



**Colorado Water Conservation Board**

**Water Supply Reserve Fund**

**Water Project Summary**

Name of Applicant	Upper Road 42 Water Association	
Name of Water Project		
Basin Account Request Subtotal		\$60,000.00
Applicant Cash Match		\$16,000.00
Applicant In-Kind Match		\$4,000.00
Basin Requests		
Sources of Funding		

**Grant Details**

Water Project Justification

This project will help meet water supply gaps as identified in Colorado's Water Plan (specifically Action A in Chapter 10 of the plan). The project purpose is to design, construct, and install an extension of the Mancos Rural Water Company water system to provide domestic drinking water to a rural community that is currently dependent on water hauling, located in Montezuma County, CO. This project directly protects and enhances the ability of 29 properties in a rural community to obtain a secure, reliable domestic water supply.

Securing safe drinking water to these residents meets Theme C – Meet Municipal and Industrial Water Needs in the Southwest Roundtable's BIP. Specifically, this project meets the goal for providing safe drinking water to the citizens of southwest Colorado (C2) and measurable outcomes 1 and 2.

The project results in the availability of a permanent, reliable potable water supply that has been unavailable to this community. In addition, it provides increased quality of service to those properties that are currently served by the nearby water system, but do not have sufficient pressure at their faucets.

Basin Implementation Plan

Table 1 – A: Balance all needs and reduce conflict

- This specific and small project falls under ID: A1 and A2.

- Mancos Rural Water Company's Water Treatment Plant is located at the base of Jackson Reservoir dam on Montezuma County Road N (Rd N). A 4" water main runs up the east side of the dam, serving several properties on Rd N before the line turns and runs south. This line is only ¼ of a mile from nearby properties north of Rd N.

- The properties north of Rd N along County Rd 42 were subdivided in the 1990's by Clay and Jean Bader. The new property owners of the area were assured by the nearby Mancos Rural Water Company that the domestic water line would be extended north and available to the homes within a year or two. Thirty years later this water is still not available and property owners continue to haul water to their cisterns. Many of the homeowners are now retired and on a fixed income. For some the task of hauling water has become arduous and they have resorted to paying for a water hauling service, at ten times the cost of hauling the water themselves.

- Homeowners currently haul water from the Town of Mancos water dock—6 miles away; this dock can close at any time without warning. When this happens, the residents must haul from water docks in Cortez, Dolores, or Durango, if these docks are open. Each resident has an average size pickup truck water tank of 250 gallons to fill their 2,000-gallon cisterns. Residents make on average 7 trips to fill their cisterns every month. The Town of Mancos charges \$0.017 per gallon of water at the water dock. The cost of the water is not expensive, but the cost of multiple trips in fuel, the wear and tear on vehicles, the time it takes, and the cost of the equipment necessary to haul water quickly becomes expensive.

Gallons/month x \$0.017/gallon = 2000gal x \$0.017 = \$34  
Mileage/month x \$0.655/mile\* = 84 miles x \$0.655 = \$55.02  
Total = \$89.02

- Mancos Rural Water Company has been approached by many of the homeowners over the years wondering when the water line will be extended north. The Water Company is small and has limited funds, time, and staff; they are simply unable to construct the line.

- The practice of hauling water risks contamination of the water during loading, unloading, transport and storage of the hauled water. In 2019 three properties had to replace their cisterns due to cracks that had formed in the walls of their concrete tanks. The cisterns are susceptible to infiltration from groundwater, bacteria, and viruses, posing a significant health risk for the residents.

- Water security is also an issue for the residents of the Upper Rd 42 due to a lack of a reliable source of potable water. During times of drought the nearby water docks can close without notice. Their supply of water is also threatened when residents are unable to drive to Cortez, Dolores or Durango due to weather, illness, vehicle trouble, or other hardship.

- By extending the nearby existing water system this project addresses the water needs of this community and reduces any conflict with the town's residents over water needs.

#### Identified Project/Process

- This project falls under Rural Water Supply: ID 3-MB: "Assumed 5 to 10 percent of future demand in Southwest Basin will be in rural areas not covered by public water systems and groundwater or hauling water may be the only options and alternatives will not be developed."

### Applicant & Grantee Information

Name of Grantee: Upper Road 42 Water Association  
Mailing Address: 42115 Rd N.25 Mancos CO 81328  
FEIN: 843,318,889

Organization Contact: Laura Rieck  
Position/Title: Water Association Vice President/District Administrator Email: upperroad42water@gmail.com  
Phone: 970-379-5715

Organization Contact - Alternate: Terry Schupp  
Position/Title: Email: dakotasoo@aol.com  
Phone: 602-309-3663

Grant Management Contact: Laura Rieck  
 Position/Title: Water Association Vice President/District Administrator  
 Phone: 970-379-5715  
 Email: upperroad42water@gmail.com

Grant Management Contact - Alternate: Terry Schupp  
 Position/Title:  
 Phone: 602-309-3663  
 Email: dakotasoo@aol.com

**Agency Information**

Agency Type District  
 Current Assessment  
 Number of Shareholders or Customers 50  
 Number of Shares  
 Number of Taps 29  
 Average Monthly Water Bill  
 Annual Water Delivery (acre-feet)

**Description of Grantee/Applicant**

Incorporated Non-Profit Water Association / Montezuma County Local Improvement District.

**Location of Water Project**

Latitude 0.000000  
 Longitude 0.000000  
 Lat Long Flag  
 Water Source  
 Basins  
 Counties  
 Districts

**Water Project Overview**

Major Water Use Type  
 Type of Water Project  
 Scheduled Start Date - Design 1/3/2024  
 Scheduled Start Date - Construction 1/3/2024  
 Description

**Measurable Results**

0 New Storage Created (acre-feet)  
 0 New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Nonconsumptive  
 0 Existing Storage Preserved or Enhanced (acre-feet)  
 0 New Storage Created (acre-feet)  
 0 Length of Stream Restored or Protected (linear feet)  
 0.00 Length of Pipe, Canal Built or Improved (linear feet)  
 \$0 Efficiency Savings (dollars/year)  
 0 Efficiency Savings (acre-feet/year)  
 0 Area of Restored or Preserved Habitat (acres)  
 0

Quantity of Water Shared through Alternative Transfer Mechanisms or water sharing agreement  
(acre-feet)

0 Number of Coloradans Impacted by Incorporating Water-Saving Actions into Land Use Planning

0 Number of Coloradans Impacted by Engagement Activity

Other

No additional measurable results provided

## SOUTHWEST BASINS ROUNDTABLE'S CRITERIA FOR BASIN EVALUATION

**The following will be used to evaluate a project submitted to the Southwest Basins Roundtable.**

*The listed requirements include Southwest Basins Roundtable specific requirements as well as the Colorado Water Conservation Board requirements for completing the Water Supply Reserve Fund (WSRF) Grant application. This is not an exhaustive list and all application forms should be thoroughly reviewed and completed. For assistance in completing the application package please reference the Southwest Basins Roundtable's WSRF Grant application submittal checklist.*

### **REQUIRED:**

- A. Projects must be submitted on application forms used by the [Colorado Water Conservation Board \(CWCB\)](#) and this Southwest Basins Roundtable's Criteria for Basin Evaluation (Roundtable).
- B. All applicable sections must be completed.
- C. Applicants will identify which of the goals, objectives, and principles as described in the [Roundtable's Basin Implementation Plan \(BIP\)](#) apply to the proposed Project.
- D. Applicants will identify which goals and actions apply as described in the [Colorado Water Plan \(CWP\)](#) and address those applicable for the Project. The CWP agency and partner actions may be found in [Chapter 6: Visions and Actions for Addressing Colorado's Risk](#).
- E. In addition to describing applicable BIP goals and CWP goals, the applicant will also identify if the project is listed on the basin's "Project List" and note the identification number of the Project in their application. The Projects List is available on the [CWCB's website](#). If the project is not listed, the applicant should make note of this in the application.
- F. Provide a financial overview of the project and/or process, including cost sharing and all other possible funding sources. The Roundtable requires a minimum 25% match of the total funding request for WSRF grant funds, not to exceed 10% as in-kind (i.e. minimum of 15% cash match). Please provide details of the in-kind contributions. The Roundtable strongly encourages cash contributions from project beneficiaries or applicants. Waivers of these requirements will be considered on a case-by-case basis.

An example of the cost share breakdown for a grant request of \$22,500 is shown below.

<b>Total cost of Project, or portion being funded by WSRF Basin Grant*</b>	<b>\$30,000</b>
Total Cash Match Amount (15%)	\$4,500
Total In-Kind Match Amount (10%)**	\$3,000
Total WSRF Basin Grant Request Amount	\$22,500

*\*Amount of Grant Request plus amount of match should equal total cost of Project.*

*\*\*CWCB allows that "past expenditures directly related to the project may be considered as matching funds (i.e. in-kind contributions) if the expenditures occurred within nine months of the date of the contract or purchase order between the applicant and the State of Colorado is executed."*

- G. Until further notice, the Roundtable's WSRF basin grants will not exceed \$100,000 unless special circumstances exist which the Roundtable deems a larger amount is warranted. Waiver of this recommendation will be considered on a case-by-case basis.
- H. Provide the proposed schedule for the project and/or process to be funded and the timeline for entire project if only funding part with this application.
- I. The Roundtable requires that, if the application is approved, the applicant provide at a minimum semi-annual progress reports of the project as well as a final report once the project is completed. The first report is due six months after the notice to proceed is given. To avoid duplicate efforts, the applicant may electronically send the same progress and final reports, as required by CWCB, to the Roundtable chair for distribution to the group. Applicants are always encouraged to share project completion stories including successes and lessons learned at Roundtable meetings.
- J. Applicants must answer, to the best of their ability, the evaluation questions posed below. These questions and answers assist the Roundtable during the application review process.



Last Update: January 10, 2022

<https://cwcb.colorado.gov/>

<b>Colorado Water Conservation Board</b>	
<b>Water Supply Reserve Fund</b>	
<b>Exhibit A - Statement of Work</b>	
<b>Date:</b>	<b>12/12/2023</b>
<b>Water Activity Name:</b>	<b>Upper Road 42 Water Extension Phase 1 Continued</b>
<b>Grant Recipient:</b>	<b>Upper Road 42 Water Association (Montezuma County LID)</b>
<b>Funding Source:</b>	<b>Southwest Basin Roundtable</b>
<p><b>Water Activity Overview:</b> (Please provide brief description of the proposed water activity (no more than 200 words). Include a description of the overall water activity and specifically what the WSRF funding will be used for. (PLEASE DEFINE ALL ACRONYMS).</p> <p>The purpose of the project is to design, construct, and install an extension of the Mancos Rural Water Company (MRW) water system to provide domestic water to 29 properties from Road N north to the Forest Service Boundary on County Road 42 in Mancos, Colorado.</p> <p>The proposed project includes:</p> <ol style="list-style-type: none"> <li>1. An above-ground pump station located at the Mancos Rural Water Company's treatment plant, located at the base of the Jackson Lake dam.</li> <li>2. Approximately 12,000 ft of 4" C900 pipe, installed in the utility easement and bar ditch on the south side of Road N and east side of Road 42 extending from the end of the existing 4" water line on Rd N, east along Road N, and north to the Forest Service boundary on Road 42.</li> <li>3. A new 20,000 gallon above-ground water storage tank located on the Upper Road 42 Tank Site property, which has been subdivided from the Stinson property, formally owned by Connie and Huston Anderson.</li> </ol> <p>The WSRF funding will be used to pay for the remainder of Phase 1 of the project: final design and engineering of the system, bringing in a contractor to assist with design as part of a CMAR (construction management at-risk) project delivery method, and creation of construction documents.</p>	
<p><b>Objectives:</b> (List the objectives of the project. (PLEASE DEFINE ACRONYMS).</p>	



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Tasks	
	Construction manager at risk project delivery method. Involves heavy collaboration between Upper Road 42 Water Assoc (Montezuma County LID), MRWC, engineer and contractor.
Grantee Deliverable: (Describe the deliverable the grantee expects from this task)	
	Construction documents and final project costs for submission to Montezuma County for LID final resolution creation. Intergovernmental Agreement between MRWC and LID. All necessary documentation for SRF loan application completion.
CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)	
	Construction documents and final project costs for submission to Montezuma County for LID final resolution creation. Intergovernmental Agreement between MRWC and LID. All necessary documentation for SRF loan application completion.

Tasks	
Provide a detailed description of each task using the following format: (PLEASE DEFINE ACRONYMS)	
<b><u>Task 2 - (Name)</u></b>	
Description of Task:	
Method/Procedure:	





Last Update: January 10, 2022

<https://cwcb.colorado.gov/>

### Reporting Requirements

#### Payments

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

The CWCB will pay the last 10% of the entire water activity budget when the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the water activity and purchase order or contract will be closed without any further payment. Any entity that fails to complete a satisfactory Final Report and submit to CWCB within 90 days of the expiration of a purchase order or contract may be denied consideration for future funding of any type from CWCB.

#### Performance Requirements

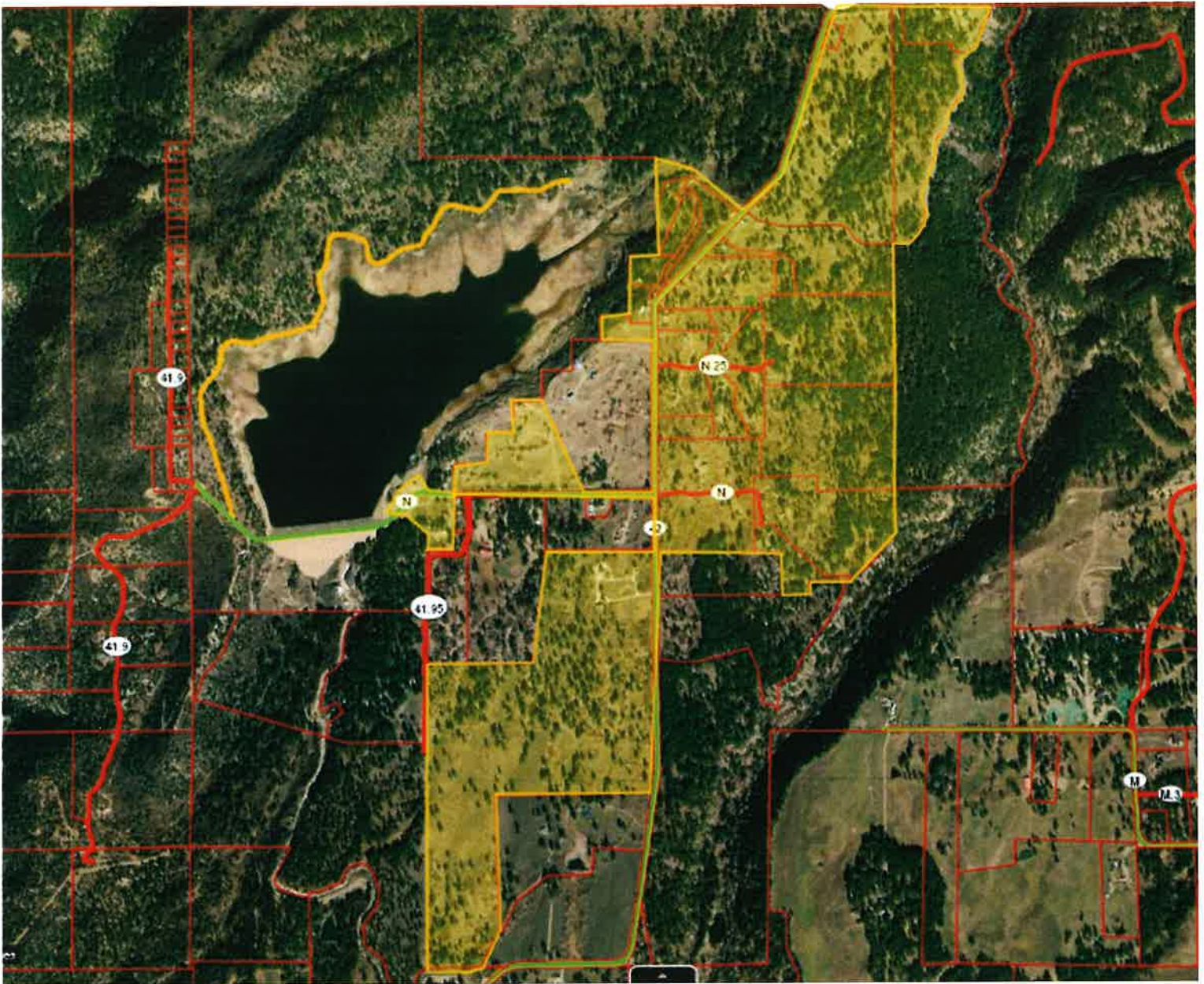
Performance measures for this contract shall include the following:

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

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

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

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



Upper Road 42 Water Association/LID Project Service Area





Upper Road 42 Water Association, Inc.  
Upper Road 42 Local Improvement District  
42115 Road N.25  
Mancos, CO 81328  
970-529-6011

Ed Tolen  
Chairperson  
Southwest Basin Roundtable

December 12, 2023

**Re: Details of matching funds and other funding sources**

Mr. Tolen,

The Upper Road 42 Water Association (Montezuma County LID), known as UR42WA, collected matching funds for an \$80,000 Design and Engineering grant from the State, which we expected to receive this month following a successful TABOR election which formed our Local Improvement District. As you know, this grant funding was exhausted by December and is not expected to be available in 2024, leaving UR42WA searching for alternative sources of funding. The matching funds are still in our bank account, which were cash donations from our members. The additional in-kind donations are time donated to this project from myself, UR42WA Vice President/LID Administrator, as well as our UR42WA Secretary, Linda Mount; Treasurer, Terry Schupp; and President, Kyle Rieck. I have calculated that I donate approximately 5-10 hours per week at \$25/hr to this project and have done so for the last 5 years. As we cannot contribute in-kind donations for more than 10% of the matching funds, we will limit the in-kind donation to \$2,000.

The UR42WA received a \$10,000 Planning Grant from the State to cover administrative and legal costs associated with the formation of the LID, and initial costs for the Environmental Assessment. These funds are fully allocated to work already performed, and our last invoices are being paid now. As such, none of this money is available for use toward final design and engineering.

At the time of this letter, there are no other funding sources available to move this project forward. I have reached out to Patrick Rondinelli with DOLA for potential grant funding but have not yet heard a response. Should alternative funding through DOLA become available, this information will be relayed to you directly and our application and Exhibit B will be updated to include alternative funding sources.

Should you have any questions about our budget or project, please contact me.

Thank you for your consideration,

Laura Rieck  
UR42WA Vice President  
UR42LID Administrator  
970-379-5715  
[upperroad42water@gmail.com](mailto:upperroad42water@gmail.com)

## SOUTHWEST BASIN ROUNDTABLE'S EVALUATION QUESTIONNAIRE

**To assist the Roundtable in determining whether and to what extent a proposed project and/or process meets the values set forth in the Roundtable Bylaws and goals of the Basin Implementation Plan, the following questions should be addressed separately as can reasonably be answered by the applicant. Note: this is not an exhaustive list and additional questions may be asked of the applicant.**

1. Identify the benefit(s) the project would provide. Are there multiple purposes (Agricultural, Environmental, Municipal, Industrial, Recreational) that the project would meet as defined in the Basin Implementation Plan? *Note: Projects that meet multiple purposes are strongly encouraged; however, this does not mean that a single purpose project would be rejected.*
  - This project will extend the Mancos Rural Water Company (MRWC) distribution system north to provide domestic water to 29 properties from Rd N north to the Forest Service Boundary on County Road 42 in Mancos, CO. Twenty-four of these properties have been hauling water for over 30 years, since their homes were built. The other five properties are current MRWC customers, but do not have sufficient pressure at their taps and therefore must fill cisterns with MRWC water and then boost pressure to their homes. Additionally, this project will provide redundancy in water storage for MRWC, provide their current customers with ample water pressure, and provide a water storage tank that is tall enough to mount radio antennas for MRWC, Mancos State Park, the Bureau of Reclamation, and the Mancos Water Conservancy District (MWCD) for increased means of telecommunications in the area.
2. Outline the steps needed for completion of the project. Are there permit issues that must be overcome? How will funds acquired in this process be used to accomplish the final goal?
  1. Completion of Environmental Assessment as per requirements for State Revolving Fund loan.
  2. Creation of Intergovernmental Agreement with Mancos Rural Water Company (MRWC).
  3. Contractor selection process as per requirements for State Revolving Fund loan.
  4. Complete design of water system extension in collaboration with Goff Engineering, selected contractor, MRWC, Bureau of Reclamation, Mancos Water Conservancy District, and other necessary stakeholders.
  5. Submit design to MRWC, CDPHE for review. Submit Basis of Design Review (BDR) for review if required.
  6. Creation of construction documents for construction which include final project costs.
  7. Secure grant funding for project construction.
  8. Apply for and secure State Revolving Fund loan.
  9. Submit final project costs to Montezuma County for creation of final resolution assessments for Local Improvement District.
  10. Construction and installation of extension.
  11. Approval of new extension and approval of as-builts.
  12. Transfer of ownership to MRWC.
  13. Dissolve Local Improvement District once project debts are repaid.

