private landowners, and others, have worked to identify drought and climate-resiliency strategies that support a holistic approach to Mancos River health. Therefore, the riparian restoration component of this project will support these prescribed values through providing private landowners in the Mancos Valley the necessary assistance and scientific knowledge required for effective and long-lasting removal of invasive species paired with the native plant restoration within riparian areas. MCD continues to build these relationships with partners and landowners through our commitment to identifying and completing integrated, multi-purpose projects throughout the Watershed while maintaining and building our capacity to work with landowners one-on-one to improve their stream habitat.

MCD's stakeholders represent diverse community representation including, but not limited to, Mancos Water Conservancy District, the Town of Mancos, Federal Land Managers, Ute Mountain Ute Tribe, The Nature Conservancy, Mesa Verde National Park and the Natural Resource Conservation Service. These partners will support this project through guidance for recommendations on management options, and provide feedback on technical products that will prioritize holistic strategies and actions.

Evaluation Criterion D: Readiness to Proceed (20 points)

The Mancos Watershed Resiliency Project is composed of multiple components that are in different phases of readiness to proceed. Project Management will be provided by the MCD Watershed Coordinator for the duration of the project. MCD has worked with the local Water Commissioner to determine which diversion structures would benefit from being improved but outreach needs to be conducted to ditch companies to determine which ditches are interested in participating. Design and engineering of the diversion structures has not been completed and would be the first phase of that component of this project. None of these identified diversions are located on federal land and the ditch companies that operate them have easements that allow them to work on their headgates.

The metering and telemetry equipment has been piloted through the Mancos Valley Smart Metering Project so installation can be commenced as soon as funding is available, depending on availability of equipment and metering devices. MCD worked with the local Water Commissioner to determine which ditches would benefit from

metering devices as well. Ditch companies have demonstrated interest in support of this project, and additional outreach will be conducted to engage additional ditches in installing metering and telemetry equipment. The ditch companies will be responsible for the installation of the meters, and have easements to access their respective headgates and pipelines. None of the metering devices or telemetry equipment will be installed on federal land.

The forestry fire mitigation work will occur on private property located in a high wildfire risk area. The Jackson Gulch area has over 9,000 acres of private lands identified as a high priority for wildfire mitigation work due to high fire risk. This proposal will treat 650 acres in the Jackson Gulch high priority area.

The Mancos River Resiliency Project will initiate the removal of Russian Olive and Tamarisk along streambank stretches of cooperating private landowners. Native cottonwood, willows, and understory species will be replanted in areas where the invasive species have been removed. Private landowners will be responsible for hiring contractors to perform the necessary work.

Component 1: Project Management - the MCD Watershed Coordinator will coordinate the completion of the project by various partners, funders, contractors, and Mancos Conservation District staff, as well as writing and circulating progress reports and the final project report as required.

1. The Watershed Coordinator will prioritize projects in collaboration with project partners
 - a. Timeline: November 2023 - February 2024
2. The Watershed Coordinator will arrange meetings, and liaise with funding agencies
 - a. Timeline: November 2023 - December 2026 - duration of the project
3. The Watershed Coordinator will track and document project progress
 - a. Timeline: November 2023 - December 2026 - duration of the project
4. The Watershed Coordinator will liaison with watershed partners and stakeholders, contractors, and ditch companies and coordinate overall project management.
 - a. Timeline: November 2023 - December 2026 - duration of the project
5. The MCD Technicians will perform construction inspections as the project progresses
 - a. Timeline: July 2025 - December 2026 - duration of the project

