

**Water Supply Reserve Fund  
Water Activity Summary Sheet  
September 16-17, 2020  
Agenda Item 19(n)**

**Applicant & Grantee:** Montezuma Orchard Restoration Project

**Water Activity Name:** Innovations in Irrigation to Support Heritage Apple Orchards in SW Colorado

**Water Activity Purpose:** Agricultural-Implementation

**County:** Montezuma

**Drainage Basin:** Southwest

**Water Source:** Montezuma Valley Irrigation Company

**Amount Requested:** \$25,000 Southwest Basin Account  
\$39,900 Statewide Account  
\$64,900 Total Request

**Matching Funds:** Basin Account Match = \$25,000

- 63% of statewide request (meets 10% min)

Applicant & 3<sup>rd</sup> Party Match (cash & in-kind) = \$72,000

- 180% of the statewide request (meets 10% min)

Total Match (Basin request & Applicant Match) = \$97,000

- 243% of the statewide request (meets 50% min)

<b>Staff Recommendation:</b>
Staff recommends approval of up to \$25,000 from the Southwest Basin Account, and up to \$39,900 from the Statewide Account to help fund the project: Innovations in Irrigation to Support Heritage Apple Orchards in SW Colorado.

**Water Activity Summary:** WSRF Funds, if approved will assist the Montezuma Orchard Restoration Project (MORP): create an efficient irrigation system design for 20.95 acres of reestablished heritage orchard (divided into three phases of installation) that can be used as a transferable template to farmers in the region; create an irrigation water management plan that utilizes soil moisture monitors to inform irrigation scheduling and application rates, and; install the first phase of orchard establishment and irrigation improvements on 6.20 acres of Orchard Hub property.

Montezuma Orchard Restoration Project owns 36.35 acres of residential/agricultural land near Cortez, Colorado, irrigated with 35 shares of Montezuma Valley Irrigation Company water. Historically the property was used for orchards, but the majority of the trees were cut out by 1960 in favor of water intensive crops such as alfalfa. In collaboration with its partner The Nature Conservancy, MORP seeks to restore the site to heritage orchards while demonstrating crop conversion opportunities and water conservation methods to area farmers. The property known as the “Orchard Hub” is located in the San Juan basin on lands that use water from the Dolores River basin.

**Discussion:** This effort will assist the Southwest Basin Roundtable achieve several goals as called for in their Basin Implementation Plan, such as: their Agricultural goal B2 to Implement efficiency measures to maximize beneficial use and production, and also assisting Colorado achieve the goal to Maintain Agricultural Viability as called for in Chapter 10 of Colorado's Water Plan.

**Issues/Additional Needs:** None.

**Eligibility Requirements:** The application meets requirements of all eligibility components.

**Evaluation Criteria:** Staff has determined this activity satisfies the Evaluation Criteria.

<b>Funding Sources/Match</b>	<b>Cash</b>	<b>In-kind</b>	<b>Total</b>	<b>Status</b>
Montezuma Orchard Restoration Project	\$13,000	\$12,000	\$25,000	Secured
The Nature Conservancy	\$47,000	\$0	\$47,000	Secured
Sub-total	\$60,000	\$12,000	\$72,000	
WSRF Southwest Basin Account	\$25,000	\$0	\$25,000	Secured
Sub-total	\$85,000	\$12,000	\$97,000	
WSRF Statewide Account	\$39,900	\$0	\$39,900	
<b>Total Project Costs</b>	<b>\$124,900</b>	<b>\$12,000</b>	<b>\$136,900</b>	

**CWCB Project Manager:** Alex Funk

## SOUTHWEST BASINS ROUNDTABLE

July 24, 2020

Mr. Craig Godbout  
Water Supply Planning Section  
Colorado Water Conservation Board  
1580 Logan Street, Suite 600  
Denver, Colorado 80203

RE: Montezuma Orchard Restoration Project  
WSRF Grant Request

Dear Mr. Godbout,

The Southwest Basins Roundtable approved funding of \$25,000 from the Southwest Basins Roundtable account for the Montezuma Orchard Restoration Project. In addition, we are recommending that the Colorado Water Conservation Board approve their request for \$39,900 from the Statewide account. This application was considered fully and approved by the Southwest Basins Roundtable at the July 23, 2020 meeting. There was a quorum of members present at the meeting.