- Permitting from Montezuma County Road & Bridge is expected to create a driveway off CR 42 to the water tank site, as well as for digging in the ROW. Permitting from BOR is not expected.
  - Funds received from this grant will be used for final engineering and design, construction documents, inclusion of contractor in design process, creation of Intergovernmental Agreement and completion of Environmental Assessment to finish the State-required PNA as part of our future loan, as well as review processes by CDPHE, MRWC and other stakeholders.
2. For prioritization of different proposals and assessment of the merits of the plan, can this project be physically built with this funding? Are further studies needed before actual construction is commenced (if the project anticipates construction)? Will these studies or additional steps delay the completion of the project substantially?
- No, this project cannot be physically built with this funding. Further studies are not foreseen.
3. What is the ability of the sponsor to pay for the project? What actions have been taken to secure local funding? Are there supporting factors that affect the sponsor's ability to pay? Please provide a summary of the sponsor's financial condition such as customer fee structure, mill levy rate, or other applicable information that demonstrates the sponsor's ability to support the project. For example, has the sponsor increased assessments or rates to meet the project requirements in the past five years. Also, address how a loan could address the needs of the applicant instead of a grant?
- The UR42WA/LID is not a public water system, water purveyor, or entity that has steady revenue; we are a non-profit organization and newly formed Local Improvement District. Our members have contributed cash donations, land donations, and in-kind contributions for matching funds for grants. This project will be funded exclusively by grants up until the construction phase and a State Revolving Fund loan for construction completion and commissioning. We have received a Southwest Basin Roundtable loan for just under \$23,000 for preliminary engineering, feasibility study, and initial final engineering. We have also received a DWRF Planning Grant in order to form a Local Improvement District in Montezuma County. The LID will allow us to repay the SRF loan through property assessments. We were supposed to receive an \$80,000 Design and Engineering Grant from the State in November 2023, however we were informed that the D&E grant funding was exhausted by November and the funding was expected to be cut by 60% in 2024, leaving us searching for alternate sources of funding.
4. Which alternative sources of water or alternative management ideas have you considered? Are there water rights conflicts involving the source of water for the project? If yes, please explain.
- MRWC's water lines are within ¼ mile of the project area. The project is an extension of their domestic water system. This is the most feasible source of potable water due to its proximity, availability, reliability, and water supply security. MRWC has indicated their water rights for domestic use out of Jackson Lake far exceed the needs of the proposed project area homes and they are willing to provide services to the project area homes. To ensure water security into

the future, MRWC has placed a moratorium on additional taps six months after project completion.

5. Has there been public input solicited and is there local support for the project? Please provide a brief summary of public input if applicable.
  - UR42WA/LID has been holding member meeting since 2019, providing project updates, educating members and non-members about the project needs and benefits, and attending BOCC meetings to gain support for the project. We had unanimous support from the BOCC to form the LID and 100% voter support from our members to form the LID to continue with the project.
6. Is there opposition to the project? If there is opposition, how have those concerns been addressed? Identify any conflicts that may exist and how they will be addressed.
  - At each public meeting there were opportunities for the public to voice their concerns and we have not had one concern raised thus far. The UR42WA Board places much emphasis on transparency and education and will address any concerns immediately.
7. Does this project affect the protection and conservation of the natural environment, including the protection of open space? If yes, please explain.
  - No.
8. Are there impacts of the proposed action on other non-decreed values of the stream or river? Non-decreed values may include things such as non-decreed water rights or uses, recreational uses and soil/land conservation practices.
  - No
9. Does this project relate to a Stream Management Plan (SMP) or Needs Assessment for one of southwest Colorado river reaches? If yes, please explain and provide detailed evidence of how project will meet SMP goals or needs.
  - No
10. Does this project relate to local land use plans? If yes, please explain.
  - No
11. Does the project depend on a conversion of an agricultural water right? If yes, please explain.
  - No
12. Does the project support agricultural development or protect the existing agricultural economy? If yes, please explain.

- No

13. Does the project optimize existing water rights and/or existing infrastructure? If yes, please explain.

- Yes, this project optimizes MRWC domestic use water rights from Jackson Lake by adding beneficiaries to the water right. It will also provide MRWC with new infrastructure, expanded service boundaries, redundancies in their infrastructure, and enlarging their customer area, thus increasing their revenues from capacity fees and service fees.

14. Does the applicant anticipate future funding requests to complete the additional components of this project? Does the applicant have a long-term operation, maintenance, and replacement plan? When was the last update of the plan?

- Yes, we anticipate requesting additional funding for the construction phase of this project, which will involve construction, installation, testing, approvals, and mitigation to construction areas.
- An intergovernmental agreement between MRWC and UR42WA/LID will be completed using the funding from this application and potentially future applications. MRWC will take ownership of the infrastructure upon construction completion, assuming all operations and maintenance of the system as part of the MRWC water system.

15. Does this project have an education component? If yes, please explain how it is consistent with the Roundtable's [Education Action Plan](#).

- This project does not have a formal education component; however, the President and Vice President of UR42WA/LID are both water treatment and water distribution operators, certified to the highest levels in Colorado. They have many years of experience in operations, maintenance, design, and construction of water systems, experience in water rights, environmental protection, wildlife and land management, and other subjects that pertain directly to this project. Additionally, the Vice President is experienced in public outreach and educational efforts specifically pertaining to water treatment and water distribution and has lead all of the UR42WA member meetings, public meetings, and Q&A sessions.



March 9, 2023

Upper Road 42 Water Association  
Attn: Kyle & Laura Rieck  
970-903-8518, (970) 379-5715  
[lcbriec@gmail.com](mailto:lcbriec@gmail.com), [kttrieck@gmail.com](mailto:kttrieck@gmail.com)

**RE: Proposal for Professional Services**

Dear Laura,

Thank you for contacting Goff Engineering & Surveying, Inc. (Goff) for your professional service needs related to the proposed extension of a new potable water delivery system and storage tank to serve the Upper Road 42 Water Association in Montezuma County, Colorado. Per your request, we have prepared this **budgetary** professional services fee proposal based on our understanding of the project requirements.

**PROJECT SCOPE**

As I understand the project, Goff's scope will consist of developing **construction documents of ~1.75-mile extension onto the Mancos Rural Water Company's (MRWC) distribution network to serve the Upper Road 42 Water Association (UR42WA) population (~25 users)**. The system will also include installation of a new pumping station, (potentially utilizing an existing concrete pad located at the MRWC water treatment plant below the Jackson Lake reservoir) and a new ~20,000-gallon storage tank at the apex of the delivery system. Scope will also include administering the required permitting of its installation through CDPHE, and documentation as required by State Revolving Funding (SRF) policies and protocols.

It is understood that this project will utilize a Construction Manager at Risk (CMAR) delivery format, and that the RFQ will be issued at the Design Development (DD) phase of the project. Construction Documents (CD) will be developed in collaboration with the selected contractor during the Guaranteed Maximum Price (GMP) negotiation with the owner and include sufficient information and detail for construction permitting and execution of work. Scope outline is summarized below and additional detail is provided in the attached Budget Worksheet.

1. Topographic, and utility survey of the project improvement corridor, including subsurface utility engineering Quality Level B. Includes preparation of existing conditions base map, and Digital Terrain Model (DTM).
2. Consultation and coordination with the client, vendors, stakeholders, and reviewing agencies (MRWC, CDPHE, Montezuma County, BOR, Mancos State Park, Mancos Water Conservancy District).
3. Preparation of civil and structural construction documents, assuming Schematic Design (SD) for client review, Design Development (DD) for CMAR solicitation, and Construction Document (CD) submittals
4. Assembly of CMAR solicitation Project manual per CDPHE requirements.
5. Review and certify client prepared Basis of Design Report (BDR) for CDPHE permitting of new water tank.
6. Limited Construction administration.
7. Project close out

Our understanding is that the project will be designed and reviewed in accordance with Montezuma County, CDPHE, and AWWA standards and specifications and funded by CDPHE State Revolving Funds (SRF). The method of delivery for the project is understood to be CMAR, and solicitation will utilize contracting documents developed by Goff and obtained from the Engineering Council of Joint Contract Documents (EJCDC).

**SUMMARY OF INVOICING AND PAYMENT**

Our proposed project fee is summarized as follows:

Total cost of this proposal

**\$90,170**

This project would be invoiced on a percentage of completion basis, with a limit amount (indicated above) for the work tasks listed herein. Statements will be emailed monthly and the undersigned client agrees to be solely responsible for payment of all bills within 30 days of receipt of invoices, with the total balance due prior to delivery of the final product.

In the event additional work outside the scope of this contract is required, you will be notified for authorization to proceed with the additional work. Revisions to the project scope due to owner, architect, or contractor-initiated changes that require an update to substantially complete services will be considered additional work and may be subject to an additional service fee. Additional services will be pre-approved by you and billed on a per-hour basis in accordance with our hourly rates.

The cost and conditions listed herein are valid for 45 days from the date of this presentation.

#### ITEMS TO BE PROVIDED BY THE CLIENT / OTHERS

1. Geotechnical site evaluation and water tank foundation recommendations.
2. Prompt payment of all invoices in accordance with the invoicing summary and conditions listed below.
3. Title policies (as required for boundary survey).
4. Application and publication fees.

#### ITEMS NOT INCLUDED

1. Environmental site assessment/clearances.
2. Off-site improvements (utilities, roadway improvements, etc.)
3. Construction staking, parcel boundary delineation, and platting.
4. Easement exhibits and legal descriptions for individual parcels; should exhibits be required, can be prepared at an additional fee of \$ 700 per exhibit.
5. Items not specifically identified in the scope of services

#### SCHEDULE

Topographic site survey can be completed after the site is clear of snow. SD submittal can be furnished six (6) weeks following completion of the topographic survey work.

#### ACCEPTANCE

The scope of services, project costs, payment plan, and the attached standard terms and conditions are hereby approved and accepted.

Presented by,



Rob Harries, P.E.  
Goff Engineering & Surveying, Inc.

March 9, 2023

Date

Accepted by,



Shuravech, Vice President UR42WA  
John Will, President UR42WA  
Client

3/14/23  
Date

#### Attachments:

- a. Goff Engineering Standard Terms and Conditions
- b. Project Budget Tabulation
- c. Goff Hourly Rate Sheet

**1. STANDARD OF CARE:** Services shall be performed in accordance with the standard of professional practice ordinarily exercised by the applicable profession at the time and within the locality where the Services are performed. Professional services are not subject to, and GOFF cannot provide, any warranty or guarantees contained in any uniform commercial code. Any such warranties or guarantees contained in any purchase orders, requisitions, or notices to proceed issued by Client are specifically objected to and excepted from the contract between GOFF and the Client.

**2. CHANGE OF SCOPE:** The Scope of Services set forth in this Agreement is based on facts known at the time of execution of this Agreement, including, if applicable, the information supplied by the Client. For some projects, the scope may not be fully definable during the initial phases. As the Project progresses, facts discovered may indicate that scope must be redefined. Any change of scope will be considered additional services (if additive) and the contract fee will increase to cover the additional scope. GOFF will notify the Client by including additional service items on the standard monthly billing forms. Any additional service fees shall be deemed approved if not objected to in writing within 15 days of receipt by the Client.

**3. SAFETY:** GOFF has established and maintains corporate programs and procedures for the safety of its employees. GOFF specifically disclaims any authority or responsibility for general job site safety and safety of persons other than GOFF employees.

**4. DELAYS:** If events beyond the control of either Client or GOFF, including, but not limited to, fire, weather, snow, rain, flood, explosion, riot, strike, war, process shutdown, the act of God, or the public enemy, and act or regulation of any government agency, result in a delay to any schedule established in the Agreement, such schedule shall be amended to the extent necessary to compensate for such delay. In the event such delay exceeds 90 days, GOFF shall be entitled to an equitable adjustment in compensation. In the event Client delays GOFF and such delay exceeds 30 days, GOFF shall be entitled to an extension of time equal to the delay and an equitable adjustment in compensation. Any non-payment of any invoice by Client may be deemed sufficient cause for GOFF to delay all work on the Project until such time that full payment of past due accounts are received.

**5. TERMINATION/SUSPENSION:** Either party may terminate this Agreement upon 30 days written notice to the other party. The client shall pay GOFF for all Services, including profit relating thereto, rendered prior to termination, plus any expenses of termination. GOFF shall retain ownership of all project deliverables.

**6. INSURANCE:** GOFF will maintain insurance coverage for Professional, Comprehensive, General, Automobile, Worker's Compensation, and Employer's Liability in amounts in accordance with legal, and GOFF's business requirements. Certificates evidencing such coverage will be provided to the Client upon request.

**7. LIMITATIONS OF LIABILITY:** To the fullest extent permitted by law, GOFF's total liability to Client for any and all injuries, claims, losses, expenses, or damages whatsoever arising out of or in any way related to the Project or this Agreement from any causes including, but not limited to, GOFF's negligence, errors, omissions, strict liability, or breach of contract shall not exceed, either (a) the total compensation received by GOFF under this Agreement, or (b) re-performance of the defective services by GOFF at no cost to Client. No employee or agent of GOFF shall have individual liability to the Client. IN ANY EVENT AND UNDER NO CIRCUMSTANCES SHALL GOFF BE LIABLE TO THE CLIENT FOR CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES.

**8. LENGTH OF TIME THIS PROPOSAL IS VALID:** This proposal, associated fee schedule, and the presented costs are valid for 45 days from the date of the proposal. However, if this contract is accepted, signed, and executed by Client and GOFF, the associated fee schedule and presented

costs shall be valid until the project is completed, or excessive delays are experienced (see paragraph 4.) or this contract is terminated.

**9. ACCESS:** Client shall provide GOFF safe access to any premises, on or off the project site, necessary for GOFF to provide the Services.

**10. OWNERSHIP AND REUSE OF PROJECT DELIVERABLES:** All documents furnished by GOFF to Client are instruments of service and shall remain the copyrighted property of GOFF. These documents include but are not limited to, plats, sketches, reports, calculation sheets, field books, specifications, design & layout concepts & drawings, documents, electronic imagery, maps, photographs, inked tracings, and/or all other visual impressions, whether recorded and/or delivered on paper, magnetically, electronically, optically or otherwise. GOFF is not obligated to, and will not provide electronic copies, copies on disk, or any computer files of the product to the Client or other parties unless this is specifically called for in the contract documents. Reuse or alteration of any documents or other deliverables, including electronic media, pertaining to the Project by Client for any purpose other than that for which such documents or deliverables were originally prepared, is prohibited and if done by the client or his representative, shall be at the Client's risk. Client agrees to defend, indemnify, and hold harmless GOFF from all claims, damages, and expenses, (including reasonable litigation costs), arising out of such reuse or alteration by Client or others acting through Client.

**11. AMENDMENT:** There are no understandings or agreements, verbal, written, or other, except as herein expressly stated. This agreement, upon execution by both parties hereto, can be amended only by a written instrument signed by both parties.

**12. ASSIGNMENT:** Except for assignments (a) to entities which control, or are controlled by, the parties hereto or (b) resulting from the operation of law, the rights and obligations of this Agreement cannot be assigned by either party without written permission of the other party. This Agreement shall be binding upon and inure to the benefit of any permitted assigns.

**13. STATUTES OF LIMITATIONS:** To the fullest extent permitted by law, Client agrees that, except for claims for indemnification, the time period for bringing claims under this Agreement shall expire one year after Project completion.

**14. PREVAILING PARTY LITIGATION COSTS:** In the event any actions are brought to enforce this Agreement, if GOFF is the prevailing party, GOFF shall be entitled to collect its litigation costs and reasonable attorney fees from the other party.

**15. NO WAIVER:** No waiver by either party of any default by the other party in the performance of any particular section of this Agreement shall invalidate any other section of the Agreement or operate as a waiver of any future default, whether like or different in character.

**16. SEVERABILITY:** The various terms, provisions, and covenants herein contained shall be deemed to be separate and severable, and the invalidity or unenforceability of any of them shall not affect or impair the validity or enforceability of the remainder.

**17. AUTHORITY:** The persons signing this Agreement warrant that they have the authority to sign as, or on behalf of, the party for whom they are signing.

**18. PAYMENT FOR SERVICES:** Statements will be mailed monthly and the Client agrees to be solely responsible for payment of all bills immediately upon receipt of invoices, with the total amount due at the time of delivery of the product. The client agrees to pay 2% per month for all amounts due not received within 15 days of the billing statement. Should collection procedures be required, GOFF shall be allowed to receive collections fees including reasonable attorney fees. If any past due accounts exceed 30 days, GOFF has the authority to suspend all work, without liability, until the total amount is paid in full and GOFF will be entitled to an extension of time to complete the Services or have the option to terminate this Agreement.

**19. CREDIT CARD PAYMENTS:** Payments made by credit card will be subject to a 3.50% surcharge added to the invoice amount.

**// TIME AND FEE PROPOSAL**

Upper Road 42 Water System Project  
Montezuma County, CO



Staff	RT	RH/BH	TE	KK	JO/RA	JE	GG/KR	BB	KN	SM	KT	2MAN	ADM	
Hourly Rate	\$172	\$165	\$160	\$146	\$123	\$111	\$108	\$128	\$123	\$114	\$97	\$170	\$64	
Labor Code	PLS-4	PE-4	PE-3	PE-2	PE-1	EIT-2	EIT-1	PLS-3	PLS-2	ST-3	ST-2	2MAN	ADM	
<b>// PHASE 1 SITE INVENTORY &amp; ASSESSMENT</b>														
Topographic, & utility, Survey	2							2				50		\$9,100
Prepare existing conditions base map including digital terrain model (DTM)	2					6		2			20			\$3,206
Site visit to review/inspect site conditions		4				4								\$1,104
														<b>PHASE TOTAL \$13,410</b>
<b>// PHASE 2 PROJECT MANAGEMENT SERVICES</b>														
Consultation and correspondence with client, reviewing agencies, and project stakeholders.		24		8										\$5,128
Professional review and certification of client prepared Preliminary Needs Assessment (PNA)		12												\$1,980
EJCDC - CMAR contracting documents acquisition														\$2,600
														<b>PHASE TOTAL \$9,708</b>
<b>// PHASE 3 SCHEMATIC DESIGN PHASE</b>														
Subsurface Utility Engineering (SUE) Quality Level B at crossing locations		8				4		8				20		\$6,188
Prepare SD waterline plan & profile drawings, including SD site grading plan for water tank site.		8				16								\$3,096
Draft publication of Project Manual including development of EJCDC Construction Manager at Risk (CMAR) contract for CDPHE and stakeholder review.		24				40								\$8,400
														<b>PHASE TOTAL \$17,684</b>
<b>// PHASE 4 DESIGN DEVELOPMENT PHASE</b>														
Prepare DD site improvement plans, including significant details (water tank, booster pump, services).		16				60								\$9,300
Publication of Project Manual solicitation, includes development of EJCDC Construction Manager at Risk (CMAR) contracting documents.		16				32								\$6,192
Orchestrating and administration of Public presentation meeting		4				4								\$1,104
Review and certify client prepared Basis of Design Report (BDR) for new potable water storage Tank for CDPHE review/approval.		12												\$1,980
														<b>PHASE TOTAL \$18,576</b>
<b>// PHASE 5 CONSTRUCTION DOCUMENT PHASE</b>														
Collaboration with Contractor during development of GMP.		16				8								\$3,528
Finalize Construction Documents in collaboration with contractor, client, and reviewing agencies		16				32								\$6,192
														<b>PHASE TOTAL \$9,720</b>
<b>// PHASE 6 CONSTRUCTION ADMINISTRATION PHASE</b>														
Review material submittals, respond to RFI, RFC, review payment requests, etc.		24				40								\$8,400
Review client furnished weekly site visit field reports during assumed 6 month construction period		18												\$2,970
Monthly site inspections during assumed 6 month construction period		12												\$1,980
Project Closeout, includes punch lists, issuance of substantial completion, and acceptance certifications.		12				4								\$2,424
Preparation of "As-Built" plans from contractor furnished information		2				4								\$774
														<b>PHASE TOTAL \$16,548</b>
<b>// PHASE 7 STRUCTURAL DESIGN SERVICES</b>														
Construction documents/details for cast in place water tank foundation, assumes DD and CD submittals, with sheet specifications		8			12		16							\$4,524
														<b>PHASE TOTAL \$4,524</b>
														<b>&gt;&gt; TOTAL PROJECT FEE \$90,170</b>

Abbreviations and acronyms

AWWA	American Water Works Association
BDR	Basis of Design Report
BOR	Bureau of Reclamation
CD	Construction Documents (100%)
CDPHE	Colorado Department of Public Health and Environment
CMAR	Construction Manager at Risk
DD	Design Development (80%)
EJCDC	Engineers Joint Contract Documents Committee
GMP	Guaranteed Maximum Price
MRWC	Mancos Rural Water Company
RFQ	Request for Qualifications
SD	Schematic Design (30%)
SRF	State Revolving Funds
UR42WA	Upper Road 42 Water Association

## 2023 Fee Schedule | Hourly Rates

### // STAFF

PLS-4	Senior Project Manager PLS	\$172.00
PE-4	Principal Engineer	\$165.00
PE-3	Associate Principal PE	\$160.00
PE-2	Senior Project Engineer	\$146.00
PE-1	Project Engineer	\$123.00
EIT-2	Engineering-In-Training 2	\$111.00
EIT-1	Engineering-In-Training 1	\$108.00
CAD2	CAD Operator II	\$103.00
CAD1	CAD Operator I	\$ 92.00
ADM	Office Manager/Receptionist	\$ 64.00
PLS-3	Survey Dept Manager PLS	\$128.00
PLS-2	Project Surveyor II PLS	\$123.00
PLS-1	Project Surveyor I PLS	\$ 97.00
ST-3	Survey Manager Non-PLS	\$114.00
ST-2	Survey Technician / Operator II	\$ 97.00
ST-1	Survey Technician / Operator I	\$ 92.00
1MAN	One-Person Survey Crew	\$150.00
2MAN	Two-Person Survey Crew	\$170.00
3MAN	Three-Person Survey Crew	\$200.00
ADV	Advocacy Representation & Expert Testimony	\$250.00