Component 2: Diversion Improvements

1. Design and Engineering - Design and engineer three improved diversion structures.
 - a. During year one, the contractor will complete detailed topographic surveys of the prioritized diversions and will build base maps of the project sites for use in the design phase of the project.
 - i. Timeline: June 2024 - September 2024
 - b. Contractor will create concept level plans and preliminary cost estimates for the proposed structures and restoration.
 - i. Timeline: June 2024 - September 2024
 - c. The landowners, ditch companies, and MCD Project Coordinator will review the plans and adjustments will be made by the contractor.
 - i. Timeline: June 2024 - September 2024
 - d. Contractor will develop construction level design drawings for each stretch of the river, using the initial topographic surveys. Engineering designs will include an updated estimate of construction quantities and costs.
 - i. Timeline: June 2024 - September 2024
 - e. The contractor will schedule a meeting with landowners, ditch companies, and MCD to review the final designs and ensure the goals of the project are being adequately addressed.
 - i. Timeline: June 2024 - September 2024
 - f. Contractor will develop three complete sets of engineering plans for the project.
 - i. Timeline: June 2024 - September 2024
2. Construction - three improved diversion structures will be installed, as designed and engineered above.
 - a. Engineering firm will oversee the purchase of construction materials and provide construction staking and oversight for all three diversions
 - i. Timeline: July 2025 - November 2025
 - b. Site clean-up and restoration
 - i. Timeline: November 2025 - December 2025
3. Monitoring - Monitor the efficacy of improved diversion structures
 - a. Pre-installation photos will be taken in the fall before construction begins
 - i. Timeline: November 2023
 - b. Pre-installation RSRA survey and additional photos will be taken during the engineering and design phase of the projects
 - i. Timeline: June 2024 - September 2024
 - c. Post-installation photos will be taken after construction of improved diversion structures is complete
 - i. Timeline: November - December 2025

- d. MCD District Technicians will provide yearly inspections of installed diversion structures
 - i. Timeline: yearly beginning at the completion of the construction or December 2025

Component 3: Metering & Telemetry MCD will facilitate the installation of meters and telemetry equipment on ten headgates that will utilize a local cell network to transmit data at frequent intervals to a central website

- 1. Outreach to prioritized ditch companies for interest
 - a. Timeline: March 2024 - May 2024
- 2. Create contracts/business agreements between ditch companies and contractors
 - a. Timeline: Completed by June 2024
- 3. Installation of meters and telemetry equipment on three to five diversions will happen each year of the proposal. Installation will happen in the late summer to early fall, after irrigation water use has decreased so as to not disrupt agricultural use of water during critical water use and measurement periods.
 - a. Timeline:
 - i. July - October 2024 - five meters and telemetry set-ups will be installed
 - ii. July - October 2025 - five additional meter and telemetry set-ups will be installed
- 4. Monitoring
 - a. Ditch companies will be responsible for the long-term operations and maintenance of the meters and telemetry equipment

Component 4: Forest Mitigation - MCD will facilitate the forest thinning on 650 acres of private land in the Jackson Gulch area.

- 1. Outreach to landowners
 - a. Timeline: Outreach to private property landowners fall and winter of 2023.
- 2. MCD will work with landowners to secure a technical service provider to develop forest management plans for individual properties.
 - a. Timeline: March-November 2024
- 3. Forest plan implementation: TSP will complete site layout, mark trees, and review work. Contractor will complete thinning.
 - a. Timeline: By Dec 31, 2024 - 50 acres will be completed
 - b. By Dec 31, 2025 - 300 acres will be completed
 - c. By Dec 31, 2026- 300 acres will be completed

Component 5: Riparian Restoration - MCD will work with private landowners interested in removing invasive phreatophytes (Russian olive and tamarisk) along

riparian corridors, and will oversee revegetation with native riparian plants species. The goal is to treat 15 properties, at an estimated 5-acres of treatment per property, in the Mancos Watershed.

4. Outreach to landowners-ongoing
 - a. Timeline: 2023: Fall and winter outreach to property owners interested in phreatophyte removal and native plant restoration.
5. Conduct Rapid Stream Riparian Assessments (RSRA) to assess overall riparian condition
 - a. Timeline: RSRA surveys will be performed prior to phreatophyte removal, which will be timed to avoid critical nesting periods for riparian birds.
6. Restoration plan implementation: Phreatophytes removed in fall, replanting with native species seedlings the following spring.
 - a. Timeline: 2024: 5 properties treated
2025: 5 properties treated
2025: 5 properties treated, finalized December 31, 2026
7. Monitoring: RSRAs will be conducted prior to restoration work, and 2 years after to gauge success of invasive removal and native plant establishment.

Component 6: Administration - The MCD Executive Director will provide fiscal administration of the grant.