This project will provide a demonstration project that will help to revive a heritage fruit growing economy and demonstrate water conservation measures that could help meet Colorado's water needs in the face of drought and climate change.

The proposed project falls under IPP 4-MB of the Southwest Basins Implementation Plan. It also meets a Measurable Goal or Outcome of the Southwest Basins BIP to Maintain Agricultural Water Needs.

The completed Grant Application will be forwarded directly to you by the applicant. Please contact the applicant directly or me at 970-563-0320, [etolen@laplawd.org](mailto:etolen@laplawd.org), if you have questions or wish to discuss this application in more detail.

Sincerely,



Edward Tolen  
Southwest Basins Roundtable Chair

C/O La Plata Archuleta Water District  
PO Box 1377  
Ignacio, Colorado 81137

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Colorado Water Conservation Board	
Water Supply Reserve Fund Grant Application	

Instructions
<p>All WSRF grant applications shall conform to the current <a href="#">2016 WSRF Criteria and Guidelines</a>.</p> <p>To receive funding from the WSRF, a proposed water activity must be recommended for approval by a Roundtable(s) <b>AND</b> the Colorado Water Conservation Board (CWCB). The process for Roundtable consideration and recommendation is outlined in the 2016 WSRF Criteria and Guidelines. The CWCB meets bimonthly according to the schedule on page 2 of this application.</p> <p>If you have questions, please contact the WSRF Grant Program Manager (for all Roundtables):</p> <p style="text-align: center;">Craig Godbout  <a href="mailto:craig.godbout@state.co.us">craig.godbout@state.co.us</a>          303-866-3441 x3210 (office)          303-547-8061 (cell)</p>

WSRF Submittal Checklist (Required)	
x	I acknowledge this request was recommended for CWCB approval by the sponsoring roundtable.
x	I acknowledge I have read and understand the <a href="#">2016 WSRF Criteria and Guidelines</a> .
x	I acknowledge the Grantee will be able to contract with CWCB using the <a href="#">Standard Contract</a> . <sup>(1)</sup>
Application Documents	
x	Exhibit A: Statement of Work <sup>(2)</sup> ( <i>Word – see Template</i> )
x	Exhibit B: Budget & Schedule <sup>(2)</sup> ( <i>Excel Spreadsheet – see Template</i> )
x	Letters of Matching and/or Pending 3 <sup>rd</sup> Party Commitments <sup>(2)</sup>
x	Map <sup>(2)</sup>
x	Photos/Drawings/Reports
x	Letters of Support
Contracting Documents <sup>(3)</sup>	

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	Detailed/Itemized Budget <sup>(3)</sup> ( <i>Excel Spreadsheet – see Template</i> )
	Certificate of Insurance <sup>(4)</sup> ( <i>General, Auto, &amp; Workers' Comp.</i> )
	Certificate of Good Standing <sup>(4)</sup>
	W-9 Form <sup>(4)</sup>
	Independent Contractor Form <sup>(4)</sup> ( <i>If applicant is individual, not company/organization</i> )
	Electronic Funds Transfer (ETF) Form <sup>(4)</sup>

- (1) Click "Grant Agreements". For reference only/do not fill out or submit/required for contracting  
 (2) Required with application if applicable.  
 (3) Additional documentation providing a Detailed/Itemized Budget maybe required for contracting. Applicants are encouraged to coordinate with the CWCB Project Manager to determine specifics.  
 (4) Required for contracting. While optional at the time of this application, submission can expedite contracting upon CWCB Board approval.