### // REIMBURSABLES

Mileage	\$0.63 / mile
Per Diem	Dependant upon site location
Permanent Markers Set	
Section monuments	\$40.00 each
5/8' rebar and survey cap	\$8.00 each
Fence posts	\$8.00 each
Hubs	\$43.00 / box
Printing	
Black Lines (24x36 – individual)	\$7.00 each
Black Lines (24x36 – project sets)	\$3.00 each
Mylars	\$20.00 each
Photocopies	\$0.20 each
Color Maps	\$4.00 / SF
Archive Aerial Maps	\$250.00 / tile
Data Retrieval	\$85.00 / request
Subcontracting	1.15 x invoice
Overtime rates for specific projects (hourly billing x 1.5)	

\*All costs are effective January 1, 2023



Preliminary Engineering Report  
for  
Upper Road 42 Water Association  
Treated Water Distribution System  
and tie-in to  
Mancos Rural Water Company

Prepared by

Harris Water Engineering  
954 East 2<sup>nd</sup> Avenue, Suite 202  
Durango Colorado 81301

February 17, 2023

## OUTLINE

- 1) PROJECT PLANNING
  - a) Location
  - b) Environmental Resources Present
  - c) Population Trends
  - d) Community Engagement
- 2) EXISTING FACILITIES
  - a) Location Map
  - b) History
  - c) Condition of Existing Facilities
  - d) Financial Status of any Existing Facilities
  - e) Water/Energy/Waste Audits
- 3) NEED FOR PROJECT
  - a) Health, Sanitation, and Security
  - b) Aging Infrastructure
  - c) Reasonable Growth
- 4) ALTERNATIVES CONSIDERED
  - a) Description
  - b) Design Criteria
  - c) Map
  - d) Environmental Impacts
  - e) Land Requirements
  - f) Potential Construction Problems
  - g) Sustainability Considerations
    - i) Water and Energy Efficiency
    - ii) Green Infrastructure
    - iii) Other
  - h) Cost Estimates
- 5) SELECTION OF AN ALTERNATIVE
  - a) Life Cycle Cost Analysis
  - b) Non-Monetary Factors
- 6) PROPOSED PROJECT (RECOMMENDED ALTERNATIVE)
  - a) Preliminary Project Design
  - b) Project Schedule
  - c) Permit Requirements
  - d) Sustainability Considerations
    - i) Water and Energy Efficiency
    - ii) Green Infrastructure
    - iii) Other
  - e) Total Project Cost Estimate (Engineer's Opinion of Probable Cost)
  - f) Annual Operating Budget
    - i) Income
    - ii) Annual O&M Costs
    - iii) Debt Repayments
    - iv) Reserves



7) CONCLUSIONS AND RECOMMENDATIONS

8) APPENDICES

- a) Bulletin 180-2 Front Matter
- b) Short Lives Assets Matter
- c) MRWC Rate Structure
- d) USDA/NRCS Soil Survey, Shallow Excavations

## **ABBREVIATIONS**

**BOR – Bureau of Reclamation**  
**BOT – Bottom of Tank**  
**MRWC – Mancos Rural Water Company**  
**NEPA-National Environmental Policy Act**  
**NPV-Net Present Value**  
**O&M –Operations and Maintenance**  
**OMB-Office of Management and Budget Report**  
**PER –Preliminary Engineering Report**  
**SCC – Social Cost of Carbon**  
**SPPW-Single Payment Present Worth**  
**UR42WA – Upper Road 42 Water Assoc.**  
**USPW-Uniform Series Present Worth**

1) PROJECT PLANNING

*Describe the area under consideration. Service may be provided by a combination of central, cluster, and/or centrally managed individual facilities. The description should include information on the following:*

The intent of the planned Upper Road 42 Water Association (UR42WA) is to serve approximately 25 residential and commercial customers along Upper Road 42, in the town of Mancos, Montezuma County, Colorado with water from the Mancos Rural Water Company (MRWC) Treatment Plant (Plant) located at the base of the Jackson Reservoir Dam. Fundamentally, this will result from the installation of a main line connection to the treated water outlet at the Plant, pumps, a storage/head tank, service connections, and ancillaries. Once built, MRWC will assume operations and maintenance (O&M) of the system. Ownership of the system will remain with UR42WA until it is paid off, at which time it will be granted to MRWC.

- a) Location. *Provide scale maps and photographs of the project planning area and any existing service areas. Include legal and natural boundaries and a topographical map of the service area.*

The location of the project center is 21.5 degrees / 4.5 miles NNE of Mancos at UTM 12 S 742356 m E 4143335 m N.

The pipeline will begin at the South edge of the MRWC Treatment Plant, with an interconnect and pump station. The existing 4" pipeline that proceeds up the edge of the Plant service road to Road N will be utilized, with a tie in at the end of the existing 4" pipe. A new 3" C900 pipe will run Eastward ~0.5 miles to the west side of CR 42. From there, the pipe will proceed North for 0.4 miles along the west side of CR 42, then bear NE along CR 42 for 0.4 miles, then bear NNE along CR 42 for 0.35 miles where it will then cross CR 42 to the east and terminate at a presently planned 20,000-gallon tank at the north end of the system on the Anderson property, south of the access road to the Diggs property. A service connection pipe will potentially double back approximately 0.5 miles to two residences to encourage tank turnover. Remaining service connections and laterals will be installed along the route, discussed later, some requiring trenching or boring on both sides of CR 42. Current MRWC customers on Road N that are not members of the UR42WA and have opted out of the project will continue to receive their currently delivered water pressure with the installation of pressure reducing valves at the 3" tie in on Road N. Should they decide to join the project within the 6-month timeframe given by MRWC, the pressure reducing valve will be removed and they will receive increased pressure from the new pressure zone.

System location and topographic maps are provided below in [Figures 1 and 2](#) ([Figure 2](#) with USGS base map). [Figure 3](#) provides an overview of the existing system and proposed system additions.

Project border considerations need to be mentioned. The beginning (lower west) part of the pipeline, leading from the Plant to Road N and the first ~430 feet of pipeline along Road N is on Bureau of Reclamation (BOR) land. The project Service area is bounded on the lower Northwest by Jackson Gulch Reservoir and Mancos State Park (BOR). On the Upper Northwest the project is bounded by private land. To the North, with no intrusion, is the San Juan National Forest (USDA National Forest). The balance of the project is bordered on the East and South by private land. The pipeline will need to cross under an existing bridge / over the Jackson Gulch Inlet Canal at CR 42, near the Northeast end of the Jackson Gulch Reservoir. To date, 25 parcel owners are opted into the project; a single property shown (yellow shade) within the service area in [Figure 2](#) is not planned for service connections at this time (owner declined to opt-in).

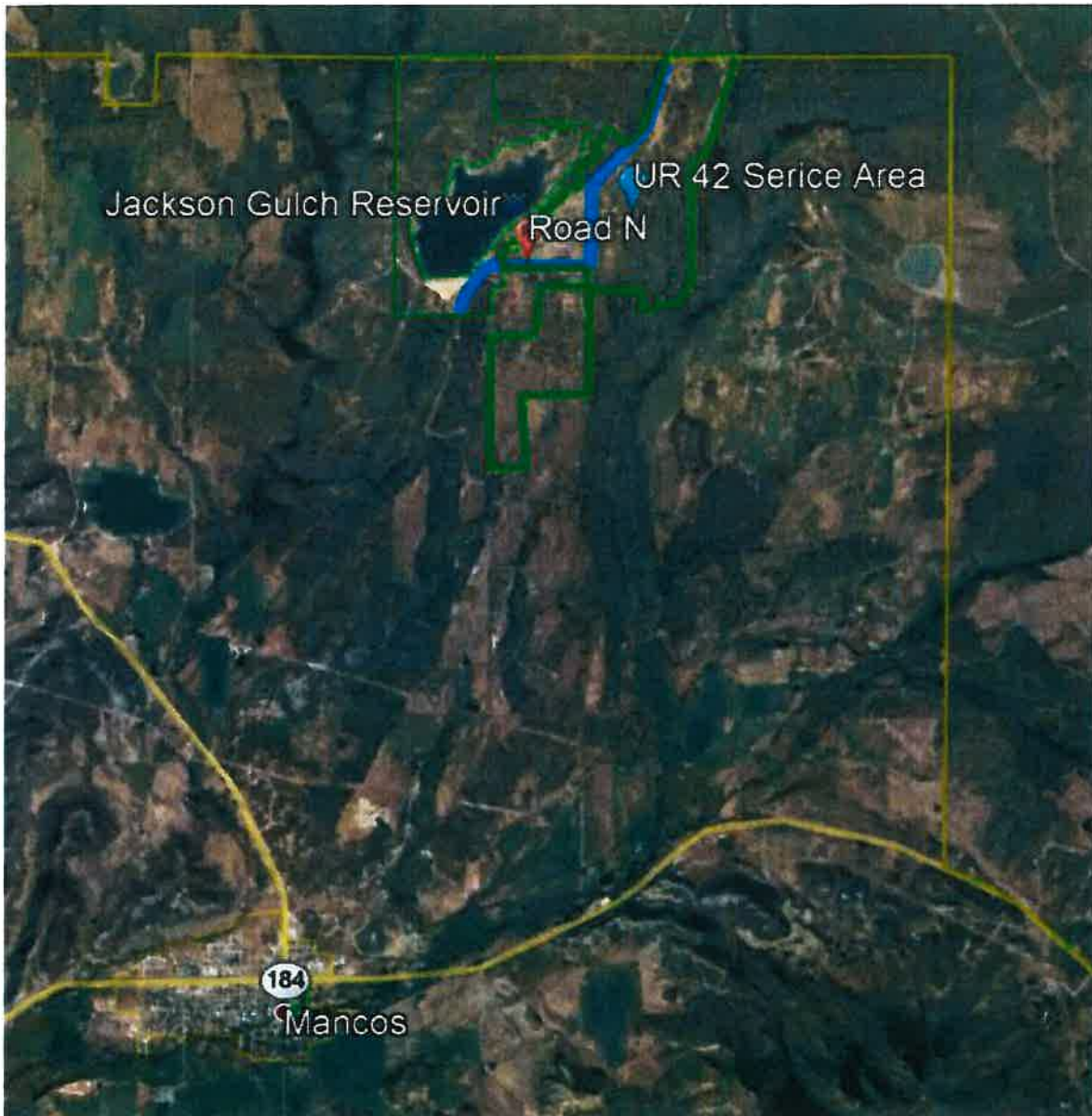


Figure 1. General Location Map of UR42 Project: Service Area (bold green) and Service Main (bold blue).



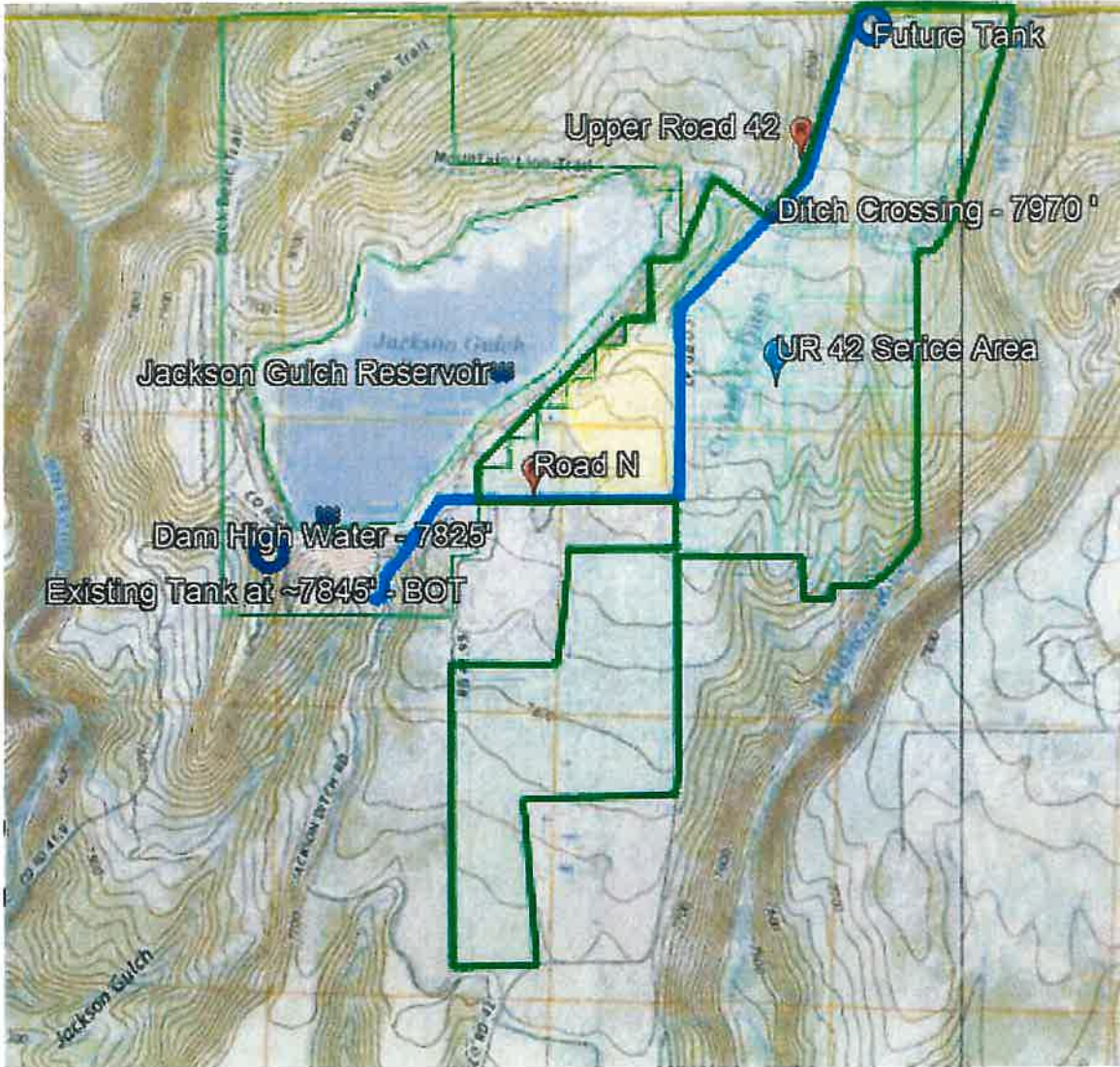


Figure 2. Overview Location/Topographic Map of UR42 Project: Service Area, Parcels, and Main Pipeline (existing and proposed, total flow route). USGS base map.

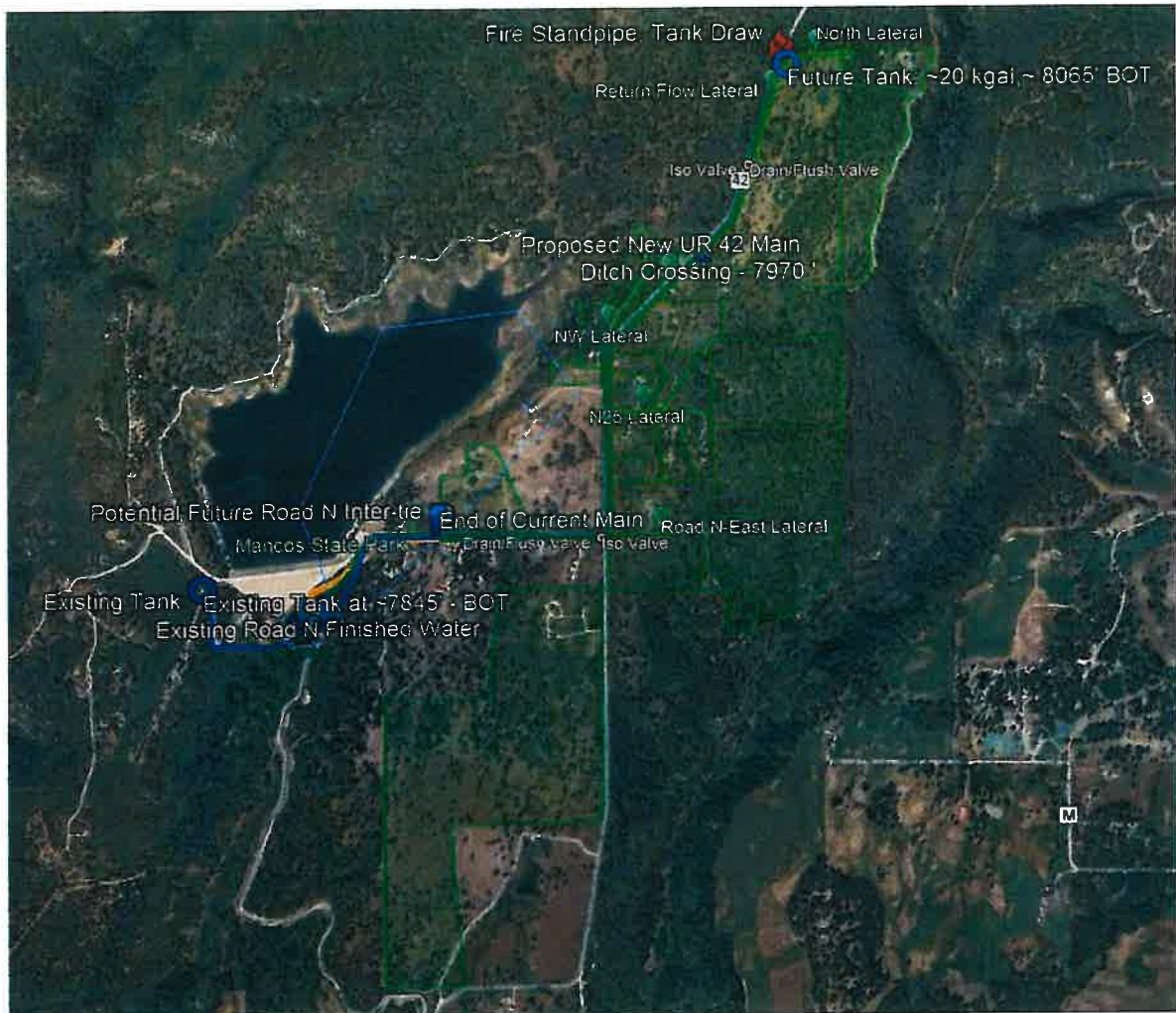


Figure 3. Existing and Proposed Facilities Overview

- b) Environmental Resources Present. *Provide maps, photographs, and/or a narrative description of environmental resources present in the project planning area that affect design of the project. Environmental review information that has already been developed to meet requirements of NEPA or a state equivalent review process can be used here.*

A cursory literature-derived analysis of the conceptual design impacts was conducted for this document. Results did not identify any significant ecological issue (i.e., the presence of a critical habitat, or wetland) that would affect the design. The only possible environmental issue that could affect the construction schedule, would be the presence of protected migratory bird nest(s) which need to be inventoried. This is a very standard consideration for construction projects that involve the use of federal funds, or that occur on public lands.

Correspondence with project trustees/landowners identified the need for license agreement with the Bureau of Reclamation (BOR) in order to construct project features within BOR managed lands. BOR representatives have indicated that the DRAFT conceptual design would likely have minimal impacts but



would require their National Environmental Policy Act (NEPA) compliance review. Based upon initial review (which included a new line running up the service road, in lieu of the current decision to utilize the existing 4" main), the BOR identified a possible cultural resource (a CCC camp) that would require inventory and analysis. Upon the decision to utilize the existing 4" main, the cultural resource is avoided as outside the project envelope.

In general, the conceptual design will likely yield minimal impacts to environmental resources of interest such as aquatic and terrestrial wildlife, wetlands, surface water, groundwater, and geologic resources. The conceptual pipeline occurs primarily in private lands or along an existing road prism. This alignment approach does an effective job of minimizing impacts to any existing natural resources of concern. It should be noted that regardless of these preliminary results, as per NEPA compliance requirements for the PER; it is necessary to 'scope' the next steps necessary to document existing environmental setting conditions and the possible project impacts to the natural setting. This scope is dependent upon the funding type and regulatory review compliance requirements that has yet to be defined.

### c) Environmental Impacts

As stated within the USDA Rural Utilities Service Bulletin 1780-2 describing essential elements necessary to complete a 'Preliminary Engineering Report for the Water and Waste Disposal Program'; "*Projects utilizing direct federal funding require an environmental review in accordance with the National Environmental Policy Act (NEPA). The Report should indicate that environmental issues were considered as part of the engineering planning and include environmental information pertinent to engineering planning. Some state and federal funding agencies will not require the Report for every project or may waive portions of the Report that do not apply to their application process, however a Report thoroughly addressing all of the contents of this outline will meet the requirements of most agencies that have adopted this outline.*"

NEPA compliance requires the federal government to formally consider how a funded project will affect the environment and make sure nearby communities—the people who will have to live with the consequences—get a fair chance to weigh in on whether it's a good idea. NEPA analysis will determine if the environmental impacts attributable to a project are acceptable or require the development of alternatives to the project design. Ultimately, NEPA compliance will assist in the process of developing a project that yields the least impact to resources of value to the public. The NEPA analysis will evaluate project impacts to natural resources of soil, geologic features, surface and groundwater, aquatic and terrestrial habitats and species, wetlands, species of special interest (USFWS, State of CO and others), and any pertinent social or economic resources.