1. The Executive Director will track financial match and invoices and prepare reimbursement requests.
 - a. Timeline: January 2024 - December 2026 - duration of the project
2. The Executive Director will administer the grant.
 - a. Timeline: January 2024 - December 2026 - duration of the project
3. The Executive Director will support the Watershed Coordinator on the completion of progress reports to funding agencies and MCD Board.
 - a. Timeline: January 2024 - December 2026 - duration of the project

Evaluation Criterion E: Performance Measures (5 points) - Sensa

Monitoring will be conducted as part of this project to evaluate the success of the project components and performance measures will be assessed based on long-term ecological objectives for each project component. Pre-construction photos will be taken at each diversion during two different times, one in the fall and one in the following spring, along with post-construction photos. A pre-construction Rapid Stream Riparian Assessment (RSRA) will be performed, and a post-construction RSRA will be performed 2 years prior to installation to compare riparian corridor health before and after construction. Improved diversion structures will also receive annual inspections from the Mancos Conservation District Technicians, with routine operation & maintenance being

provided by the ditch companies, in order to keep these structures in top shape and performing as designed.

As meters and telemetry equipment are installed through the Valley water managers and users will gain a better understanding of current and future water use. This will allow water managers and users to better understand the complex system and make adjustments to management that will benefit water users and the ecological processes of the watershed as well. Ditch companies who install meters will provide feedback after installation about how the project benefited them, as well as provide feedback to improve installations in the future.

Forestry mitigation will be assessed using repeat photo points and vegetation transects before work is performed and at years 2 and 5 after treatment to qualitatively measure changes over time (with private landowner permission). Success metrics will be based on changes in vegetation productivity, diversity, fuel loads, and invasive species. Riparian restoration goals are to remove all Tamarisk and Russian Olive species while maintaining total vegetation cover equal to or greater than 30 percent. Riparian restoration work will be assessed using RSRAs completed before work begins and 2 years after treatment.

Evaluation Criterion F: Presidential and DOI Priorities (15 points)

Sub Criterion No. E1: Climate Change

Drought has historically impacted the Mancos Watershed by decreasing hay production, stunting rangeland growth, increasing wildfires, reducing flows in rivers, reducing reservoir storage and changing the timing of runoff. Climate change and drought are projected to have heavy impacts on the water that the Mancos Valley is reliant on for municipal, agricultural, environmental and recreational uses. Therefore, incorporating drought resiliency strategies into water use and protection is imperative.

The Mancos River headwaters are located in a densely forested area of the San Juan National Forest from there the tributary flows downstream through parcels of federal, state and private lands. The Mancos River is critical to providing agricultural, municipal, recreational and environmental water throughout the Mancos watershed. The modeling and assessment of fire-related hazards in the Mancos River corridor was identified as a top priority in the recently completed Mancos Watershed Stream Management Plan: Phase I. Fire risk modeling completed by the San Juan National Forest and the Colorado State Forest Service show that high severity wildfires in this watershed could have catastrophic impacts (severe erosion and sediment filling source water reservoirs and streams, destruction of property and lives), negatively affecting the livelihoods of all of the people in the Mancos Valley. Many highly valued resources and assets supplying

water to Mesa Verde National Park, Jackson Gulch Reservoir, the Town of Mancos and Mancos Rural Water are at risk of wildfire. This water infrastructure, including inlets and key diversion structures could be susceptible to the flash floods, and mud and debris flows that are common after wildfire. Water delivered through this infrastructure provides the entire supply for municipal and agricultural water users in the Mancos watershed, and there is not a backup system or alternative sources of water. This project will build on the \$1-million COSWAP Grant awarded to the Mancos Conservation District in 2022 to perform fire mitigation work in high-risk private lands within the watershed.

The Mancos Watershed Resiliency Project will build long-term resiliency to drought by mitigating drought impacts through slowing water down, holding the water longer, and increasing soil moisture and groundwater recharge. The proposed project will include risk reductions to wildfire and catastrophic wildfire by thinning dense forest stands and reducing threat to impacts caused by post-fire, including erosion, sediment run-off, and severe flooding. Forest thinning enhances runoff and groundwater recharge and mitigates the effects of drought through increasing water use efficiency.

Research has shown that the thinning of forests is likely to increase the climate and human benefits, and increase the carbon use efficiency of the forest system. Forests play a key role in the ability to sequester and store carbon. One tree can sequester as much as 48 pounds of carbon per year, and fire resilience is key to healthy forests and carbon sequestration. By reducing burn risk, we will maintain the forest's storage capacity for carbon sequestration. Thinning helps pine forests adapt to climate change through optimizing growth, and allowing a greater incorporation of organic matter into the soil which increases carbon storage capacity throughout the forest. This is consistent with research using dendrochronology, which has shown that greater growth was associated with a reduction in forest density. As a result of this there is an increase in available resources paired with a reduction in competition, trees are able to grow more and can sequester more carbon causing a reduction in greenhouse gas emissions due in part to the sunlight exposure of the forest floor increasing capacity from soil, grasses, trees, and other vegetation.