Schedule		
CWCB Meeting	Application Submittal Dates	Type of Request
January	December 1	Basin Account; BIP
March	February 1	Basin/Statewide Account; BIP
May	April 1	Basin Account; BIP
July	June 1	Basin Account; BIP
September	August 1	Basin/Statewide Account; BIP
November	October 1	Basin Account/BIP

Desired Timeline	
Desired CWCB Hearing Month:	September, 2020
Desired Notice to Proceed Date:	October 15, 2020

Water Activity Summary	
Name of Applicant	Onward! A Legacy Foundation DBA Montezuma Orchard Restoration Project

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Water Activity Summary	
Name of Water Activity	Innovations in Irrigation to Support Heritage Apple Orchards in SW Colorado
Approving Roundtable(s)	Basin Account Request(s) <sup>(1)</sup>
Southwest Basin Roundtable	\$25,000
Statewide Account Request <sup>(1)</sup>	\$39,900
Total WSRF Funds Requested (Basin & Statewide)	\$64,900
Total Project Costs	\$136,900

(1) Please indicate the amount recommended for approval by the Roundtable(s)

Grantee and Applicant Information	
Name of Grantee(s)	Onward! A Legacy Foundation DBA Montezuma Orchard Restoration Project (MORP)
Mailing Address	POB 1556, Cortez, CO 81321
FEIN	26-0045741
Grantee's Organization Contact <sup>(1)</sup>	Jude Schuenemeyer
Position/Title	CoDirector
Email	<a href="mailto:judemorp@gmail.com">judemorp@gmail.com</a>
Phone	970-565-3099
Grant Management Contact <sup>(2)</sup>	Adalyn Schuenemeyer
Position/Title	CoDirector
Email	<a href="mailto:addiemorp@gmail.com">addiemorp@gmail.com</a>
Phone	970-565-3099
Name of Applicant (if different than grantee)	
Mailing Address	

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Grantee and Applicant Information	
Position/Title	
Email	
Phone	

(1) Person with signatory authority

(2) Person responsible for creating reimbursement invoices (Invoice for Services) and corresponding with CWCB staff.

Description of Grantee
Provide a brief description of the grantee's organization (100 words or less).
<p>Montezuma Orchard Restoration Project (MORP) works to preserve Colorado's fruit growing heritage and restore an orchard culture and economy to the southwestern region. MORP documents historic orchards, identifies and propagates endangered heritage apple varieties, and helps farmers care for and benefit from their historic fruit trees in a region that suffers from drought, agriculture water shortages, and one of the highest poverty rates in Colorado. MORP believes that the remarkable orchard culture and economy that once thrived here can again be possible, in part, by demonstrating effective irrigation and water conservation while reconverting hay fields into heritage orchards.</p>

Type of Eligible Entity (check one)	
	<b>Public (Government):</b> municipalities, enterprises, counties, and State of Colorado agencies. Federal agencies are encouraged to work with local entities. Federal agencies are eligible, but only if they can make a compelling case for why a local partner cannot be the grant recipient.
	<b>Public (Districts):</b> authorities, Title 32/special districts (conservancy, conservation, and irrigation districts), and water activity enterprises
	<b>Private Incorporated:</b> mutual ditch companies, homeowners associations, corporations
	<b>Private Individuals, Partnerships, and Sole Proprietors:</b> are eligible for funding from the Basin Accounts but not for funding from the Statewide Account.
x	<b>Non-governmental organizations:</b> broadly, any organization that is not part of the government

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Type of Eligible Entity (check one)	
<input type="checkbox"/>	<b>Covered Entity:</b> as defined in <a href="#">Section 37-60-126 Colorado Revised Statutes</a>

Type of Water Activity (check one)	
<input type="checkbox"/>	Study
<input checked="" type="checkbox"/>	Implementation