The amount of NEPA analysis required for a project is 'scoped' by conducting an initial inventory of the resources impacted by the project. If 'critical' elements such as critical habitat for a threatened or endangered species is identified, it becomes apparent that alternative project design is warranted. This initial scoping is a very cursory analysis of the project environmental impacts using immediately available resources. These available resources are standard tools that the USDA and others require; however, the results provide only a conceptual understanding of the project setting. Once a formal PER is initiated, it is necessary to complete a more in-depth field-level analysis in order to acquire defensible information. For the purposes of this document, the initial scoping relied upon internet-available databases such as the US Fish and Wildlife Service – Wetlands Mapper, eBird and the US Fish and Wildlife Service iPAC database systems which were queried using the available pipeline shapefile. Results of the USFWS iPAC query are attached to this report (USFWS iPAC, 10/11/2021).

Results of the initial scoping identified the following environmental issues requiring further analysis:

- The project is immediately adjacent to Jackson Lake which is a recognized habitat resource for migratory birds. It is possible that migratory bird nest sites are located in close proximity to the pipeline that will need to be inventoried and avoided during construction.
- The project crosses two waters of the United States including Jackson Gulch and the Jackson Gulch inlet canal. The project impacts to the wetlands associated with these crossings will need to be delineated.
- The USFWS iPAC system has identified certain species of concern in the area. These species include:
  - New Mexico Meadow Jumping Mouse (*Zapus hudsonius luteus*)
  - Mexican Spotted Owl (*Strix occidentalis lucida*)
  - Southwestern Willow Flycatcher (*Empidonax traillii extimus*)
  - Yellow-billed Cuckoo (*Coccyzus americanus*)
  - Colorado Pikeminnow (*Ptychocheilus Lucius*)
  - Razorback Sucker (*Xyrauchen texanus*), and
  - Monarch Butterfly (*Danaus plexippus*)

An initial review of site conditions indicates that the habitat types required by the above species would not be affected by the project. However, there is the possibility for the Flycatcher to occur due to its migratory patterns. This species (as per eBird queries completed October 2021) was observed at Jackson Lake July 1, 2011, and August 15, 2010. These observations during that time of year (i.e., outside of the spring/fall migrations) suggest breeding/nesting in the area. A field reconnaissance may be required to determine this species presence or absence.

- There were no critical habitats identified within or adjacent to the project area.
- There are several migratory birds that occur in the area (Cassin's Finch [*Carpodacus cassinii*]; Clark's Grebe [*Aechmophorus clarkia*], Evening Grosbeak [*Coccothraustes vespertinus*], Grace's Warbler [*Dendroica graciae*], Pinyon Jay [*Gymnorhinus cyanocephalus*], Virginia's Warbler [*Vermivora virginiae*]; refer to the Migratory Birds list provided in the attached USFWS iPAC query results). As previously mentioned, these birds are protected during their nesting seasons and will need to be inventoried for their presence/absence as well as completing a nest survey in the immediate vicinity of the project footprint. An initial query of the eBird database revealed the following observations:
  - Cassin's finch: very common breeding migrant; eBird detections from March through October; 2010 to 2021.
  - Clark's Grebe: common migrant (not common to breed here); eBird detections during migration in May and June; 2013 to 2021.
  - Evening Grosbeak: common year-round resident; eBird detections in Feb through August; 2010 to 2014.
  - Grace's warbler: very common breeding migrant; Jackson has ideal Ponderosa habitat; eBird detections from late April through early Sept; 1990 to 2021.
  - Pinyon jay: common resident, becoming very common Spring through early Fall; eBird detections from March through Sept; 2004 to 2021
  - Virginia's warbler: very common breeding migrant; Jackson has ideal scrub oak habitat; eBird detections from May through late August; 2010 to 2021.
  - Bald Eagle: common resident when ice-free, becoming more common as populations increase regionally; eBird detections June through November; 2020 and 2021.



- Golden Eagle: common resident; eBird detections in May through October; 2015 to 2020.
- In order to comply with NEPA requirements, at the minimum, a literature-based review of existing historic and archaeological properties will need to be completed.

In summary, the conceptual design will likely yield minimal impacts to environmental resources of interest. The conceptual pipeline occurs primarily in private lands or along an existing road prism. This alignment approach does an effective job of minimizing impacts to any existing natural resources of concern. Regardless, as per NEPA compliance requirements for the PER; it is necessary to scope the next steps necessary to document existing environmental setting conditions and the possible project impacts to the natural setting. The 'scope' is dependent upon the funding type and regulatory review compliance requirements.

### References Cited

US DOI BOR – NEPA Analysis Handbook file:///C:/Users/kking/Desktop/NEPA\_Handbook2012.pdf  
 US FWS iPAC – Information for Planning and Consultation - <https://ecos.fws.gov/ipac/>  
 US FWS iPAC, 2021. List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project. Provided by US FWS, Western Colorado Ecological Services Field Office. October 11, 2021. Consultation Code: 06E24100-2022-E-00049  
 US FWS Wetlands Mapper - <https://www.fws.gov/wetlands/data/mapper.html>

d) Population Trends. Provide U.S. Census or other population data (including references) for the service area for at least the past two decades if available. Population projections for the project planning area and concentrated growth areas should be provided for the project design period. Base projections on historical records with justification from recognized sources.

US Census Population data for the Mancos area is derived from the 2020 Census Demographic data, Tract 9691. General county-wide data are available for 2010 and 2020; more focused tract data where the project is located are only available for 2020 as summarized below in Table 1, Project Demographics:

Table 1. Project Demographics

	2010	2020	Change
Montezuma County Population			
Population	25,535	25,849	1.2% *
% over 18 yrs of age		81 %	
Mancos Area - Tract 9691			
Population [#]		3,266	
Land Area [sq mi]		323.9	
Population Density [# /sq mi]		10.01	
% occupied housing units		80.2 %	
Total occupied housing units		1,431	
Total housing units		1,785	

\* vs. 7.4% US Average

Population density is on the lowest 'bucket' of the distribution tracked by the Census (less than 50 persons / sq mi). County-wide population growth in the last 10 years is relatively low, at 1.2%, as compared to the national average of 7.4%. Project area parcels are already filled, with little room for growth other than speculative potential subdivision of a few lots (subject to local code and approval). Given the project boundaries discussed earlier, with State and Federal land to the West and North, few inhabited parcels to

the East, and the majority of parcels to the South already being served by MRWC, there is little likelihood of significant capacity or service expansion beyond initial construction and operation. Nonetheless, reasonable system expansion factors will be included in design, including the potential of a small number of current MRWC Road N customers who may later opt-in.

e) Community Engagement. *Describe the utility's approach used (or proposed for use) to engage the community in the project planning process. The project planning process should help the community develop an understanding of the need for the project, the utility operational service levels required, funding and revenue strategies to meet these requirements, along with other considerations.*

The Upper Road 42 Water Association (UR42WA) was formed via a coalition of local residents including placement of officers. Meetings have been held with residents, resulting in a steady increase in participation. There are approximately four existing MRWC customers along Road N who have opted to not join the project at this time, some due to significant prior investment in personal water systems.

There is a prior history of two such attempts, which lacked the interest and momentum to proceed at the time. Since then, the local demand for sufficient quantities of piped regulatory-compliant treated water, the desire to evolve away from hauling water, as well as presence of strong and determined local leadership, has resulted in significant progress toward making this needed system a functional reality. It should be noted that there is currently a strong and involved interest by the residents to see this project completed.

Planning and conceptual design meetings were held with MRWC regarding project scope, system performance and operations, with strong consideration of MRWC operating parameters and mutual system and community objectives, including an agreement to have MRWC take over the associated O&M upon completion. MRWC is viewed as a critical partner in this process.

The UR42WA leadership has reached out to associated state and federal agencies, including USEPA, as well as secured funding through meetings with the Southwest Basin Roundtable and Colorado Water Conservation Board.

As the project proceeds, community, MRWC, and agency engagement will continue through regular and key milestone stakeholder meetings, including presentation/feedback/inclusion of: system need and scope; performance expectations; project funding, budget, and expenses; schedule and status; and eventual operations, maintenance, and cost of service (rates). Service levels will be commensurate with existing MRWC levels of service.

## 2) EXISTING FACILITIES

*Describe each part (e.g. processing unit) of the existing facility and include the following information:*

a) Location Map. *Provide a map and a schematic process layout of all existing facilities. Identify facilities that are no longer in use or abandoned. Include photographs of existing facilities.*

The extent of existing facilities is represented in Figure 4 (area) and Figure 5 (plant detail) and include: the treatment plant (Plant); raw water supply and delivery; finished (treated) water tank and lines; and the finished water main to Road N are shown. Raw water lines are in light blue, treated water in dark blue.

The plant receives raw water from an outlet at the base of Jackson Gulch dam. From there the raw water proceeds to a flow control structure just southeast of the plant. This structure allows distribution of raw water to each and any combination of the plant, the Town of Mancos, and the “Park” community. Raw water in the plant is treated by a package Flocculation, Sedimentation and Filtration, with primary chlorine disinfection, followed by head pumps. A clearwell / CT tank is located just south of the Plant. Treated water leaves this tank and is pumped up to the holding/head tank west of the dam (standard procedure, head maintenance).

Given the elevation of the existing Finished Water Tank and the associated head of the Plant pumps, as compared to the elevation of customers on Road N, there is very little driving head to supply these customers. Service pressure at the parcels is relatively low (resulting in some customers installing booster pumps), and certainly not sufficient to provide service to customers on Road N at longer pipe distances and elevations.

While the option of tapping into the end of the existing Road N main - with the addition of a booster pump at that location - was investigated, this option was rejected for reasons discussed later. Instead, the proposed pump will be placed at the Plant and tap into the existing 4” main, with a 3” main extension starting up the hill on Road N.

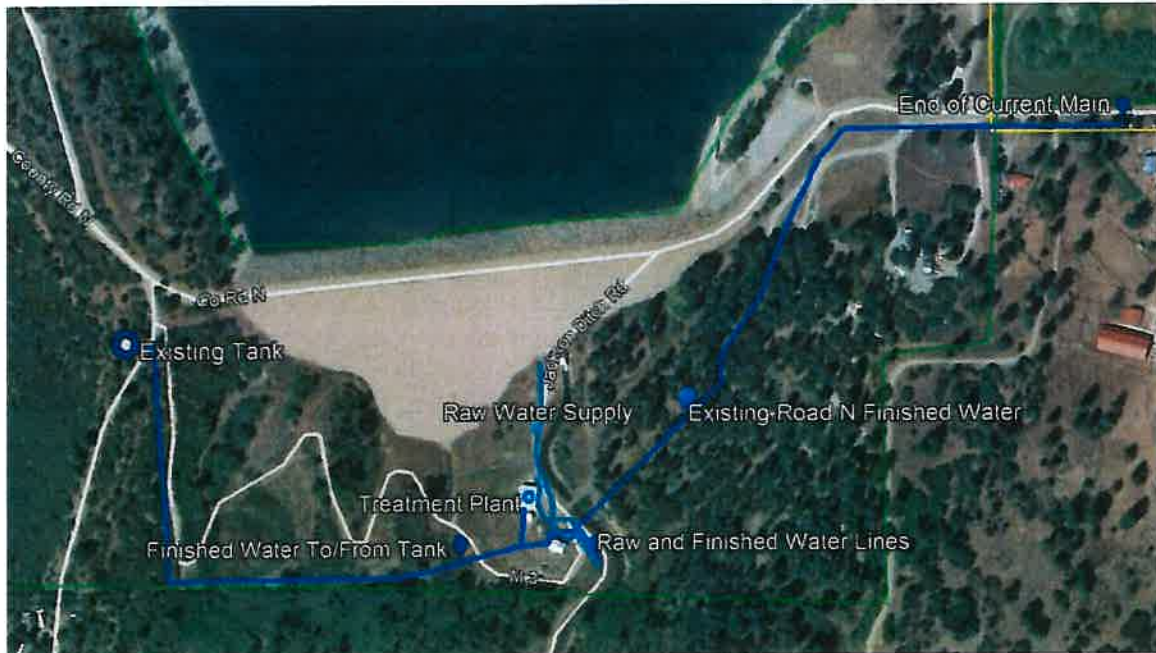


Figure 4. Detail of the existing infrastructure immediately surrounding the plant, including raw water (light blue), treated water (dark blue).





Figure 5. Close-up of Figure 4; Plant-scale detail of existing major infrastructure, including abandoned lines (yellow).

**b) History.** Indicate when major system components were constructed, renovated, expanded, or removed from service. Discuss any component failures and the cause for the failure. Provide a history of any applicable violations of regulatory requirements.

The Plant was built in 1995 and has operated steadily since that time. The service line to Road N was installed in 1994. There have been some modifications (date unknown) to the raw water distribution controls with the current vault replacing a prior one. There are very few records available on the engineering and construction of the plant, and no engineering drawings. We have obtained a hand-drawn schematic of the plant's yard-piping, which was used to rough-scale Figure 5. As measurements are provided in this schematic and are assumed relatively accurate, no exploratory potholing has been done at this preliminary phase. Utility locating and potholing will be performed after this phase, in more detailed engineering (engineering locates/811) and during construction (construction 811 and potholing), including for currently unknown electrical lines. Accordingly, the *utility location Quality Levels* are currently at grade D, may go to D or C during engineering locates (pending utility company information), and B or even A during construction locates and as-built's (pending utility company flagging and potholing records, data, and accuracy).

**c) Condition of Existing Facilities.** Describe present condition; suitability for continued use; adequacy of current facilities; and their conveyance, treatment, storage, and disposal capabilities. Describe the existing capacity of each component. Describe and reference compliance with applicable federal, state, and local laws. Include a brief analysis of overall current energy

*consumption. Reference an asset management plan if applicable.*

The current Plant is relatively modern, well-managed, maintained, and monitored by close-by MRWC management and staff. The system pipe diameters and capacities are noted below, in Table 2.

Table 2. Existing system Facilities and Capacities

Line	Diameter, Dia.	Nom. Cap. [gpm]*
<b>Existing Lines</b>		
Raw Water from Dam	12" PVC	3,498
Raw Water to Plant	6" PVC	903
Raw Water to "Park"	6" Steel	891
Raw Water to Town	8" PVC	1563
Finished Water to CT Tank / conveyance split	8" PVC	<b>1563</b>
Finished Water Tank Line	8" PVC	1563
Finished Water to distribution	6" PVC	<b>903</b>
Finished water to Road N Main	4" PVC	<b>398</b>
<b>Planned UR42 Lines (for ref.)</b>		
Pump Feeds	3"	398
Main	3"	<b>398</b>
Laterals	1-2", by case	27-105

\* based on normalized sizing velocity of 10 ft/sec. Up to 15 ft/sec is allowable.

Based on nominal pipe/flow values, plant outlet pipe capacity is 1563 gpm. Given that the Treatment capacity is 325 kgal/day (225 gpm), treatment, rather than pipe capacity, is the limiting factor. We will discuss later that the increases in treatment capacity to supply the new customers are within the limits of the plant. The inclusion of the tank flows, to-and-from the tank, add a complicated variable, not included here as they are variable balancing flows. However, pipe sizes seem to meet network supply and demand nominal capacities in general. We are not addressing raw water distribution as part of this project.

As discussed later in Need for Project, the residents of the UR42 Project all currently haul water; there are very few wells currently in use in the service area. Facility/well data from the Colorado Water Conservation Board / Division of Water Resources (CWCB/DWR) Decision Support System Website has been searched and mapped (via downloaded shapefile/datafile within the project polygon) and is shown in Figure 6 and Table 3. There is not much well data available (there are not many wells); permit data is only available for six of the parcels in the service area. Of the eight well records available in Table 3, two are not in the service area (USA and Mish), three permits have expired, one permit was issued, and two wells were constructed. Well records may not indicate current status; record start and end dates are available for these structures but are not a true indication of the structure age or status, only when records started or were last updated, e.g., 1978 to 2019. Surface water structure locations and data such as ditches, canals, and dam outlets - though not directly applicable or related to domestic water use under this project - were also retrieved, if of interest. Water quality information for the wells is not readily available.

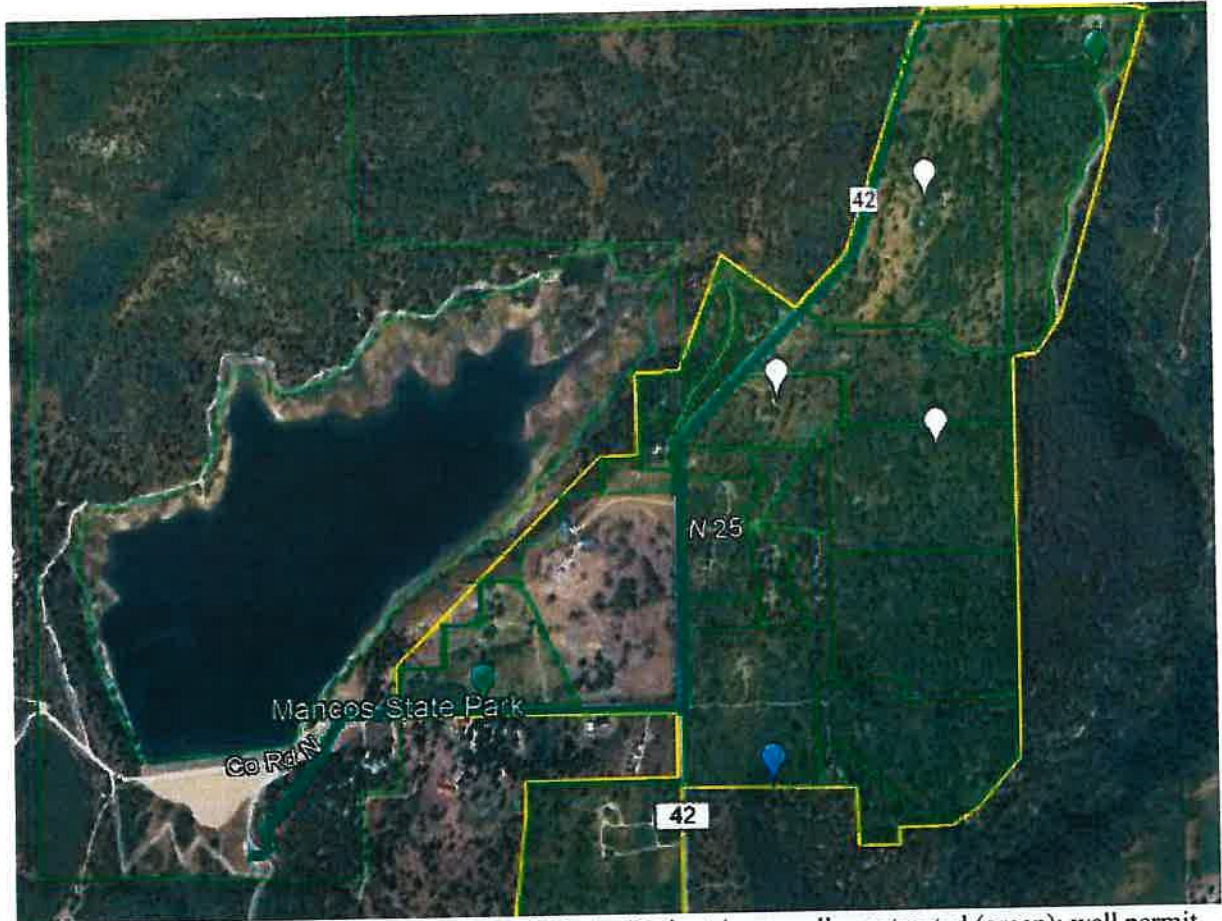


Figure 6. DWR CDSS Existing Well Data within the Project Area: well constructed (green); well permit issued (teal); well permit expired (white).





There are no documented health, sanitation, or security concerns for UR42WA residents. However, there are difficulties for most of the residents in obtaining water, as the majority of them must haul water from roughly 7 miles away, at all times of the year. From a water security standpoint – the concept of being able to secure water – this can be challenging in hard weather (annual snowfall of 5'-7") and even more difficult for elderly residents.

As residents report, the Town of Mancos water dock can close at any time, without notice, putting residents at risk of running out of water. Alternate water docks are located in Durango, Dolores and Cortez, but that is a 60–90-minute round trip, adding to wear and tear of vehicles and increased fuel consumption, carbon footprint, and financial burden. Additionally, there are elevated health risks in hauling water as the potential for contamination increases as water transfers from the water dock to customer water hauling tanks and cisterns.

b) Aging Infrastructure. *Describe the concerns and indicate those with the greatest impact. Describe water loss, inflow and infiltration, treatment or storage needs, management adequacy, inefficient designs, and other problems. Describe any safety concerns.*

Of minor concern is the current location and condition of the existing Road N 4" main: the location of this main is not well recorded, though it is a short and locatable span, and the endpoints are known. Prior repairs have indicated some pipe embrittlement (typical of PVC of this age). That said, it is the preference of MRWC and the UR42WA to continue to use this line effectively until end of life is achieved.