Forest thinning has historically been a successful tool for mitigating climate change impacts as it allows the forest to better manage drought, regulate carbon sequestration, and reduce climate change-induced disturbance risks. Thinning also has immediate benefits as it enhances runoff and groundwater recharge and mitigates the effects of drought through increased water use efficiency, and can augment downstream water availability. The duration of thinning effects on increased soil moisture can last up to an average of nine years.

The project's planned riparian restoration along the Mancos River will be comprised of invasive species removal, i.e., Russian olive and tamarisk alongside native species restoration along the stream banks. Improving riparian corridor conditions through native species restoration is incredibly beneficial in its contributions to healthy watersheds, such as: increased shade and cooler water temperatures, pollutant filtration, stream bank stability, and habitat for wildlife and birds. Overhanging plants provide essential shading to our riverway, which has been greatly degraded by grazing impacts in the past. This shading aids in temperature control throughout the summer and limits evaporation capability compared to bare stream banks. This shading enhances in-water habitat and promotes diversity and abundance of fish and macroinvertebrate species. They also offer habitat and food sources for non-obligate water species that rely on proximity to water sources with representatives from insects, amphibians, reptiles, songbirds, mammals, and fish. Native vegetation also helps prevent the establishment and spread of invasive herbaceous and woody species. Bank stabilization is provided by roots that help prevent erosion and bank undercutting.

Sub Criterion No. E2: Disadvantaged or Underserved Communities

Montezuma County, Colorado is a rural county located in the Four Corners Region in the southwest corner of Colorado with a population of just over 26,000. The county totals 1.31 million acres, with 690,788 acres in agricultural production. Approximately one third of all lands in Montezuma County are Ute Mountain Ute Tribal Lands, one third are federally owned, and the remaining one third are privately held. The county poverty rate is 15.2-percent, higher than the state poverty rate of 9.78-percent. Populations living in poverty face disproportionate and structural inequities daily that exacerbate risk and make it difficult to access critical resources and services like health care, healthy food, housing, and jobs. The county has a high rate of poverty, low household income, and a high rate of unemployment (5.3%), even compared state-wide. Montezuma County's median household income is \$50,717, compared to the state median household income of \$75,231. Montezuma County scores 51.7 on the RD USDA economic assessment dashboard, with the Ute Mountain Ute Tribal Lands within the county listed as a USDA Social Vulnerable Community. Montezuma County is not listed as a USDA Distress Energy Community; however it is directly adjacent to four other counties and states that are on the list.

According to recent data from the Housing Needs Assessment & Strategy; between 2010 and 2019 housing costs shifted upwards for both owned homes and rentals—but mostly for rentals. Rental costs increased by 31 percent while renter incomes rose by 19 percent. In Montezuma County, mobile homes are 18.3-percent of the housing units, compared to 4-percent for Colorado. In the spring of 2021, the Southwest Colorado Council of Governments (SWCCOG) and Housing Solutions of the Southwest (Housing Solutions) published a housing study that concluded that Montezuma County is in need

of additional housing stock across all categories, but housing needs are especially acute for rental housing and attainable “starter” homes.

In addition to initially low housing availability much of Montezuma County, and most of the Mancos watershed is classified as having a moderate to very high risk of wildfire. According to the Colorado State Forest Service, 47-percent of Montezuma County residents live in the moderate to highest impact risk areas of the wildland-urban interface, posing a risk to human lives and property, as well as increasing the risk of wildfire overall. The Colorado Hazard Risk Dashboard estimates that with current conditions, wildfire in Montezuma County has the potential to cause annual damages of \$5.9 million dollars.

Drought conditions have impacted southwestern Colorado for many years, with impacts seen across agriculture and outdoor recreation. In most of 2021 and 2022, much of Montezuma County was classified as abnormally dry to extreme drought by the U.S. Drought Monitor. Drought is expected to persist and worsen in southwest Colorado, potentially causing \$1.3 million in damages annually to agriculture, outdoor recreation, and tourism.

By increasing drought resiliency, this project will reduce the environmental and financial impacts of long-term drought and the potential for catastrophic wildfires.