Category of Water Activity (check all that apply)		
<input type="checkbox"/>	Nonconsumptive (Environmental)	
<input type="checkbox"/>	Nonconsumptive (Recreational)	
<input checked="" type="checkbox"/>	Agricultural	
<input type="checkbox"/>	Municipal/Industrial	
<input type="checkbox"/>	Needs Assessment	
<input type="checkbox"/>	Education & Outreach	
<input type="checkbox"/>	Other	Explain:

Location of Water Activity	
Please provide the general county and coordinates of the proposed activity below in <b>decimal degrees</b> . The Applicant shall also provide, in Exhibit C, a site map if applicable.	
County/Countries	Montezuma
Latitude	37°24'36"N
Longitude	108°31'07"W



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### Water Activity Overview

Please provide a summary of the proposed water activity (200 words or less). Include a description of the activity and what the WSRF funding will be used for specifically (e.g. studies, permitting, construction). Provide a description of the water supply source to be utilized or the water body affected by the activity. Include details such as acres under irrigation, types of crops irrigated, number of residential and commercial taps, length of ditch improvements, length of pipe installed, area of habitat improvements. If this project addresses multiple purposes or spans multiple basins, please explain. The Applicant shall also provide, in Exhibit A, a detailed Statement of Work, Budget, and Schedule.

Montezuma Orchard Restoration Project owns 36.35 acres of residential/agricultural land near Cortez, Colorado, irrigated with 35 shares of Montezuma Valley Irrigation Company water. Historically the property was used for orchards, but the majority of the trees were cut out by 1960 in favor of water intensive crops such as alfalfa. In collaboration with its partner The Nature Conservancy (TNC), MORP seeks to restore the site to heritage orchards while demonstrating crop conversion opportunities and water conservation methods to area farmers. The property known as the "Orchard Hub" is located in the San Juan basin on lands that use water from the Dolores River basin.

This project will lay the ground work for future education and outreach opportunities tied to water conservation in orchards through the following activities: 1) create an efficient irrigation system design for 20.95 acres of reestablished heritage orchard (divided into three phases of installation) that can be used as a transferable template to farmers in the region, 2) create an irrigation water management plan that utilizes soil moisture monitors to inform irrigation scheduling and application rates, and 3) install the first phase of orchard establishment and irrigation improvements on 6.20 acres of Orchard Hub property.

### Measurable Results

To catalog measurable results achieved with WSRF funds please provide any of the following values.

	New Storage Created (acre-feet)
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Measurable Results		
	New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Nonconsumptive	
	Existing Storage Preserved or Enhanced (acre-feet)	
	Length of Stream Restored or Protected (linear feet)	
TBD	Efficiency Savings (indicate acre-feet/year OR dollars/year)	
	Area of Restored or Preserved Habitat (acres)	
1,160' of gated pipe; 6,000' supply pipe/line	Length of Pipe/Canal Built or Improved (linear feet)	
	Other	Explain:

Water Activity Justification
<p>Provide a description of how this water activity supports the goals of <a href="#">Colorado's Water Plan</a>, the most recent <a href="#">Statewide Water Supply Initiative</a>, and the respective <a href="#">Roundtable Basin Implementation Plan and Education Action Plan</a> <sup>(1)</sup>. The Applicant is required to reference specific needs, goals, themes, or Identified Projects and Processes (IPPs), including citations (e.g. document, chapters, sections, or page numbers).</p> <p>For applications that include a request for funds from the Statewide Account, the proposed water activity shall be evaluated based upon how well the proposal conforms to Colorado's Water Plan criteria for state support (CWP, Section 9.4, pp. 9-43 to 9-44;) (Also listed pp. 4-5 in <a href="#">2016 WSRF Criteria and Guidelines</a>).</p>

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## Water Activity Justification

Montezuma Orchard Restoration Project believes that the remarkable orchard culture and economy that once existed in southwestern Colorado can again be possible through its program work of Preservation, Education and Outreach, and Cultural & Economic Revitalization. Through orchard survey, hands-on workshops, historic document research, and direct engagement with knowledgeable people, an active interest in heritage orchards is again taking hold.