All other aspects of the local system (inflow, treatment, storage, etc.) and its operation and management are of sufficient condition to supply the project needs.

c) Reasonable Growth. *Describe the reasonable growth capacity that is necessary to meet needs during the planning period. Facilities proposed to be constructed to meet future growth needs should generally be supported by additional revenues. Consideration should be given to designing for phased capacity increases. Provide number of new customers committed to this project.*

The key driver for this project is reasonable and actual recent growth. The area within and around the Project is relatively built out already. It is bordered on the North by Federal lands, on the West by State lands, on the South by a limited number of existing MRWC customers, and on the East by steep West Mancos River canyon lands which geographically and hydraulically separate it from the mesa to the East.

The potential of future growth then results from system parcel additions (adding *existing* local parcels to the project), and potential subdivisions (effectively adding *new* residential customers to the local available land). MRWC has previously voiced opposition to providing water for more than the current proposed number of services.

Regarding parcel additions, 7 of the 25 parcels in the project do not have residences constructed but could result in added demand in the future. Additionally, there are roughly 8 existing parcels nearby, not in the project, that could potentially join the system in the future (subject to UR42WA and MRWC as appropriate), three of which appear to be current MRWC customers on the existing main.

Regarding parcel subdivision and the addition of new residences, this is likely to be a politically charged subject for local residents, but it needs to be addressed for planning purposes. Most residents likely live in this area for the large lot size and relative solitude. That said, it is apparent that some larger lots have historically been divided into smaller ones near the north end of the project, and it is possible that other lots may be subdivided in the future, adding domestic units and water system demand. Of the 25 lots



currently in the project, they range from 3.41 acres to 162.7 acres, with a median of 10 acres. While not an exhaustive review of the Montezuma County Land Use Code, Chapter Three Section 3309.2 states the minimum residential lot size is no less than three acres. Thus, anything less than 6 acres would need to remain as one parcel. There are 13 parcels at 6 acres or more that can *theoretically* be subdivided (this is of course subject to county and local resident input and approval, as well as accommodations by MRWC) to a total of 153 parcels, with the largest single lot capable of 54 parcels. While it is unlikely this would happen in totality, some reasonably conservative factor should be used to confirm the system capacity. For this assessment, and later system performance and hydraulic calculations, a value of 50 additional parcels (new single-family homes / Domestic Units) was used. This value should also reasonably address second homes (e.g., parental care homes) on a limited number of properties. It is likely that, at that point in the future, both UR42WA and/or MRWC will have some say in water availability relative to local development.

Parcel buildouts (7), local parcel opt-in's (8), and parcel subdivisions (50) were summed to a total of 65 *potential* domestic unit additions to the system; when adding the existing parcel count of 25, the total residence count for long-term planning purposes is 90. A demand value 350 gpd was used for each residence, with min.- and max.-day and hour factors applied (discussed later) for system capacity checks. It is later discussed that the design standard of 350 gpd/DU is a high value; while often required for system evaluation, is a high value and can result in excessive detention times and water quality issues and should be used with caution. It is important to note that MRWC has, at this time, not agreed to supply any more taps than the currently proposed UR42WA members.

#### 4) ALTERNATIVES CONSIDERED

*This section should contain a description of the alternatives that were considered in planning a solution to meet the identified needs. Describe the facilities associated with every technically feasible alternative. Describe source, conveyance, treatment, storage and distribution facilities for each alternative. A feasible system may include a combination of centralized and decentralized (on-site or cluster) facilities.*

##### Alternative One.

The primary alternative is to install a new 3" main line, beginning at the end of the existing Road N 4" line. This line would proceed east across Road N on the north side, and then north up CR 42 on the west side to the last parcel on the east side of CR 42, with associated service laterals and connections. Pressure will be provided by new pumps (redundant pair) at the Plant, tapped into the existing 4" main at the Plant. The end of the new 3" main will be a storage/head tank. These components are illustrated below in Figures 7 (system overview) and Figure 8 (plant level detail), with the proposed new infrastructure shown in green.

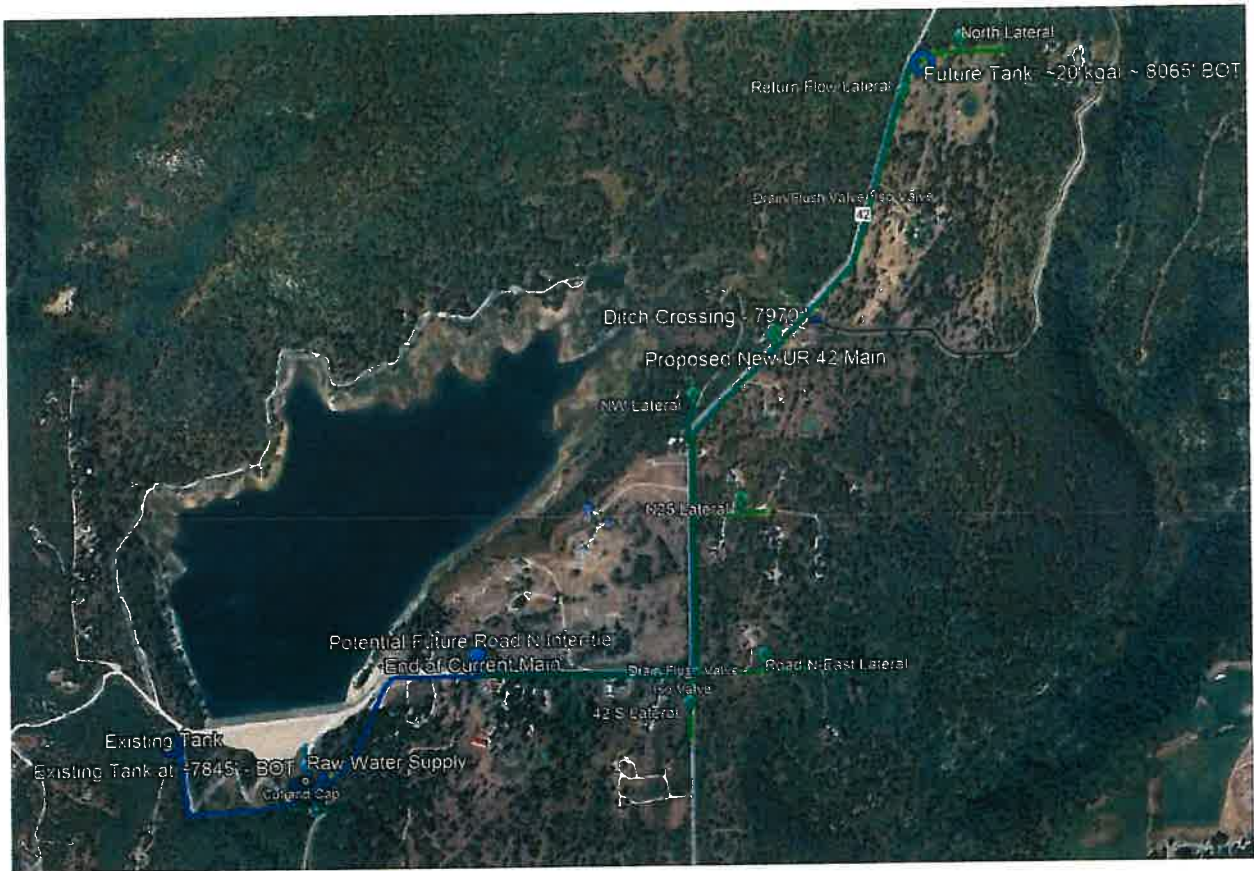


Figure 7. Project-scale proposed new infrastructure (green)

Figure 8, below, shows the relatively simple plant modification of a new pump structure and supply /feed lines, tapping into the existing 4" main. The pump structure will utilize an existing, to be reconditioned, concrete pad.



**Figure 8.** Plant-scale proposed new infrastructure; new pump pair and associated piping (green).

Prior to discussion of additional alternatives, it is necessary to state that there is an existing treatment plant – with needed supply and treatment capacity, in operation, staffed, and in full regulatory compliance – within less than one-half mile of the planned system’s first customer.

It is also important to note that the majority of Upper Road 42 constituents haul their water from the Town of Mancos Water Dock; this water is supplied by the Town of Mancos via its treatment and distribution system, which is separate from the MRWC treated water system.

As the intent of this project is to provide sufficient quantities of clean drinking water to the constituents of the UR42 project, we must consider the practicalities of raw water acquisition and conveyance, treatment, distribution alternatives, capital and O&M costs, constructability, environmental impact, and community service and impact.

*Raw Water:* Regarding raw water acquisition and conveyance, the only available alternative local sources of raw water are the Jackson Gulch Ditch or pumping uphill from the West Mancos River, both of which are the same source of water supplying the Jackson Gulch Reservoir - the same supply to the existing MRWC plant. Using the ditch or the river is really just a change in the Point of Diversion of the same water. Aside from water rights complexities of drawing from the ditch or the river, withdrawal structures (including possible pumping), metering, power lines, access roads, and rights of way and easements would need to be built and established.



These facilities would need to be on either State, Federal, or private land, often with environmental impacts. Pumping from the river, for system hydraulics and energy's sake, would ideally be done near the north end of the system. However, this would cost additional road and power infrastructure. Pumping O&M costs from the river were not estimated but are considered prohibitive and unjustified. Drawing from the ditch would require conveyance piping to go to the existing plant, which would be redundant; or possibly a new plant (discussed below). There is no simpler, more cost-effective, or more environmentally sound alternative than obtaining raw water from the current operational source at the base of the dam.

*Treatment:* Alternative treatment options consist solely of building a new treatment plant (likely a package plant), ideally close to the conveyance and distribution system. Unless state, Federal, or private land can be offered or procured to house such a facility, simply locating the plant would be challenging. The plant would need sufficient power, requiring significant addition of power infrastructure along the UR42 corridor. The plant would need to be at least partially staffed, incurring additional O&M costs. Finally, chemical deliveries and storage would need to be accommodated, increasing the risk of a spill along the corridor and close to residential land, the State Park, Federal Forest, and Jackson Gulch Reservoir itself. Given that the existing plant is established, staffed, and operating with sufficient capacity, a second plant is not justified.

*Finished Water Distribution:* Alternatives for treated water distribution provides few practical options: the proposed system is fairly simple, with a single main, few laterals, and services limited to either side of Road N and Upper Road 42. Any other route than along these two roads would be excessive and convoluted. Locating a treatment plant, hydraulically, could be done anywhere near the distribution system, but would not change the distribution system itself.

Per above, there is no more appropriate source of raw water, no better treatment options, and no feasible major alternatives to distribution. There are, however, minor alternatives from a distribution / water access perspective.

#### Alternative Two, New Water Dock.

Instead of a new distribution system, a new water dock could be installed either at or near the plant. A water dock at the plant would be challenging in the winter given the steep and unimproved road to the plant. A water dock near the plant, but on perhaps Road N, is possible and would provide easier access, if land can be acquired. However, at that point, a pump station will still be required; a physical water dock facility, including power, would need to be funded and built (offsetting cost savings); a storage tank would likely not be included; there is not enough head with the current system to supply a water filling station (a booster pump would still be required); and people would still need to haul water at all times of the year. This option is brought up for the sake of consideration but has siting constraints, debatable cost/benefit, and is not what the residents are looking for.

#### Alternative Three, Pump from Road N.

As discussed previously, there is an existing main running from the Plant to Road N. Rather than installing a new pump at the plant, a pump at Road N could be utilized. The downsides are citing a new pump plant on either Federal, State, or private land; providing the requisite power infrastructure; and site drainage. Lastly, the head pressure in the existing 4" main does not supply enough suction pressure for a pump station located on Rd N.

It is our conclusion, with alternatives considered, that the most cost effective, reliable, and effective

system is as proposed for Alternative One.

- b) Design Criteria. *State the design parameters used for evaluation purposes. These parameters should comply with federal, state, and agency design policies and regulatory requirements.*

Water Demand:

- A water demand value of 350 gpd per household (Domestic Unit, DU) is used for system sizing.
  - While 350 gpd/DU is a design standard, local water consumption, per MRWC, is historically much lower than 350 gpd; on the order of 150 gpd
- There are currently 25 parcels opted into the project
  - 18 have residences (base design criteria)
  - 7 are vacant land (potential future DU's)
- There is a potential of approximately 8 local parcels/DU's being added through future opt-in
- There is an estimated/planning potential of 50 parcels/DU's being added via existing project parcel subdivision (Note: This is **not** a known planned level of subdivision by any parcel holder(s), but rather a value used to validate future system capacity)
- Potential additional DU's = 65
- Base/initial system demand = 25 DU's
  - Potential DU additions and subdivisions = 65
- Total future DU planning qty = 90

Design Factors:

- Minimum day factor = 0.5
- Maximum day factor = 2.0
- Maximum hour factor = 3.0

Distribution System:

- Current system (pipe) sizing is then:
  - 25 DU's x 350 gpd = 8,750 gpd = 6.1 gpm
  - Min Day = 4,375 gpd = 3.04 gpm
  - Max Day = 17,500 gpd = 12.2 gpm
  - Max Hour = 18.2 gpm
  - Pump/main flow, before service usage
- Future system (pipe) capacity check:
  - 90 DU's x 350 gpd = 31,800 gpd = 21.9 gpm
  - Min future Day = 15,570 gpd = 10.9 gpm
  - Max future Day = 63,000 gpd = 44.0 gpm
  - Max future hour = 65.6 gpm

Treatment Plant Capacity:

- Treatment Plant capacity assessment relative to potential growth:
  - The treatment plant is currently rated at 325 kgpd.
  - Base flow plant demand increase: 25 DU's = 8,750 gpd
  - Plant demand increase = 2.7%
- 8 DU potential opt-ins currently receive MRWC treated water, no additional treatment demand
- Planning increased treatment demand is 90-8 = 82 DU's or 28,700 gpd avg.
- Planning potential future treatment demand is an 8.8% increase against nominal plant capacity, and within current production capability.

Delivery Pressure:

- Typical delivery pressures range ideally between 45 and 80 psi
- Minimum delivery pressure will be set to 40 psi
- A Low alarm will be set to 25 psi
- A low-low alarm will be set to 22 psi
- Per CDPHE, minimum pressure will be 20 psi (to all fixtures at least 20 percent of the total daily required volume for any one-hour peak use period)
- Alarms will be set relative to head at the pump with respect to tank levels
- The system will be run on tank head at the north end of the system
- A booster pump may be necessary for northern parcels

Tank Storage - Capacity and Turnover:

Current planned tank capacity is at 20,000 gallons, which provides (at plug flow):

- Full system turnover
  - 2.3 days of backup/turnover at average base demand usage (25 DU's, 8,750 gpd)
  - 4.6 days of backup/turnover at min day base demand usage
  - 1.1 days of backup/turnover at max day base demand usage

Given the wide range of turnover times based on simple plug flow, especially for the two northern lots, it is recommended the tank volumes be cycled by daily tank head changes, as the current MRWC tank is operated. A 50% daily volumetric change should maintain reasonable base back-up capacity while drastically improving turnover. There are various methods of achieving this, such as: variable rate pumping on an off-peak (energy price) basis, which achieves higher daily volumetric changes while also saving energy and operating costs by moving power consumption to off-peak hours; or passive jet-mixing or powered mixing (solar or line power) may be considered upon further study, of which typical solutions include a solar bee, PAX, manifolded eductors, with the latter being preferred as the simplest, though requiring some additional pumping head. The basic tank inlet/outlet piping will be designed for force-mixing of the water during normal tank cycling, requiring nominal energy consumption. If further testing reveals disinfection byproduct (DBP) issues, a mechanical mixer, discussed above, will be a retrofit option.

Water age and mixing will be assessed as part of tank selection. A water quality rule of thumb is five days of turnover: a 20 kgal tank at minimum flow approaches this. A focus on mixing and water age will improve water quality residual integrity and improved total trihalomethane (TTHM) reduction (if needed).

To provide additional aid in tank mixing, the northernmost two parcels could be served from laterals off the tank. Yet, the two properties may be better served from a water age standpoint from the main. However, and in either case, these two properties will likely require a booster pump given that tank static heads (service delivery pressures) are low at these sites. Both parcels currently utilize cisterns and booster pumps and have agreed to continue to utilize their booster pumps to increase pressure at their taps. Minor piping could easily provide either alternative and accommodate water service while the tank is in maintenance.

Significant system demand growth would improve turnover to a point, but also require a larger or secondary tank at some point. The tank will be sized to current system demands, with some room for growth, but also with respect to turnover and water quality. Discussions will continue with UR42WA and MRWC on optimizing tank size with respect to current and practical future needs.

Much larger tanks, for only the potential of future growth, are not advisable at this time. MRWC could



operate a larger tank at lower water levels, however, generally larger tanks result in increased water age and mixing challenges, as well as increased capital and maintenance cost. In addition, operating a larger (though shorter) tank at lower water levels would result in decreased system pressures. If the system does grow, the need for additional storage will be assessed at that time.

Pumping:

Total static head, less tank water level elevation:

- Pump location elev.: ~7728'
- Main highpoint elev. (BOT): ~8065'
- Min Static head: ~337 (340)'

Tank operating height: ~18' (est. at this time)

Total static head: ~358'

Dynamic head:

Hydraulic calculations summarized below in Table 4, with respect to a balance or reasonable water age, pipe velocity and head loss, result in the following:

Table 4. System dynamic head losses, velocities, and water age in pipe at design flows

Criteria/results	3" Main				
	Case	gpm	HL [ft]	Vel. [fps]	Age [days]
Nominal Plant	min day	3.04	0.18	0.14	2.70
	avg day	6.08	0.58	0.26	1.30
	max hr	18.20	3.99	0.79	0.40
Future Growth	min day	10.09	1.40	0.44	0.80
	avg day	21.90	5.56	0.95	0.40
	max hr	65.60	41.3	2.84	0.10

Results in Table 4 are calculated using a Darcy-Weisbach, closed-form Reynold's number solution, with K-factors for each pipe segment and element. Water age is bulk-flow terms in this table, without service line bleed-off; in actuality, velocities will be lower, and age will be higher at northern service connections as flow rates are reduced due to service draws. While velocities are relatively low, this system needs to balance water age and head loss across all flow scenarios.

Other pipe sizes were evaluated, including 2.5" and 4", with 4" being originally proposed by initial parties, likely in relation to the existing Road N main being 4". While velocities are relatively low for 3" pipe, this has no practical impact (with clean water). Larger 4" pipe resulted in excessive in-pipe water age of 4.8 days at min-day flows (excluding service draws, which would cause increase). Smaller 2.5" pipe resulted in excessive head loss of up to 115' of dynamic head at possible future growth max-hour flows, leading to an oversized pump. As a separate factor, 3" pipe is significantly less expensive than 4" pipe on an installed cost basis; as installed pipe is the major cost factor in this project, 3" pipe is roughly 30% less expensive than 4". Thus, 3" pipe is considered a reasonable balance of capital cost, pump performance and efficiency, and water quality objectives.

Resulting pump head, a combination of static (including tank) and dynamic heads, is 365' to 383' for the current system, and 369' to 480' for possible future flows. A 5psi buffer is included for top-end heads during pump selection.

As discussed earlier, a pumping system that can operate on a variable rate flow schedule, while still maintaining tank level / system pressure requirements, will be most effecting in maintaining water quality and system/cost efficiency.

Water Quality:

Compliance with water quality regulations will be provided through finished water from the MRWC plant and associated monitoring of main, tank, and service connection water quality parameters.

- c) Map. *Provide a schematic layout map to scale and a process diagram if applicable. If applicable, include future expansion of the facility.*

Please see prior Figures. The treatment plant itself is not anticipated to be expanded. Any future service provisions, discussed earlier (e.g., inclusion / subdivision of surrounding parcels) would be addressed through additional laterals and/or service connections.

- d) Environmental Impacts. *Provide information about how the specific alternative may impact the environment.*

While monitoring during construction will be required, there are no known long-term environmental impacts identified at this time. Again, this project is in an established corridor and avoids cultural resources.

- d) Land Requirements. *Identify sites and easements required. Further specify whether these properties are currently owned, to be acquired, leased, or have access agreements.*

Utility easements for the main will be utilized along the existing service road, Road N, and Upper Road 42. Easements necessary within private lands will be provided by UR42 customers. A tank site at the north end of the proposed system, has graciously been provided by a private landowner and customer of the proposed system. Pumping infrastructure will be housed on the MRWC plant site. There is a bridge across the Jackson Gulch Ditch; rather than bore under the ditch, the main will be either suspended, or independently supported across the ditch, near the bridge itself – coordination will be required but is not expected to be a major hurdle.

- e) Potential Construction Problems. *Discuss concerns such as subsurface rock, high water table, limited access, existing resource or site impairment, or other conditions which may affect cost of construction or operation of facility.*

The project is on a well-established thoroughfare, with much of the significant infrastructure (e.g., pumps and part of the main) to be sited alongside similar existing major utility infrastructure (e.g., dam, plant, and existing mains). Where new mains and laterals are required, it is along established roadways and driveways.