Sub Criterion No. E3: Tribal Benefits

The project supports Tribal resilience to climate change and drought impacts by addressing resiliency in the upper Mancos watershed. The Ute Mountain Ute Tribe has portions of tribal land within the lower Mancos watershed. Increased watershed resiliency addressed in this proposal will benefit the tribal lands by reducing the seed source for invasive species downstream, reduce the risk of sediment and ash flows downstream from catastrophic wildfire in the upper watershed, and potentially increase the duration of Mancos River flow through the tribal lands. The Tribe will benefit from increased water supplies as downstream users with agricultural water rights on the Mancos River. The stream restoration components include the replanting native willows and cottonwoods, both culturally important to the Ute Mountain Ute Tribe. Portions of the cost share from this project come from the COSWAP forestry grant; a component of that project includes forest mitigation work on the Adams Ranch, a Ute Mountain Ute Tribal owned bison ranch.

Applicant Category and Eligibility of Applicant

The Mancos Conservation District qualifies as a Category B Applicant, and is acting in partnership with the Town of Mancos, which is the Category A partner. The Town of Mancos is an active member in the Mancos Watershed Group and is supporting the

creation of the Mancos Watershed Stream Management Plan. The Town of Mancos Administrator will be involved in providing input and feedback for the various components of this project, as protecting the sole source of municipal water is a vital priority to the Town of Mancos. The MCD Watershed Coordinator, who will be the project manager for this proposal, is funded through a partnership with the Town of Mancos and MCD, so the Watershed Coordinator works closely with the Town Administrator and will continue to do so throughout this project.

Project Budget

Funding Plan

The non-federal cost share of this project will come from two grants. MCD was awarded a Water Supply Reserve Fund Grant for construction of two diversions. This grant will provide \$370,760 in match funding toward this project. This match will support construction, supplies, equipment, project management, and grant administration. MCD's grant application was approved and we are currently in the contracting phase of this grant, but specific dates for the disbursement of funds is not available yet. MCD was also awarded a grant through the Colorado Strategic Wildfire Action Plan. The \$495,000 in match funding will support fire mitigation efforts on private lands, to expand the reach of the acreage mitigated through this project.

Budget Proposal

Budget document is attached in Grants.gov portal.

Budget Narrative

Budget narrative is attached via Grants.gov portal.

Letters of Funding Commitment (if applicable)

Letters of funding commitment are attached via the Grants.gov portal

Environmental and Cultural Resources Compliance (recommended)

Throughout the scope of work required to complete the Watershed Resiliency Project there will be a period in which earth-disturbing work will be required. To work on diversion structures the use of heavy machinery will be required and there will be de-vegetation occurring on the banks abutting the project. To combat this part of each project will be a native plant restoration effort following any work that may be disturbing to stream banks. We will also comply with any impact and ESA studies needed to

determine presence and limitations on work due to federally threatened or endangered species. The diversion project will have the chance to contribute to the introduction, continued existence, or spread of noxious weeds on non-native invasive species in the area. This is due to the use of machinery along banks with known specimens of Russian Olive and Tamarisk. However, due to our priority of establishing native plants in any area receiving this work we will mitigate the effects of invasive species throughout the project area.

Additionally, our forest thinning project will require tree felling as a crucial component. However, any felling recommendations will only be done on the recommendation of a forester's prescription which will follow established best practices. For forestry work the necessity of thinning is crucial to maintain watershed health in the Mancos Watershed. However, any impact studies necessary for presence of federal threatened or endangered species that rely on the forest structures here for habitat. In response to this we will alter the timing or the prescriptions themselves to protect these species. Again, as the use of machinery is needed throughout the forestry process there is the chance of the introduction of noxious weeds or non-native invasive species. However, the work will also help privately owned forested areas in mitigation of invasive mistletoe which is negatively impacting Ponderosa Pine and Mixed Conifer Forest structures.

Since we do not currently have a defined project boundary because we are still assessing prioritization of projects specific federal threatened or endangered species presence is not known at the moment. Once we have determined projects, we will meet any required environmental assessments to determine species presence and the level of impact required work would cause. Additionally, there are no wetlands or surface waters within the project boundaries that could potentially fall under the jurisdiction of "Waters of the United States".