As described in more detail in the Montezuma Valley Apple Market Study (see <http://montezumaorchard.org/wp-content/uploads/2018/06/Finalrev-Updated-MORP-Market-Study-January-2018.pdf>), Montezuma Valley's farmers started growing apples over a century ago. MORP has documented thousands of historic apple trees, representing hundreds of rare and endangered varieties, that still dot Montezuma County's landscape. Conservatively, MORP estimates that on a good year these trees produce 50,000 bushels of apples that mostly end up as on-farm food waste, falling to the ground to rot or be eaten by deer or other animals. To address this problem, MORP has completed several successful mobile juicing pilots and seeks to purchase its own equipment to turn this waste into a value added juice product.

As a result, small family farms that are located in a rural region with one of the highest poverty rates in Colorado (see <https://www.coloradohealth.org/sites/default/files/documents/2016-12/Mapping%20Rural%20Health.pdf>), and have not seen reliable markets for their apples in decades, will receive revenue from their fruit. With time, this will lead to more orchard owners maintaining their historic and unique fruit trees, and planting new ones, because of the economic value of doing so. These orchards are irreplaceable building blocks for a restored economy based upon the legendary quality and diversity of Montezuma Valley Fruits.

Indeed, apples were once one of Montezuma County's main crops. But over time, orchards gave way to hay, alfalfa and other crops that were more lucrative—and also more water intensive. In the face of climate change, population growth, drought, and agricultural water deficits MORP believes there is an urgent need to help area farmers plan for future water shortages, and a timely opportunity to demonstrate water conservation in orchards.

According to MORP Director, Jude Schuenemeyer, *"Bringing back apples is not only about preserving the past. Apples use less water than other common crops in the area, and historic, wide-spaced orchards provide habitat for native pollinators, wildlife and plants. By testing irrigation strategies and looking into reviving apple production, we can increase the understanding of how to best provide food and manage water sustainably for the area."* (see <https://www.nature.org/en-us/about-us/where-we-work/united-states/colorado/stories-in-colorado/growing-apples-to-serve-water/>)

In collaboration with its partner The Nature Conservancy (TNC), this project will convert recently purchased MORP property, now known as the "Orchard Hub", from flood-irrigated pasture grass back to an heirloom apple orchard. There, The Nature Conservancy will help MORP improve irrigation efficiency and showcase efficient water use practices, such as drip irrigation and soil moisture monitoring, to local farmers. By planting native grasses between the trees, like buffalo grass and blue grama, the soil holds in more moisture and the whole area becomes more resistant to drought.

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## Water Activity Justification

The Nature Conservancy became involved in the project as a way to investigate and test options for switching crops to conserve water. Crop switching can be a tool to benefit both rivers and the rural communities that depend on them. This project will lay the groundwork for MORP to incorporate water conservation strategies in orchards into its regular education and outreach activities.

*"We are excited to support MORP's efforts to address water use and community resiliency," said Celene Hawkins, Western Colorado water project director for The Nature Conservancy in Colorado. "We hope to learn a lot about what crop switching could mean for water use in southwest Colorado. I see this as a community-based project that supports local agriculture, while also helping the region think about its options in an increasingly dry future."* (see <https://www.nature.org/en-us/about-us/where-we-work/united-states/colorado/stories-in-colorado/growing-apples-to-conserve-water/>)

Although this project is not currently an Identified Project Proposal (IPP), MORP has a pending application for this project to be added as an IPP. Water activities described in this project meet multiple regional and statewide goals that were informed by the work of the **Statewide Water Supply Initiative (SWSI)** that identified Colorado's current and future water needs and ways to meet those needs. By completing this project, MORP will have grown the capacity to incorporate "water awareness", as emphasized in these regional and statewide plans, into its future education and outreach activities.