Sample borings have not yet been undertaken, at this point in the process, but soil maps via USDA/NRCS Web Soil Survey system indicate some typical, though limited, construction challenges. A full NRCS Building Site Development / Shallow Excavations rating report is included in Appendix D. The associated Soil Survey Maps is provided below, as Figure 9. Colors are indicative soil construction impact, with important qualifications discussed below. NRCS does indicate that the scale of this map may not accurately reflect detailed on the ground conditions. Note also that the map is a gross area of the project; specific routing needs to be considered, e.g., soils and pipe routing on one side of the road or

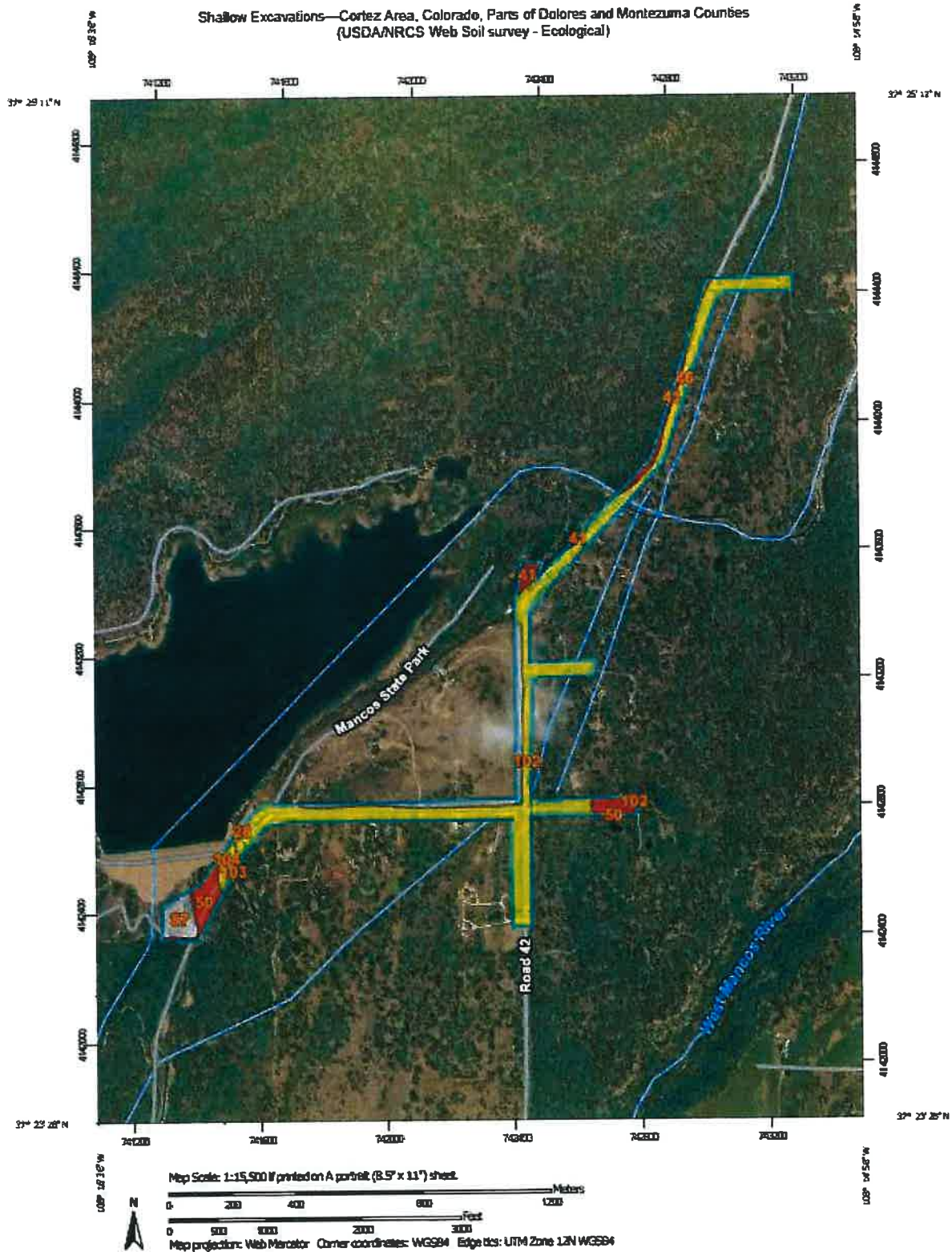


Figure 9. NRCS - Project Area Soil Survey. Soil ID's are discussed below.

In summary, 70.2% of the gross mapped areas is "Somewhat limited" in construction, 14.4% of the area is "Very limited", and the remainder is not rated. While some work will be done on the west/plant side in soil Area 87, there will be no work done along the dam-face access road for soil types 50, 103, 104 and the western end of 28; the existing 4" main will be utilized here, and no trenching will be needed. The balance of the soil types does apply for pipe trenching and tank siting.

The soils Map and associated Report, as well as the routing, need to be taken in conjunction with information summarized here. The bulk of the Very Limited soil, type 41, Fughes-Sheek Complex, is rated poorly based on typical natural slope, and moderately poor ratings are based on clay content and unstable excavation walls, each of which is of limited scope along the actual pipe route. The bulk of the route is soil type 102, Ricot Loam, which has only minor construction impact ratings. Other factors (rated from 0.0 - low impact to 1.0 - high impact) include dust, large rocks, and other factors, generally rating in the low impact range. Of specific safety concern, in any case, is the observation of potential unstable trench walls (though rated generally low impact), which is always a safety obligation in any trenching job. While this information is useful and provides important safety information, this is a developed and transited site with no anticipated extreme conditions.

Below is a list of other typical, though project-specific, construction issues to be addressed:

1. An 811 utility survey (both a detailed engineering and construction potholing) will be conducted to identify any buried utilities; routing and separation will be addressed accordingly.
2. A pipe crossing at the bridge over the Jackson Gulch ditch will need to be designed with respect to proper support, structural integrity, and insulation, including coordination with stakeholders of both the bridge and the ditch.
3. There are several under-road borings to be executed. These are typical for such a project, though worth mention.
4. Pump pad rehabilitation and power supply will need to be addressed at the plant site.
5. Plant-area pipe routing with respect to existing buried infrastructure will need detailed attention in this crowded area. Potholing and locating will be required.
6. Easements and ROW's will need to be established.
7. Tank foundation work will need to be addressed at the tank site. This is normally done by the tank supplier, including soils and structural determinations.

f) Sustainability Considerations. *Sustainable utility management practices include environmental, social, and economic benefits that aid in creating a resilient utility.*

Several factors support the sustainability of this initiative and option:

- 1) A relatively simple solution with modern materials and efficient equipment.
- 2) The use of existing close-proximity infrastructures and thoroughfares avoids further disruption of natural land
- 3) Avoiding a second treatment plant reduces construction, road building, energy infrastructure needs, and reduces the chance of chemical delivery and storage spills.
- 4) The personal/community and environmental costs - financial, time, and carbon footprint of hauling water - will largely be eliminated. This includes a reduction of CO<sub>2</sub> generation by 36.26 metric tons per year - 94% by pumping instead of hauling, as discussed further on in the report.
- 5) The storage tank will be equipped with a flushing hydrant for operation and maintenance purposes, allowing for proper flushing of the system and maintaining water quality in the system and tank.

i) Water and Energy Efficiency. *Discuss water reuse, water efficiency, water conservation, energy efficient design (i.e., reduction in electrical demand), and/or renewable generation of energy, and/or minimization of carbon footprint, if applicable to the alternative. Alternatively, discuss the water and energy usage for this option as compared to other alternatives.*

Return flow for domestic use is commonly set at 85% of domestic influent (15% consumptive use). This water would return to the West Mancos River Watershed - as it already does in the case of water hauling.

While the plant would consume electrical energy for pumping, the current amount of energy spent via gasoline to haul water (from a much lower elevation), is far offset by the reduced pumping energy consumption (from a higher elevation).

In interviewing one resident, as well as reviewing available well information, only two of the 20 parcels are known to have wells. All other 16 residences, and perhaps all 18, haul water. In the case of this resident, they make 10 trips a month to the Town of Mancos Water Dock, at 14 miles per round trip. Downhill is relatively efficient on an empty water tank, but 7 miles uphill with a full tank and a 900-foot elevation gain (think pumping head) is not efficient. At roughly 8 mpg average, 140 miles per month total, this is 17.5 gallons of gas per month or 210 gallons per year. At \$3.50 per gallon, this is ~\$61 per month, or \$732 per year. Adding the cost of hauled water at the dock, at "\$40 to \$50 per month" results in ~\$100 to \$110 per month, or ~\$1,200 to \$1,320 per year per residence.

Using the above example, multiplied by the assumed 16 parcels that haul water, and considering 10 mpg (vs. 8 mpg) at an average of 15 miles round trip for 10 trips, it is estimated that the UR42 residents travel 2,400 miles and consume roughly 240 gallons of gas per month (2,880gpy), just to haul water. At 5.5lbs carbon per gallon of gas, or 20.35lbs of carbon dioxide per gallon, this results in a carbon footprint of 15,840lbs of raw carbon or 58,608lbs of carbon dioxide, per year. It is assumed that many of these residents own large inefficient trucks, simply because they are needed to haul water. Wear and tear and the resulting carbon footprint of worn engines and replacement part manufacturing for multiple vehicles is an added detraction. Environmental costs (and savings) will be addressed further on the report in the Cost section; in summary, this project will save 729 metric tons of CO<sub>2</sub> over a 30-year span at a Social Cost (savings) of Carbon (SCC) of \$84,007.

ii) Green Infrastructure. *Discuss aspects of project that preserve or mimic natural processes to manage stormwater, if applicable to the alternative. Address management of runoff volume and peak flows through infiltration, evapotranspiration, and/or harvest and use, if applicable.*

The project uses existing infrastructure locations and utility / roadway thoroughfares. Pumping will be via modern and efficient pumps, minimizing energy consumption, especially as compared to water hauling by personal vehicles.

Factors of stormwater, runoff, peak flows, evapotranspiration, or other agricultural elements are not an aspect of this project as this is most simply a replacement of hauled water with piped water. Accordingly, while there is no specific green-positive infrastructure (e.g., wetlands development), there is a decreased carbon footprint and no impact to the natural surroundings.

iii) Other. *Discuss any other aspects of sustainability (such as resiliency or operational simplicity) that are incorporated into the alternative, if applicable.*

The project is relatively simple in construction and operation, with significant benefits to local residents. The addition of a tank at the north end of the line results in added water storage, head



pressure, and redundancy for the entire MRWC distribution system. While they currently only have one water storage tank, which cannot be taken offline for long periods of time for needed maintenance, they have a capital improvement project planned to install an additional tank next to the existing tank on the west side of the dam.

h) Cost Estimates. *Provide cost estimates for each alternative, including a breakdown of the following costs associated with the project: construction, non- construction, and annual O&M costs.*

#### Capital Cost.

The capital cost estimate is based on a unit-cost database of similar local water project actual constructed costs and includes a three-point estimate range. A copy of the estimate is provided in Table 5. For local work of this nature, bids are rarely received, and actual cost is rarely billed, on a line-item basis of material cost and separate construction. Bids are typically received, and costs are paid, on a basis of installed cost (materials and construction). Accordingly, our cost estimate is based on a history of bids (high, average, and low unit cost per installed asset, e.g., \$ per foot of AWWA C-900 12" diameter pipe, bored and cased, installed) and winning low-bid actual installed costs.

Determining individual material and construction costs would require a significant material costing effort and, effectively, labor-only construction bids from contractors. We do however specifically identify the costs of the following construction overhead factors: mobilization and demobilization; bonds, insurance and permits; traffic control; environmental protection, mitigation and seeding; submittals and O&M documentation; shop drawings and survey-based as-built drawings; and pipe testing and disinfection – as a historical percentage of base materials and construction. Additionally, due to recent natural disasters, Covid, and supply chain impacts, estimates of PVC pipe costs are nearly impossible to predict; recent PVC price quotes are only good for 24 hours, and delays in delivery are standard procedure. Fuel costs have also increased dramatically, labor availability has dropped, and labor prices have increased. Accordingly, we have added a 1.5 escalation factor and 25% contingency to historical costs. Using "Method 2" As a summary, the installed construction (only) cost estimate, in a three-point spread, ranges from \$706K to \$841K to \$977K, including construction contingency, with the midpoint being most likely.



# Preliminary Engineering Report: Upper Road 42 Water Association

**Table 5. Construction Cost, 3-Point Estimate, Details.**

**Mancos Upper Road 42: Bid Cost Estimate Template**

**Method**

**1 Averages of price histories and estimates**

Summary, 3-pt. Estimate	Low	Average	High
Subtotal: Mob., Ins., Traf., Env., and Docs	\$126,459	\$236,427	\$365,579
Construction Scope	\$534,547	\$784,165	\$1,108,584
<b>Total Estimated Bid Range</b>	<b>\$661,006</b>	<b>\$1,020,592</b>	<b>\$1,474,163</b>

Note: High span based on all historical individual unit highs and lows; all lows and highs are unlikely

Note: At this time, construction cost estimates are highly speculative.

Fuel costs are increasing, PVC quotes are only good for 24 hours.

Labor availability and rates are volatile.

Contractors are hedging for future cost increases.

A 1.45 escalation factor has been added over historical local costs

**2 Low Bid Relation to Average Cost Estimate**

Likely Low Bid Range (low, avg., high)	\$706,243	\$641,526	\$976,809
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Note: Based on historical averages and relationship to Low bid

< sigma

1.1

**3 Low Bid per \$/foot of pipe method**

Total Pipe Length, Ft	11120
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Note: High cost estimate for small diameter pipe - based on historical data, heavily weighted to large

11120 **\$762,134** +/-

Escalation

1.50 < Variable

#	Description	Item	Type	Size	Qty	Unit	Esc.	Unit Price or Percent of Average Scope Price			Estimated Amount		
								Avg. Low	Avg	Avg. High	Low	Avg	High
5	Mobilization and Demobilization				1	LS	1.50	3.32%	8.19%	13.13%	\$26,877.57	\$66,249.64	\$106,230.29
6	Bonds, Insurances, and Permits				1	LS	1.50	2.33%	3.84%	5.29%	\$18,889.64	\$31,080.34	\$42,811.96
7	Traffic Control				1	LS	1.50	3.10%	7.09%	11.44%	\$25,093.68	\$57,328.16	\$92,586.56
8	Environmental Protection, Mitigation, and re-seeding				1	LS	1.50	3.53%	5.09%	7.37%	\$28,551.06	\$41,192.07	\$59,620.12
9	Provide two copies of all Equipment, Materials, and Q&M documentation				1	LS	1.50	0.85%	0.97%	1.09%	\$6,860.64	\$7,870.82	\$8,855.20
10	Provide two copies of approved Shop Drawings, As-Built Survey Drawings, and Pre-, In-, and Post-Construction Photo Archive				1	LS	1.50	2.49%	4.04%	6.86%	\$20,186.33	\$32,706.14	\$55,474.82
<b>Subtotal: Mobilization, Insurance, Traffic, Environmental, and Documentation/As-builts</b>								19.13%	23.17%	24.80%	<b>\$126,458.92</b>	<b>\$236,427.17</b>	<b>\$365,578.95</b>
<b>Materials</b>													
29-a	3"Ø DR18 C-900 Pipe & All Fittings, cut and cover trench, Installed (less 2,200 if using existing 4")	Trench	DR14	3	7960	ft	1.50	\$14	\$22	\$32	\$113,828	\$175,518	\$258,063
29-b	3"Ø DR18 C-900 Pipe & All Fittings, cut and cover trench, Installed (less 2,200 if using existing 4")	Trench	DR14	3	300	ft	1.50	\$15	\$24	\$35	\$4,613	\$7,113	\$10,458
29-c	3"Ø DR18 C-900 Pipe & All Fittings, cut and cover trench, Installed (less 2,200 if using existing 4")	Bored	DR14	3	180	ft	1.50	\$172	\$265	\$389	\$30,888	\$47,628	\$70,027
30	3"Ø PVC Pipe & All Fittings, cut and cover trench, installed (pending operational turnover)	Trench	DR14	2	2500	ft	1.50	\$10	\$17	\$32	\$25,000	\$42,500	\$80,000
31	2"Ø PVC Pipe & All Fittings, Bored	Bored	DR14	2	120	ft	1.50	\$130	\$137	\$143	\$15,600	\$16,380	\$17,199
32	2"Ø PVC Pipe & All Fittings, cut and cased	Cased	DR14	3	60	ft	1.50	\$150	\$158	\$165	\$9,000	\$9,450	\$9,923
34	Gate Valve	Gate Valve			3	EA	1.50				\$0	\$0	\$0
38	Blowoff, Type A	Blowoffs			4	EA	1.50	\$2,663	\$4,200	\$6,335	\$10,654	\$16,799	\$25,338
44	Blowoff, Type B	Blowoffs			2	EA	1.50	\$1,565	\$2,161	\$3,276	\$3,330	\$4,322	\$6,552
46	Blowoff, Type B	Blowoffs			2	EA	1.50	\$1,869	\$2,351	\$3,288	\$3,738	\$4,703	\$6,576
52	VARV and Vault	VARV			2	EA	1.50	\$0	\$0	\$0	\$0	\$0	\$0
56	ARV	ARV			2	EA	1.50	\$0	\$0	\$0	\$0	\$0	\$0
58	ARV	ARV			2	EA	1.50	\$3,101	\$5,509	\$7,269	\$3,101	\$5,509	\$7,269
63	Near Side Meter Pit 3/4 3/4" Tap Saddle, 3/4" Corp Stop, 8 ft of 3/4" Type K Copper Meter Yoke & Pit Installed				3	EA	1.50	\$1,679	\$2,112	\$2,778	\$28,546	\$35,907	\$47,278
74	Farside meter pit 3" x 1/2" Tap Saddle, 3/4" Corp Stop, 45 ft of 3/4" Type K Copper Meter Yoke & Pit installed				3	EA	1.50	\$3,481	\$6,446	\$9,224	\$27,848	\$51,567	\$73,790
75	Fire Hydrant / Standpipe Assembly at STA 00+48z (Sheet 22)				6	EA	1.50	\$7,849	\$9,375	\$11,037	\$7,849	\$9,375	\$11,037
76	Rock Excavation includes Disposal of Unsuitable Material & Provide Suitable Backfill Material				Ea	EA	1.50	\$38	\$70	\$114	\$1,525	\$2,785	\$4,576
77	Pipeline Trenching and Rehabilitation				Ea	EA	1.50	\$7,710	\$13,240	\$19,299	\$7,710	\$13,240	\$19,299
78	Additional Imported Native Fill at Direction of the Engineer/Owner				Ea	EA	1.50	\$19	\$34	\$46	\$1,873	\$3,357	\$4,600
79	Trench Stabilization - Removal & Disposal of Unsuitable Material at Direction of Engineer/Owner				Ea	EA	1.50	\$16	\$31	\$49	\$7,935	\$15,740	\$24,436
80	Project Specific:												
	Bridge undercrossing				1	EA	1.00	\$6,000	\$11,000	\$15,000	\$6,000	\$11,000	\$15,000
	Pump Purchase (incl. backflow prevention)				1	EA	1.00	\$13,000	\$17,000	\$20,000	\$13,000	\$17,000	\$20,000
	Pump installation				1	EA	1.00	\$20,000	\$23,000	\$26,450	\$20,000	\$23,000	\$26,450
	Pump House												
	Slab rehab				1	EA	1.00	\$10,000	\$11,500	\$13,225	\$10,000	\$11,500	\$13,225
	Building cost				1	EA	1.00	\$15,000	\$17,250	\$19,838	\$15,000	\$17,250	\$19,838
	Building construction				1	EA	1.00	\$8,000	\$9,200	\$10,580	\$8,000	\$9,200	\$10,580
	Electrical				1	EA	1.00	\$10,000	\$11,500	\$13,225	\$10,000	\$11,500	\$13,225
	Building ancillaries				1	EA	1.00	\$4,000	\$4,600	\$5,290	\$4,000	\$4,600	\$5,290
	Tank:												
	Tank				1	EA	1.00	\$25,000	\$50,000	\$80,000	\$25,000	\$50,000	\$80,000
	Slab				1	EA	1.00	\$15,000	\$17,250	\$19,838	\$15,000	\$17,250	\$19,838
	Install				1	EA	1.00	\$7,000	\$8,050	\$9,256	\$7,000	\$8,050	\$9,256
	Plumb				1	EA	1.00	\$3,000	\$3,450	\$3,968	\$3,000	\$3,450	\$3,968
	Ancillaries				1	EA	1.00	\$20,000	\$23,000	\$26,450	\$20,000	\$23,000	\$26,450
	Construction (only) Adder/contingency				25%	EA		\$75,709	\$115,473	\$169,093	\$75,709	\$115,473	\$169,093
<b>Subtotal Scope</b>											<b>\$534,546.91</b>	<b>\$784,164.79</b>	<b>\$1,108,583.82</b>
<b>Total</b>											<b>\$661,006</b>	<b>\$1,020,592</b>	<b>\$1,474,163</b>

Debt Service

As shown in Table 6, below, based on the total capital cost estimates ranges presented above and resulting loan values at 3% over a period of 30 years, debt service will result in a range of Total Loan Interest (row L) of \$656,436 to \$894,978, to be divided among the participating members. Actual costs and rates may vary. As construction costs, potential grants, additional membership, and loan financials are settled, this table will be updated.

This table is assuming no contributions from grant funding are applied. Grant funding will reduce the final total costs and thus the annual member assessments.