Our project will include work and modifications to irrigation structures throughout the Mancos Watershed. The majority of these structures were originally constructed in the 19th and 20th centuries and have had minimal modifications since their original construction date. Due to this they are in need of updating to maintain their effectiveness and to be modified without becoming fish barriers. Additionally, there are no features, buildings or structures on the National Register of Historic Places. Since we do not currently have a proposed area there are no known archeological sites in the area. This project will not have disproportionately high adverse effects on low income or minority populations. In fact, it will add cultural value to the watershed as the native plants are restored and the project reduces the impacts of fire on the majority of the population who inhabits the wildland-urban interface in a high fire risk region, as

outlined earlier in this proposal. This project will also have no effect on current access to Tribal Lands as no scope of work will be conducted on Tribal Lands.

Required Permits or Approvals (recommended)

Any required permits needed for the diversion improvements will be obtained by the contractor. Any permits required for fire mitigation and riparian restoration will be the responsibility of the landowners.

Official Resolution (recommended)

The Official Resolution is attached via the Grants.gov portal.

Letters of Support and Letters of Partnership

Letters of support and partnership are attached via the Grants.gov portal.

Conflict of Interest Disclosure Statement (recommended)

At the time of application submission, the applicant (the Mancos Conservation District and its employees) does not have any actual or potential conflicts of interest related to this application and the project proposal.

Uniform Audit Reporting Statement (recommended)

In 2022, the Mancos Conservation District did not exceed the \$750,000 threshold for income or expenses requiring a single audit report. We do however hire an independent accounting firm familiar with governmental accounting to perform an exemption from audit and file this with the State of Colorado. We are happy to provide this report at any time or any reports prior to 2022 should they be requested.

Overlap or Duplication of Effort Statement (recommended)

The only overlap between this project and other active proposals is related to the matching funds from WSRF and COSWAP funding. There is no duplication of efforts and we are not requesting any other funding for this project.

OMB Form 4040-0019 Project Abstract Summary Form (recommended)

The abstract form is attached via the Grants.gov portal.

Citations:

Buono, P., Rondeau, R., Bidwell, M., Monroe, S., Rank, G., Roberts, S., Cross, M., and Rangwala, I. 2021. Prioritized Drought Resilience Strategies for the Mancos Watershed. Prepared for Mancos Watershed Group.

Dennis, F., (1999), Fuelbreak Guidelines for Forested Subdivisions & Communities. CSFS.

Sankey, T., Tatum, J. Thinning increases forest resiliency during unprecedented drought. *Sci Rep* 12, 9041 (2022). <https://doi.org/10.1038/s41598-022-12982-z>

Stutter, M., Kronvang, B., Ó hUallacháin, D. and Rozemeijer, J. (2019), Current Insights into the Effectiveness of Riparian Management, Attainment of Multiple Benefits, and Potential Technical Enhancements. *J. Environ. Qual.*, 48: 236-247. <https://doi.org/10.2134/jeq2019.01.0020>

Yang, W., Ding Z., Zhao, F., Wang, Y., Zhang, X., Zhu, Z., Yang, X. (2015), Comparison of manganese tolerance and accumulation among 24 *Salix* clones in a hydroponic experiment: Application for phytoremediation. *J. Geochem. Exploration.*, 149: 1-7. <https://doi.org/10.1016/j.gexplo.2014.09.007>

**RESOLUTION TO SUPPORT ENVIRONMENTAL WATER RESOURCES
PROJECT FUNDING 2023**

WHEREAS, the Mancos Conservation District Board of Supervisors (the Board) and staff are in the process of creating a community-driven Mancos Watershed Stream Management Plan (SMP), underway for completion in June 2025; and

WHEREAS, the Board supports the development of the SMP and is committed to ensuring protection and restoration of the agricultural, environmental, and recreational water assets in Mancos River watershed; and,


WHEREAS, the Board recognizes that the U.S. Bureau of Reclamation WaterSMART Environmental Water Resources Projects funding opportunity for 2023 will support the goals and project needs identified through the SMP;

WHEREAS, the Board president has the authority to enter into an agreement for funding,

NOW, THEREFORE, be it resolved by the Mancos Conservation District Board of Supervisors, in the County of Montezuma, State of Colorado shall support the application to the WaterSMART EWRP for funding, and will work with the U.S. Bureau of Reclamation to meet established grant agreement deadlines to further our commitment to the Mancos Valley Watershed and its landowners.

ADOPTED AND APPROVED this 13th day of March, 2023.

MANCOS CONSERVATION DISTRICT

By 

President

ATTEST:

By 

Secretary

Bureau of Reclamation
Water Resources and Planning Office
Attn: Robin Graber
P.O. Box 25007, MS 86-69200
Denver, CO 80225

March 21, 2023

RE: WaterSMART Environmental Water Resources Project Application for the Mancos Watershed Resiliency Project; Funding Opportunity No. R23AS00089

Dear Ms. Graber,

I am writing in support of the Mancos Conservation District's WaterSMART Environmental Water Resources Projects (EWRP) grant application for improving irrigation infrastructure and watershed health. The Mancos Watershed Resiliency Project proposes infrastructure improvements to support irrigators and to better the ecological processes of the Mancos River. The projects resulting from this funding will lead to improved water resources management and improved ecological and watershed health to ensure a sustainable water supply for the Mancos Valley.

The EWRP funds will be used to improve irrigation infrastructure along the Bauer Lakes Water Company Upper Lake. This company would benefit from a remote water metering device to ensure water users are receiving the water to which they are entitled. The ditch would also benefit from having a new meter device installed that can be read remotely within a network of other remote metering devices. This will allow water users to collaborate and more efficiently manage water in the Valley. We look forward to working with the Mancos Conservation District to upgrade the Bauer ditch and improve agricultural water delivery.

We are in support of working toward a more resilient watershed to keep our water supply and livelihood sustainable for many generations to come.

Sincerely,

A handwritten signature in black ink, appearing to read 'Walter', with a long, sweeping horizontal line extending to the right.

Walter Everett
President Bauer Lakes Water Company Upper Lake



Bureau of Reclamation
Water Resources and Planning Office
Attn: Robin Graber
P.O. Box 25007, MS 86-69200
Denver, CO 80225

March 27, 2023

RE: WaterSMART Environmental Water Resources Project Application for the Mancos Watershed Resiliency Project; Funding Opportunity No. R23AS00089

Dear Ms. Graber,

The Dolores Watershed Resilient Forest Collaborative strongly supports the Mancos Conservation District's application for the Mancos Watershed Resiliency Project. The proposed thinning projects to reduce wildfire risk and enhance forest resilience will directly benefit our communities and exemplify the needed work to meet our region's cross-boundary landscape goals.

Ongoing drought and examples of uncharacteristic wildfires throughout the region highlights the immediate and ongoing need for more wildfire mitigation and risk reduction throughout our communities and landscapes. Private property is where the bulk of our wildfire risk exists, yet getting the needed work completed to save houses, infrastructure, and ultimately lives can be much more difficult to accomplish than on public lands. Property owners on the whole are very interested in reducing wildfire risk and promoting resilience, but often lack access to financial and technical resources to complete the work. The projects proposed here focus on larger acreages, but work in tandem with defensible space work through groups like Wildfire Adapted Partnership and public lands work through the San Juan National Forest.

This proposal also ties into larger landscape-scale initiatives to restore our local ecosystems and reduce wildfire risk, including the Rocky Mountain Restoration Initiative (RMRI), the Collaborative Forest Landscape Restoration Program (CFLRP), and the Colorado Forest Action Plan (CFAP). Much of geography within this proposal is considered a high priority for implementing the Living with Wildfire goals of the CFAP. The CFAP proposes promoting community fire adaptation and directly reducing the risk of uncharacteristic wildfire - both directly supported by this proposal. Critically, this project will fill a needed gap to expand mitigation and restoration work to private lands and directly make our communities more resilient to fire.

Sincerely,

Danny Margoles
Coordinator, Dolores Watershed Resilient Forest Collaborative

Email: coordinator@dwrfcollaborative.org

P: 952.457.8586

East Mancos Highline Ditch Company
Attn: Evan Campbell
42760 Highway 160
Mancos, CO 81328
206-619-5625 c

Bureau of Reclamation
Water Resources and Planning Office
Attn: Robin Graber
P.O. Box 25007, MS 86-69200
Denver, CO 80225

March 21, 2023

RE: WaterSMART Environmental Water Resources Project Application for the Mancos Watershed Resiliency Project; Funding Opportunity No. R23AS00089

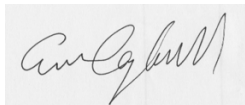
Dear Ms. Graber,

I am writing in support of the Mancos Conservation District's WaterSMART Environmental Water Resources Projects (EWRP) grant application for improving irrigation infrastructure and watershed health. The Mancos Watershed Resiliency Project proposes infrastructure improvements to support irrigators and to better the ecological processes of the Mancos River. The projects resulting from this funding will lead to improved water resources management and improved ecological and watershed health to ensure a sustainable water supply for the Mancos Valley.