**Table 6, Total Project Cost, including Debt Service (M).**

Item		Cost Estimate		
		Low	Medium	High
A	Construction (incl. equip.)	\$706,243	\$841,526	\$976,809
B	Construction Contingency (25%)	176,561	210,381	244,202
C	Land, ROW and easements	6,000	8,000	12,000
D	Legal	15,000	18,000	25,000
E	Engineering	50,000	60,000	90,000
F	Const. Prog. Mgmt.	25,000	30,000	40,000
G	Funds Admin	5,000	7,000	9,000
H	Reserves, equipment	30,000	40,000	50,000
I	Non-Const. Contingency (25% c to h)	29,000	40,750	56,500
J	MRWC Membership & Tap Fees	225,000	225,000	225,000
K	<b>Subtotal</b>	<b>\$1,267,804</b>	<b>\$1,480,657</b>	<b>\$1,728,511</b>
L	Total Loan Interest (r=3%, t=30)	<b>\$656,436</b>	<b>\$766,646</b>	<b>\$894,978</b>
M	<b>Total</b>	<b>\$1,924,240</b>	<b>\$2,247,303</b>	<b>\$2,623,490</b>
N	Total Annual County Assessment (total / 30 years)	<b>\$64,141</b>	<b>\$74,910</b>	<b>\$87,449</b>
O	Annual County Assessment per Membership (total annual / 25 memberships)	<b>\$2,565</b>	<b>\$2,996</b>	<b>\$3,498</b>

O&M / Service Charges

UR42WA members will be responsible for all capital expenditures, and once in service, MRWC will assume Operations and Maintenance, charging a service fee to UR42WA members. Once the system capital is paid off, MRWC will assume the system assets. Current MRWC subscribers will not be obliged to pay for the UR42WA system. In a different arrangement (e.g., a greenfield project), it would be relatively easy to assess the net increase in O&M expenses as a percentage of existing system base, staffing, facility, bulk chemical costs, and the like. However, we have not

had the benefit of obtaining detailed budget and O&M cost recovery information from MRWC. We respect the fact that, as a private (non-profit) entity, this is information MRWC is not readily obliged to publish, and we acknowledge with appreciation that MRWC has been as forthcoming and helpful as they can be in developing plans for this infrastructure. A standard O&M cost estimate (or associated rate study), relative to this project, is not possible at this time. Instead, we have made some estimates based on supplied information (specifically rates, discussed below), and projected operating expenses such as power. We are obliged to all parties to state that these are not set in stone and are subject to further discussions, details, and negotiations between UR42WA and MRWC, toward their mutual benefit.

Accordingly, requested Report information such as below and as identified in the Report's template Appendix A and B are not available as a baseline, or as a net increase against bulk or amortized costs relative to a whole MRWC system. The Report information requested (e.g., Section 6.f) but not available includes:

Income, annual O&M costs, debt repayments, reserves, debt service reserves, short lived asset reserves (e.g., pumps, controls, valves, meters, etc.) or and O&M generalities (or details) of the following:

Personnel (i.e., Salary, Benefits, Payroll Tax, Insurance,
Administrative Costs (e.g., office supplies, printing, etc.)
Water Purchase or Waste Treatment Costs
Insurance
Energy Cost (Fuel and/or Electrical)
Process Chemical
Monitoring & Testing
Short Lived Asset Maintenance/Replacement*
Professional Services
Residuals Disposal
Miscellaneous

Standard MRWC Residential Rates, from "MRWC Rates, November 14, 2022", are provided below in Table 7, with full details attached as Appendix C.

Table 7. MRWC Published Residential Rates.

Residential Minimum - 2,000 gallons \$44.05

<b>Residential Rate</b>	
Gallons	Water Rate Per Thousand Over Minimum
next 8,000	\$6.18
next 10,000	\$7.77
next 10,000	\$9.33
next 30,000	\$12.31
next 40,000	\$13.50
next 50,000	\$15.02
Remainder	\$15.02

At the planning level of 350 gpd (10,500 gal/mo) per residence, which may be significantly higher

than actual, UR42WA customers could expect to pay a base of  $\$44.05 + (8 \times \$6.18) + ((500/1000) \times \$7.77)_1 = \$97.38$ .

(Note 1, it is not clear if MRWC prorates per thousand gallons - as assumed here - or charges to the next thousand gallons).

The cost-of-service connections and meters will likely be borne as capital, though the course of construction, by individual UR42WA members. Each cost will vary by the nature of the connection, such as length and diameter of service line, trenching or boring required, size of meter, etc. There will be a \$7500 membership fee per new customer as well as a \$1500 tap fee per new tap applied by MRWC, which will be tied into the cost of the project (per USDA Liaison suggestion), totaling \$225,000.

While Plant O&M costs are certainly applicable to UR42WA customers, it is not known that percentage of the above rates are devoted to repair or replacement of current infrastructure. As the UR42WA system infrastructure will be new, maintenance and repair costs should be minimal, yet some sinking fund for future replacement should apply. That said, not every customer will benefit from every part of a system, yet they all benefit from economies of scale and shared capacities - and so costs and savings are often shared.

Additional details of sinking funds and reserves for replacement of both and short- and long-lived assets, eventual UR42 system repairs and replacements, liabilities and insurance, agreements as to atypical O&M costs and the like should be defined by the UR42WA, either with MRWC or as the accommodations via the Association itself, especially during the likely long term that the Association still "owns" the assets. As before, these are details to be discussed and resolved within and between parties. A risk assessment and mitigation exercise addressing ownership and responsibility for the system during this period is recommended. A carefully worded service agreement between UR42WA and MRWC is also recommended and will be completed by the UR42WA attorney and approved by the MRWC Board.

*Pumping Energy Costs:* While MRWC customers require pumping to the head tank at the west end of the dam (bottom of tank elev. ~7,845'), UR42WA customers will require pumping to the head tank at the north end of UR42 (bottom of tank elev. ~8,065); a difference of 220' (increase for UR42), upper tank level increases may vary slightly but not by much. More simply, pumping from the plant to fill a 15' tank at UR42 is a difference of 365' of static head. For the 25 current UR42WA customers with a total average of 6.08gpm, this results in a net increase of 4,791 kW/yr in pumping energy consumption. At \$0.15 kWh, this is \$718 a year, total; \$28.72 per year per customer; or roughly \$2.39 per month per customer for incremental pumping costs; a relatively small cost, especially as compared to the cost of gas needed to haul water.

#### Cost (savings) of Greenhouse Gasses, Social Cost of Carbon.

In June 2021 the Colorado General Assembly passed a bill requiring the Colorado Air Quality Control commission to use the Social Cost of Greenhouse gasses (aka the Social Cost of Carbon, SCC), at a rate of no lower than the 2016 International Working Group (IWG) Report SCC rate at a 2.5% discount rate. The SCC at 2.5% for the year 2020 in the 2016 report is \$62 per metric ton of carbon dioxide. However, the SCC at 2.5% for the year 2020 in the 2021 report is \$76 per metric ton. Rates in both reports increase in 5-year increments to 2050, with a 2021 report value of \$116/m-ton in 2050. Accordingly, the SCC for 2022 is \$78.74 / m-ton. At the earlier estimate of 58,608lbs (26.6 metric tons) per year of carbon dioxide generated for water hauling, the 2022 SCC value of carbon dioxide released is \$2,096 for the year 2022. The 30-yr lifecycle SCC for hauling water is then, at 2.5%, \$91,976.

As compared to the estimated 26.6 metric tons of CO<sub>2</sub> for water hauling, pumping the equivalent average flow of 4.4gpm for this project results in 5,860 kW of energy and 2.3 metric tons of CO<sub>2</sub> per year. Even with pumping, this results in a net savings of 24.3 metric tons of CO<sub>2</sub> per year, and a reduction of over 93%. The net 30-yr lifecycle SCC saved, after pumping, is then 729 metric tons of CO<sub>2</sub> at \$84,007. From an environmental /carbon standpoint, this project provides a significant and notable improvement for its scale.

## 5) SELECTION OF AN ALTERNATIVE

*Selection of an alternative is the process by which data from the previous section, "Alternatives Considered" is analyzed in a systematic manner to identify a recommended alternative. The analysis should include consideration of both life cycle costs and non-- monetary factors (i.e., triple bottom line analysis: financial, social, and environmental). If water reuse or conservation, energy efficient design, and/or renewable generation of energy components are included in the proposal provide an explanation of their cost effectiveness in this section.*

For a major project with significant options, such as the size/quantity of filtration beds for a large new 500 MGD treatment plant, or ozone vs. UV, lifecycle cost (triple bottom line, even) is indeed necessary. Such lifecycle cost analysis necessarily requires O&M information, which as discussed, we do not have and will not be provided with at this time. As discussed previously, the major options we have for raw water acquisition, treatment, and distribution are difficult to even create for the sake of comparative discussion; there appears no simpler or more cost-effective way to obtain raw water, treat it, and distribute it than the system so close to the raw water source, treatment facilities, and distribution system as previously described. Admittedly, there are some minor options for the sake of investigation, such as installing a water dock in lieu of a distribution system or pumping from the existing main at the west end of Road N and above the dam. Yet, these small system options, minor lifecycle cost differences aside, either do not address the solution or are built on faulty foundations (risk) with significant siting, pressure, and power concerns – they are negated to begin with.

Practically speaking, we unfortunately have been given no access to the information needed to generate O&M (and thus lifecycle) costs, other than to say at this time that they will be roughly equivalent to some portion, if not all, of existing MRWC rates, with perhaps a very small energy surcharge.

## 6) PROPOSED PROJECT (RECOMMENDED ALTERNATIVE)

*The engineer should include a recommendation for which alternative(s) should be implemented. This section should contain a fully developed description of the proposed project based on the preliminary description under the evaluation of alternatives. Include a schematic for any treatment processes, a layout of the system, and a location map of the proposed facilities. At least the following information should be included as applicable to the specific project:*

The proposed alternative, as previously discussed, is Alternative One:

- As previously illustrated
- Install a new pressure pump and ancillary piping at the Plant, connected to the existing 4" main leading to Road N.
- Install a 3" service main from this Road N connection to the last parcel at UR42, as illustrated
- Install service laterals as illustrated
- Provide service connections



- Terminate the main with a head / capacity tank
- Coordinate design, detailed ancillaries, and controls with the operating procedures of MRWC

b) Project Schedule. *Identify proposed dates for submittal and anticipated approval of all required documents, land, and easement acquisition, permit applications, advertisement for bids, loan closing, contract award, initiation of construction, substantial completion, final completion, and initiation of operation.*

A detailed schedule will be developed upon approval of this document; that date, along with seasonal (weather) conditions, party agreement negotiations, and procurement of financing, will affect the actual start date.

An overall conservative estimate of 12 to 18 month's duration from NTP is based on the following general factors:

- Agreement negotiation durations between MRWC and UR42WA are a schedule variable
- Permitting, below, is of variable duration to completion, but will be started early
- Tank siting easements are underway
- Pipe and equipment sizing is at 80% complete
- Utility locates will have a moderate but expected impact to routing details
- Detailed engineering drawings will take roughly two months to produce
- Specifications are at hand and simply need local attribution (in parallel with drawings)
- Solicitation and Procurement (bid advertisement and contract) will take a conservative four months, likely less.
- Environmental monitoring will be needed (started early and continued in parallel)
- Construction duration is estimated, conservatively, at 6 months but likely much shorter
- The tank and pumps are the longest lead times (will thus be addressed early) – Owner procurement ahead of construction bid could expedite the process
- PVC procurement timelines risks are moderate and variable, but generally easing
- Plant connection, testing, and commissioning (including water quality testing) will be given a conservative two months

c) Permit Requirements. *Identify any construction, discharge and capacity permits that will/may be required as a result of the project.*

- Land donation for tank siting
- Easements for property transitions, where they do not already exist
- Funding Agency(s) (TBD) permits, e.g., EPA, USDA-RD, of which this report is part of a sequence.
- 811 utility locates and potential construction constraints / approvals
- NEPA and Environmental
- Post-Construction Water Quality test results; CDPHE
- System Operation Permits; CDPHE
- Potential Drinking Water Storage Tank Permit; CDPHE
- Construction permits from:
  - Bureau of Reclamation (Plant site and access road construction, ditch crossing)
  - Montezuma County (potential traffic control, road crossings: main and service connections, easements)

d) Sustainability Considerations (if applicable).

i) Water and Energy Efficiency. Describe aspects of the proposed project addressing water reuse, water efficiency, and water conservation, energy efficient design, and/or renewable generation of energy, if incorporated into the selected alternative.

See prior discussion; this project greatly reduces energy/fossil fuel consumption and greenhouse gas generation.

ii) Green Infrastructure. Describe aspects of project that preserve or mimic natural processes to manage stormwater, if applicable to the selected alternative. Address management of runoff volume and peak flows through infiltration, evapotranspiration, and/or harvest and use, if applicable.

NA

iii) Other. Describe other aspects of sustainability (such as resiliency or operational simplicity) that are incorporated into the selected alternative, if incorporated into the selected alternative.

Please see prior discussion. This project greatly reduces energy/fossil fuel consumption and greenhouse gas generation, while providing water access resiliency and security, and retaining a redundant water supply (water hauling is still available).

e) Total Project Cost Estimate (Engineer's Opinion of Probable Cost). Provide an itemized estimate of the project cost based on the stated period of construction. Include construction, land, and rights-of-way, legal, engineering, construction program management, funds administration, interest, equipment, construction contingency, refinancing, and other costs associated with the proposed project. The construction subtotal should be separated out from the non-construction costs. The non-construction subtotal should be included and added to the construction subtotal to establish the total project cost. An appropriate construction contingency should be added as part of the non-construction subtotal [?]

Probable cost summary is as below in Table 8 (a repeat of Table 6).

Table 8. Total Project Cost Estimate

Item		Cost Estimate		
		Low	Medium	High
A	Construction (incl. equip.)	\$706,243	\$841,526	\$976,809
B	Construction Contingency (25%)	176,561	210,381	244,202
C	Land, ROW and easements	6,000	8,000	12,000
D	Legal	15,000	18,000	25,000
E	Engineering	50,000	60,000	90,000
F	Const. Prog. Mgmt.	25,000	30,000	40,000
G	Funds Admin	5,000	7,000	9,000
H	Reserves, equipment	30,000	40,000	50,000
I	Non-Const. Contingency (25% c to h)	29,000	40,750	56,500
J	MRWC Membership & Tap Fees	225,000	225,000	225,000
K	<b>Subtotal</b>	<b>\$1,267,804</b>	<b>\$1,480,657</b>	<b>\$1,728,511</b>
L	Total Loan Interest (r=3%, t=30)	<b>\$656,436</b>	<b>\$766,646</b>	<b>\$894,978</b>
M	<b>Total</b>	<b>\$1,924,240</b>	<b>\$2,247,303</b>	<b>\$2,623,490</b>
N	Total Annual County Assessment (total / 30 years)	<b>\$64,141</b>	<b>\$74,910</b>	<b>\$87,449</b>
O	Annual County Assessment per Membership (total annual / 25 memberships)	<b>\$2,565</b>	<b>\$2,996</b>	<b>\$3,498</b>

f) Annual Operating Budget. Provide itemized annual operating budget information. The owner has primary responsibility for the annual operating budget, however, there are other parties that may provide technical assistance. This information will be used to evaluate the financial capacity of the system. The engineer will incorporate information from the owner's accountant and other known technical service providers.

Annual Operating Budget information is not available from MRWC.

(Outline Sections omitted as NA)

i) Income. Provide information about all sources of income for the system including a proposed rate schedule. Project income realistically for existing and proposed new users separately, based on existing user billings, water treatment contracts, and other sources of income. In the absence of historic data or other reliable information, for budget purposes, base water uses on 100 gallons per capita per day. Water use per residential connection may then be calculated based on the most recent U.S. Census, American Community Survey, or other data for the state or county of the average household size. When large agricultural or commercial users are projected, the Report should identify those users and include facts to substantiate such projections and evaluate the impact of such users on the

*economic viability of the project.*

Income information is not available from MRWC. Income from UR42WA constituents will be secured through billing by a future Local Improvement District with Montezuma County. Said income will be based on contributions (initial and potentially subsequent); potential grants to mitigate capital expenses; and debt service-based billing to cover remaining capital cost loans, subsequent to funding agency(s) loan terms and conditions. Additional finances during the period of "ownership" (e.g., prior to asset payoff and assumption by MRWC) such as liability insurance, asset replacement reserves, exceptional repairs, debt service reserves, and other factors still need to be established and resolved both within UR42WA and between UR42WA and MRWC.

ii) Annual O&M Costs. *Provide an itemized list by expense category and project costs realistically. Provide projected costs for operating the system as improved. In the absence of other reliable data, base on actual costs of other existing facilities of similar size and complexity. Include facts in the Report to substantiate O&M cost estimates. Include personnel costs, administrative costs, water purchase or treatment costs, accounting and auditing fees, legal fees, interest, utilities, energy costs, insurance, annual repairs and maintenance, monitoring and testing, supplies, chemicals, residuals disposal, office supplies, printing, professional services, and miscellaneous as applicable. Any income from renewable energy generation which is sold back to the electric utility should also be included, if applicable. If applicable, note the operator grade needed.*

Annual O&M cost information is not available from MRWC, other than information provided above on existing rates and the potential of a small incremental energy surcharge, as discussed earlier.

iii) Debt Repayments. *Describe existing and proposed financing with the estimated amount of annual debt repayments from all sources. All estimates of funding should be based on loans, not grants.*

Simple loan conditions, 3% at 30 years, with potential of early settlement. Range estimated provided in Table 7, above.

iv) Reserves. *Describe the existing and proposed loan obligation reserve requirements for the following:*

I. Debt Service Reserve. *For specific debt service reserve requirements consult with individual funding sources. If General Obligation bonds are proposed to be used as loan security, this section may be omitted, but this should be clearly stated if it is the case.*

Debt service reserves of six months are strongly recommended; the cost details of which are to be worked out by the UR42WA Financial Planner relative to the financing factors discussed above.

II. Short-Lived Asset Reserve. *A table of short-lived assets should be included for the system (See Appendix A for examples). The table should include the asset, the expected year of replacement, and the anticipated cost of each. Prepare a recommended annual reserve deposit to fund replacement of short-lived assets, such as pumps, paint, and small equipment. Short-lived assets include those items not covered under O&M, however, this does not include facilities such as a water tank or treatment facility replacement that are usually funded with long-term capital financing.*

This is an excellent prompt on an important topic, especially as it related to the term of the loan with respect to the lifecycle of short-lived assets, and in particular, who is responsible for replacing such assets. The current agreement, as we understand it, is that MRWC will assume and perform all O&M of the system once it is commissioned. It remains to be confirmed in the formal O&M agreement between MRWC and UR42WA that MRWC will assume appropriate R&R sinking funds and coverage of such assets as pumps, valves, and other relatively short-lived new assets, relative to their business practices and existing finances as a private company. We encourage both parties to carefully consider and document these requirements.

## 7. CONCLUSIONS AND RECOMMENDATIONS

*Provide any additional findings and recommendations that should be considered in development of the project. This may include recommendations for special studies, highlighting of the need for special coordination, a recommended plan of action to expedite project development, and any other necessary considerations.*

Relative to reliable access to sufficient quantities of clean and safe drinking water, this is a necessary, financial- and social-cost saving project, with a straightforward solution that takes advantage of existing infrastructure and causeways. Beyond environmental mitigation during construction, there are no lasting environmental or cultural impacts. While agreement details between the parties of UR42WA and MRWC still need to be finalized, the UR42WA members are eager to proceed, and MRWC has been supportive as a private entity.

Signed:

  
David J. Henry, PE CA M 29353

February 17, 2023

  
Steven C Harris



February 17, 2023



8) APPENDICES

Appendix A: Bulletin 1780-2 Front Matter



January 16, 2013

INTERAGENCY MEMORANDUM

Attached is a document explaining recommended best practice for the development of Preliminary Engineering Reports in support of funding applications for development of drinking water, wastewater, stormwater, and solid waste systems.

The best practice document was developed cooperatively by:

- US Department of Agriculture, Rural Development, Rural Utilities Service, Water and Environmental Programs;
- US Environmental Protection Agency (EPA), Office of Water, Office of Ground Water and Drinking Water and Office of Wastewater Management;
- US Department of Housing and Urban Development (HUD), Office of Community Planning and Development;
- US Department of Health and Human Services, Indian Health Service (IHS);
- Small Communities Water Infrastructure Exchange;

Extensive input from participating state administering agencies was also very important to the development of this document.

Federal agencies that cooperatively developed this document strongly encourage its use by funding agencies as part of the application process or project development. State administered programs are encouraged to adopt this document but are not required to do so, as it is up to a state administering agency's discretion to adopt it, based on the needs of the state administering agency.

A Preliminary Engineering Report (Report) is a planning document required by many state and federal funding agencies as part of the process of obtaining financial assistance for development of drinking water, wastewater, solid waste, and stormwater facilities. The attached Report outline details the requirements that funding agencies have adopted when a Report is required.

In general the Report should include a description of existing facilities and a description of the issues being addressed by the proposed project. It should identify alternatives, present a life cycle cost analysis of technically feasible alternatives and propose a specific course of action. The Report should also include a detailed current cost estimate of the recommended alternative. The attached outline describes these and other sections to be included in the Report.

Projects utilizing direct federal funding also require an environmental review in accordance with the National Environmental Policy Act (NEPA). The Report should indicate that environmental issues were considered as part of the engineering planning and include environmental information pertinent to engineering planning.