The EWRP funds will be used to improve irrigation infrastructure along the East Mancos Highline irrigation ditch/pipeline. Our ditch company and the drainage would benefit from a remote water metering device to ensure water users on the ditch line are receiving the water to which they are entitled. The ditch would also benefit from having a new meter device installed that can be read remotely within a network of other remote metering devices. This will allow water users to collaborate and more efficiently manage water in the Valley. We look forward to working with the Mancos Conservation District to upgrade our Highline ditch company infrastructure and improve agricultural water delivery.

We are in support of working toward a more resilient watershed to keep our water supply and livelihood sustainable for many generations to come.

Sincerely,

A handwritten signature in black ink, appearing to read 'Evan Campbell', is placed over a light gray rectangular background.

Evan Campbell
East Mancos Highline Ditch Company

Bureau of Reclamation
Water Resources and Planning Office
Attn: Robin Graber
P.O. Box 25007, MS 86-69200
Denver, CO 80225

March 23, 2023

RE: WaterSMART Environmental Water Resources Project Application for the Mancos Watershed Resiliency Project; Funding Opportunity No. R23AS00089

Dear Ms. Graber,

We are writing in support of the Mancos Conservation District's WaterSMART Environmental Water Resources Projects (EWRP) grant application for improving watershed health through irrigation infrastructure improvements, riparian restoration, and wildfire mitigation activities. The projects included in the Mancos Watershed Resiliency Project will lead to quantifiable water savings, improved water resources management, and improved ecological and watershed health to ensure a sustainable water supply for the varied water users in the Mancos Valley.

The project will support watershed resiliency, improve wildlife habitat conditions and enhance ecological health by providing funds for riparian restoration projects. Project work will focus on the replacement of invasive phreatophyte species with native species to reduce streambank erosion and to improve riparian functions along the Mancos River system.

We are property owners along the lower Mancos River. The stretch of river running through our property has been highly degraded over the years by historic overgrazing, and we are currently struggling to manage the spread of Russian olives. We welcome the opportunity for the Mancos Conservation District to provide funding to restore the natural functions along the Mancos River.

We are committed to supporting a more resilient watershed in order to keep our water supply and livelihood sustainable now and into the future.

Sincerely,

/s/ Danny Cohan
/s/ Mary Hunnicutt

7582 Rd. 39
Mancos, Colorado 81328



March 22, 2023

Bureau of Reclamation
Water Resources and Planning Office
Attn: Robin Graber
P.O. Box 25007, MS 86-69200
Denver, CO 80225

RE: WaterSMART Environmental Water Resources Project Application for the Mancos Watershed Resiliency Project; Funding Opportunity No. R23AS00089

Dear Ms. Graber,

On behalf of the Town of Mancos, I would like to express our support for the Mancos Conservation District's WaterSMART Environmental Water Resources Projects (EWRP) grant application for improving watershed health through irrigation infrastructure improvements, riparian restoration, and fire mitigation activities. The Town of Mancos believes that the health of our community is tied to the health of the surrounding ecosystems, therefore resource management is an important component of the Town's comprehensive planning process. The Town of Mancos relies on the Mancos River to provide residents with high quality municipal water and recognizes the community's agricultural connection to the watershed. The Town has been an active member of regional watershed stakeholder groups and is dedicated to ensuring sustainable, high quality natural resources are available for current and future generations.

The Town of Mancos is excited to be a partner in the Mancos Watershed Resiliency Project and believes that it is a meaningful and timely complement to the other efforts taking place within the community. The Town of Mancos is currently in the process of updating our Source Water Protection Plan and Stormwater Master Plan. The Mancos Conservation District continues to be a valuable partner throughout the updates to both of these plans and their experience makes them an ideal partner to facilitate these new projects that will support more efficient water management and improved ecological and watershed health. The Town of Mancos values the opportunity to collaborate on these

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Phone (970) 533-7725 • Fax (970) 533-7727

www.mancoscolorado.com



projects that will help to create a more resilient watershed while also supporting a reliable water supply for all residents of the Mancos Valley.

Sincerely,

A handwritten signature in black ink that reads "Heather Alvarez". The signature is written in a cursive style.

Heather Alvarez
Town Administrator
halvarez@mancoscolorado.com

117 North Main Street • P.O. Box 487 • Mancos, Colorado 81328

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