For state administered funding programs, a determination of whether the outline applies to a given program or project is made by the state administering agency. When a program or agency adopts this outline, it may adopt a portion or the entire outline as applicable to the program or project in question at the discretion of the agency. Some state and federal funding agencies will not require the Report for every project or may waive portions of the Report that do not apply to their application process, however a Report thoroughly addressing all of the contents of this outline will meet the requirements of most agencies that have adopted this outline.

The detailed outline provides information on what to include in a Report. The level of detail required may also vary according to the complexity of the specific project. Reports should conform substantially to this detailed outline and otherwise be prepared and presented in a professional manner. Many funding agencies require that the document be developed by a Professional Engineer registered in the state or other jurisdiction where the project is to be constructed unless exempt from this requirement. Please check with applicable funding agencies to determine if the agencies require supplementary information beyond the scope of this outline.

Any preliminary design information must be written in accordance with the regulatory requirements of the state or territory where the project will be built.

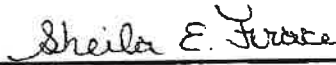
Information provided in the Report may be used to process requests for funding. Completeness and accuracy are therefore essential for timely processing of an application. Please contact the appropriate state or federal funding agencies with any questions about development of the Report and applications for funding as early in the process as practicable.

Questions about this document should be referred to the applicable state administering agency, regional office of the applicable federal agency, or to the following federal contacts:

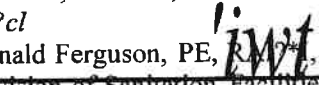
Agency	Contact	Email Address	Phone
USDA/RUS	Benjamin Shuman, PE	ben.shuman@wdc.usda.gov	202-720-1784
EPA/DWSRF	Kirsten Anderer, PE	anderer.kirsten(a),epa.gov	202-564-3134
EPA/CWSRF	Matt King	king.matt(a),epa.gov	202-564-2871
HUD	Stephen Rhodside	stephen.m.rhodside(a),hud.gov	202-708-1322
his	Dana Baer, PE	dana.baer(a),ihs.gov	301-443-1345

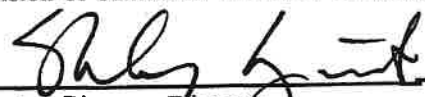
Sincerely,

 1/16/13  
\_\_\_\_\_  
Jacqueline M. Ponti-Lazaruk, Assistant Administrator  
USDA, Rural Development, Rural Utilities Service, Water and Environmental Programs

 01/16/13  
\_\_\_\_\_  
Sheila Frace, Acting Deputy Director  
US EPA, Office of Water, Office of Wastewater Management

 1/16/13  
\_\_\_\_\_  
Andrew Sawyers, Deputy Director  
US EPA, Office of Water, Office of Ground Water and Drinking Water

*wj?cl* J(16/13  
 Director  
\_\_\_\_\_  
Ronald Ferguson, PE, Director  
Division of Sanitation Facilities Construction, Indian Health Service

 1-16-13  
\_\_\_\_\_  
Stanley Gimont, Director  
Office of Block Grant Assistance, US Department of Housing and Urban Development

Attachment

Appendix B: Example List of Short-Lived Asset Infrastructure

**Estimated Repair, Rehab, Replacement Expenses by Item within up to 20 Years from Installation)**

<b>Drinking Water Utilities</b>	<b>Wastewater Utilities</b>
<b>Source Related</b> Pumps Pump Controls Pump Motors Telemetry Intake/ Well screens Water Level Sensors Pressure Transducers	<b>Treatment Related</b> Pump Pump Controls Pump Motors Chemical feed pumps Membrane Filters Fibers Field & Process Instrumentation Equipment UV lamps Centrifuges Aeration blowers Aeration diffusers and nozzles Trickling filters, RBCs, etc. Belt presses & driers Sludge Collecting and Dewatering Equipment Level Sensors Pressure Transducers Pump Controls Back-up power generator Chemical Leak Detection Equipment Flow meters SCADA Systems
<b>Treatment Related</b> Chemical feed pumps Altitude Valves Valve Actuators Field & Process Instrumentation Equipment Granular filter media Air compressors & control units Pumps Pump Motors Pump Controls Water Level Sensors Pressure Transducers Sludge Collection & Dewatering UV Lamps Membranes Back-up power generators Chemical Leak Detection Equipment Flow meters SCADA Systems	<b>Collection System Related</b> Pump Pump Controls Pump Motors Trash racks/bar screens Sewer line rodding equipment Air compressors Vaults, lids, and access hatches Security devices and fencing Alarms & Telemetry Chemical Leak Detection Equipment
<b>Distribution System Related</b> Residential and Small Commercial Meters Meter boxes Hydrants & Blow offs Pressure reducing valves Cross connection control devices Altitude valves Alarms & Telemetry Vaults, lids, and access hatches Security devices and fencing Storage reservoir painting/patching	



Appendix C. MRWC Rate Structure.

**Mancos Rural Water Company Rates**

November 14, 2022

**NEW RATES EFFECTIVE December 1<sup>st</sup>, 2022.**

**Due to increased cost of operations and maintenance we are forced to implement a rate increase of 10%. This will increase the average bill approximately \$4.00 per month.**

**There is a monthly minimum of \$44.05 per membership. You must pay the minimum whether the service connection is in use or not.**

Meters are read between the 20<sup>th</sup> & 24<sup>th</sup> of the month, bills are mailed by the last working day of the month. Payment is due by the 15<sup>th</sup> of the following month.

If service is disconnected due to a delinquent bill there will be a \$25.00 re-connect fee.

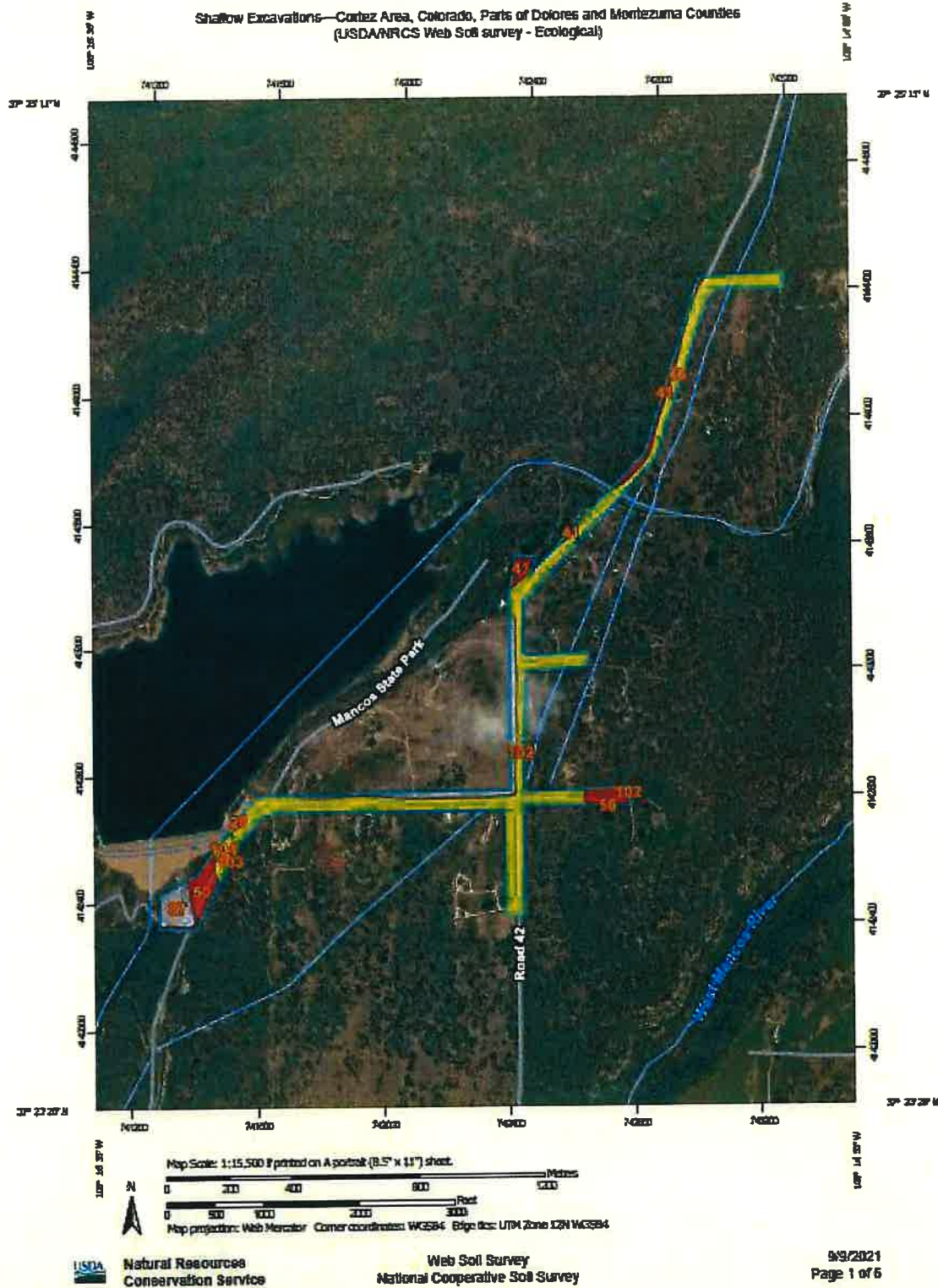
If the property is rented, the membership owner assumes all responsibility for any unpaid bills.

**Each permanent household inhabited for a period of sixty or more days in a calendar year requires a separate membership and service connection.**

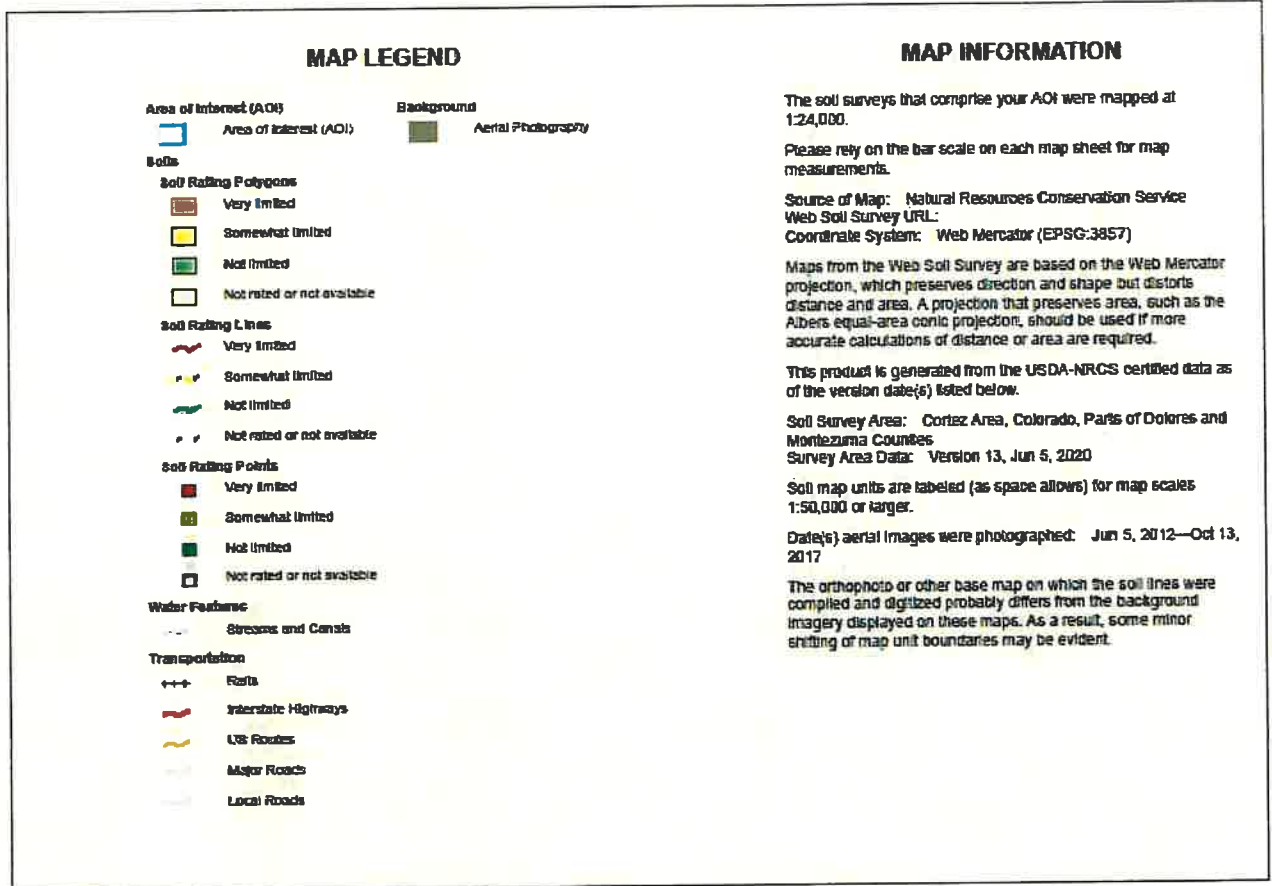
Residential Minimum- 2,000 gallons \$44.05  
Commercial Minimum- 4,000 gallons \$88.10

Residential Rate			Commercial Rate		
Gallons	Water Rate Per Thousand Over Minimum		Gallons	Water Rate Per Thousand Over Minimum	
next	8,000	\$6.18	next	4,000	\$6.18
next	10,000	\$7.77	next	67,000	\$10.03
next	10,000	\$9.33	next	25,000	\$11.51
next	30,000	\$12.31	Remainder		\$15.02
next	40,000	\$13.50			
next	50,000	\$15.02			
Remainder		\$15.02			

Appendix D. USDA/NRCS Soils Survey – Shallow Excavations.



Shallow Excavations—Cortez Area, Colorado, Parts of Dolores and Montezuma Counties  
(USDA/NRCS Web Soil Survey - Ecological)



### Shallow Excavations

Map unit symbol	Map unit name	Rating	Component names (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI		
28	Dam	Not rated	Dam (100%)		0.3	0.6%		
41	Fughes-Sneek complex, 15 to 30 percent slopes	Very limited	Fughes (50%)	Slope (1.30) Too clayey (0.50) Unstable excavation walls (0.41) Dusty (0.09)	3.4	5.9%		
			Sneek (35%)	Slope (1.00) Large stones (0.56) Dusty (0.06) Unstable excavation walls (0.01)				
			Orniston (6%)	Slope (1.00) Depth to hard bedrock (0.88) Large stones (0.39) Dusty (0.09) Unstable excavation walls (0.01)				
			Nortez (5%)	Depth to hard bedrock (1.60) Slope (1.00) Dusty (0.10) Unstable excavation walls (0.02)				
46	Granath-Fughes complex, 0 to 15 percent slopes	Somewhat limited	Granath (50%)	Dusty (0.15) Unstable excavation walls (0.01)			10.4	16.1%
			Fughes (35%)	Dusty (0.13) Too clayey (0.13) Unstable excavation walls (0.01)				
50	Herm very cobbly loam.	Very limited	Herm (65%)	Slope (1.00)			4.9	8.6%



Preliminary Engineering Report:  
Upper Road 42 Water Association

Shallow Excavations—Cortez Area, Colorado, Parts of Dolores and Montezuma Counties

USDA/NRCS Web Soil Survey -  
Ecological

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
	15 to 40 percent slopes			Dusty (0.12) Unstable excavation walls (0.01)		
87	Pits	Not rated	Pits (95%) Other soils (5%)		8.4	14.7%
102	Ricot loam, 1 to 3 percent slopes	Somewhat limited	Ricot (80%)	Dusty (0.11) Unstable excavation walls (0.01)	23.5	49.7%
103	Ricot loam, 3 to 6 percent slopes	Somewhat limited	Ricot (80%)	Dusty (0.11) Unstable excavation walls (0.01)	0.0	0.1%
104	Ricot loam, 6 to 12 percent slopes	Somewhat limited	Ricot (80%)	Dusty (0.11) Slope (0.04) Unstable excavation walls (0.01)	1.4	2.4%
<b>Totals for Area of Interest</b>					<b>57.4</b>	<b>100.0%</b>

Rating	Acres in AOI	Percent of AOI
Somewhat limited	40.4	70.2%
Very limited	8.3	14.4%
Nil or Not Rated	8.6	15.3%
<b>Totals for Area of Interest</b>	<b>57.4</b>	<b>100.0%</b>



## Description

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

## Rating Options

*Aggregation Method:* Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

**Component Percent Cutoff: None Specified**

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

**Tie-break Rule: Higher**

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

**JUDGES UNOFFICIAL ABSTRACT OF VOTES FOR**  
**Montezuma County Local Improvement District No. 2023-1 (Upper Road 42),**  
**Montezuma County, Colorado**

For the special election on November 7, 2023.

**VOTES COUNTED**


Yes/For 30                      No/Against 0

**BALLOT QUESTION A.**

SHALL MONTEZUMA COUNTY DEBT BE INCREASED BY THE AMOUNT OF \$1,728,511, WITH A REPAYMENT COST OF NOT MORE THAN \$2,998,800; AND SHALL MONTEZUMA COUNTY TAXES BE INCREASED NOT MORE THAN \$99,960 ANNUALLY OR BY SUCH LESSER ANNUAL AMOUNT AS MAY BE NECESSARY TO PAY THE AFOREMENTIONED DEBT, BY IMPOSING SPECIAL ASSESSMENTS UPON PROPERTY IN MONTEZUMA COUNTY LOCAL IMPROVEMENT DISTRICT NO. 2023-1 (UPPER ROAD 42), WHICH ASSESSMENTS ARE SUBJECT TO PREPAYMENT AT THE OPTION OF THE PROPERTY OWNER: SUCH DEBT TO CONSIST OF SPECIAL ASSESSMENT BONDS OR OTHER FINANCIAL OBLIGATIONS BEARING INTEREST AT A NET EFFECTIVE INTEREST RATE NOT TO EXCEED 4%: SUCH SPECIAL ASSESSMENT BONDS OR OTHER FINANCIAL OBLIGATIONS SHALL BE ISSUED TO PAY THE COSTS OF PROVIDING CERTAIN LOCAL IMPROVEMENTS IN SUCH DISTRICT, TO BE REPAYED FROM THE PROCEEDS OF SPECIAL ASSESSMENTS TO BE IMPOSED UPON THE PROPERTY INCLUDED WITHIN SUCH DISTRICT; SUCH TAXES TO CONSIST OF THE AFOREMENTIONED SPECIAL ASSESSMENTS IMPOSED UPON THE PROPERTY IN THE DISTRICT BENEFITED BY THE LOCAL IMPROVEMENTS; AND SHALL THE PROCEEDS OF SUCH BONDS OR OTHER FINANCIAL OBLIGATIONS AND THE PROCEEDS OF SUCH ASSESSMENTS, AND INVESTMENT INCOME THEREON CONSTITUTE VOTER-APPROVED REVENUE CHANGES AND BE COLLECTED AND SPENT BY THE COUNTY WITHOUT REGARD TO ANY EXPENDITURE, REVENUE-RAISING, OR OTHER LIMITATION CONTAINED WITHIN ARTICLE X, SECTION 20 OF THE COLORADO CONSTITUTION, AND WITHOUT LIMITING IN ANY YEAR THE AMOUNT OF OTHER REVENUES THAT MAY BE COLLECTED AND SPENT BY THE COUNTY?

Dated this 7<sup>th</sup> day of November 2023.

  
\_\_\_\_\_  
Election Judge

  
\_\_\_\_\_  
Election Judge

  
\_\_\_\_\_  
Election Judge



**JUDGES' CERTIFICATE OF ELECTION RETURNS and  
STATEMENT OF BALLOTS**

**MAIL BALLOT ELECTION**

§1-13.5-613, C.R.S.

**JUDGES' CERTIFICATE OF RETURNS:**

IT IS HEREBY CERTIFIED by the undersigned, who conducted the election held in the Montezuma County Local Improvement District No. 2023-1 (upper Road 42), Montezuma County, Colorado, on the 7th day of November 2023, that after qualifying by swearing and subscribing to their Oaths of Office, they counted the ballots cast for ballot questions duly submitted,

Montezuma County Local Improvement District No. 2023-1 (Upper Road 42) BALLOT QUESTION A

	NUMBER OF VOTES (#)	NUMBER OF VOTES (in words)
YES	30	thirty
NO	0	zero

It is hereby identified and specified that:

**Number of Ballots Delivered to Electors:**

Mail Ballot

Official: 32

Unofficial: 0

Substitute: 0

Total Number of Ballots Delivered to Electors:

32

**Number of Ballots Returned (VOTED)**

Mail Ballot

Official: 30

Unofficial: 0

Substitute: 0

Total Number of Ballots Returned (Voted):

30

Number of Ballots Undelivered: 0

Number of Spoiled Ballots (Replacement Ballot issued): 0

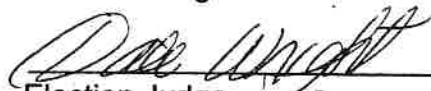
Number of Successfully Challenged Ballots: 0

Number of Rejected Ballots: 0

Number of Defective Ballots (do not include partial): 0

**Certified this 7<sup>th</sup> day of November 2022.**

  
\_\_\_\_\_  
Election Judge

  
\_\_\_\_\_  
Election Judge

  
\_\_\_\_\_  
Election Judge

\*Instructions: Attach to Canvass Board's Official Abstract of Votes Cast.