As described on page 10 of **Southwest Basin Roundtable Basin Implementation Plan**, *"Agriculture and the open space it maintains contribute to the culture, economy, and quality of life of the Southwest Basin."* In essence, this is at the heart of what MORP does. From the preservation of open space and a healthy local food economy to remembering and re-establishing a historically significant agricultural heritage, this project contributes to the culture, economy, and quality of life of the region.

MORP's mission and proposed water activities advance multiple Roundtable underlying principles:

*Identifies specific and unique projects that are important to maintaining the quality of life in this region and should accommodate the development and maintenance of flows, including domestic supplies, environmental needs, agriculture, recreation, and commercial/industrial needs to provide for further economic development.*

*Recognizes and addresses the challenges to all water uses that future drought and/or climate variability may bring.* (SW BIP, pg 10)

Section 1, Table 1 of the SW BIP lists several themes this project meets including Goal A: Balance All Needs and Reduce Conflict, Goal B: Meet Agricultural Needs, and Goal G: Comply with CO River Compact and Manage Risk (SWBRT BIP, pg. 11).

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### Water Activity Justification

Goal A: Balance All Needs and Reduce Conflict – This project addresses goal A2: *Support specific and unique IPP's important to maintaining the quality of life in this region, and to address multiple purposes including municipal, industrial, environmental, recreational, agricultural, risk management, and compact compliance needs (SWBRT, pg. 12).* By working on this project with The Nature Conservancy, Southwestern Colorado Research Center, and a qualified engineering consultant MORP will meet measurable outcome number 3 *to promote dialogue, foster cooperation and resolve conflict*.

Goal B: Meet Agricultural Needs– This project impacts goal B2: *Implement efficiency measures to maximize beneficial use and production (SWBRT BIP, pg. 13)* by working towards measurable outcomes 1 and 2. This project will showcase irrigation efficiencies in orchards that could assist in bridging the identified irrigation gap for the Dolores Project of nearly 4,000 AF (SWBRT BIP, pg. 32). As a result of demonstrating water conservation in orchards MORP will provide a transferable template to encourage farmers to preserve their old orchards and plant new ones, conserve intact agricultural land and open space, avoid buy and dry scenarios, convert water intensive crops to orchard, and consider water banking / alternative transfer methods with water conserved.

Goal G: Comply with CO River Compact and Manage Risk – This project addresses goal G6: *Support strategies to mitigate the impact of a CO River Compact curtailment should it occur (SWBRT BIP, pg 18).* MORP has participated in community outreach meetings offered by the Colorado River Water Bank Work Group that is taking a proactive approach to planning for the likelihood that ongoing drought, population growth, and resulting water gap may cause a call on water in order to comply with the Colorado River Compact (also described on page 119 of the Colorado Water Plan). The main strategy discussed by the group has been to create a water bank by paying agricultural water users to temporarily reduce irrigation. Instead, as described in this project, MORP supports water efficiency and crop conversion opportunities for the potential to bank water to “close the gap”. Should a curtailment occur, farms that have developed more efficient, resilient systems will be better situated to grow into the future.

In describing the common theme to meet Colorado's agricultural needs, the **Colorado Water Plan (CWP)** states that multiple basins are “*approaching agricultural needs from an economic and productivity standpoint*”, and recognizes that “*Some western slope roundtables, such as the Southwest Roundtable, indicate that agriculture across the state is important, and have expressed support for strategies such as high-conservation to minimize the potential loss of irrigated acres*” (CWP chapter 6, pg 16). Furthermore, *meeting Colorado's supply-demand water gaps by using a grassroots approach* is identified as a critical action in the CWP, as well is *maintaining agricultural viability, facilitating alternative transfer methods, and supporting agricultural conservation and efficiency* (CWP chapter 10.3). The water activities described in this project work towards these ends. As a result, our local economy will benefit by conserving water to preserve the agricultural heritage of our region.

(1) Access Basin Implementation Plans or Education Action Plans from Basin drop down menu.

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Matching Requirements: Basin Account Requests	
<p><b>Basin (only) Account</b> grant requests require a 25% match (cash and/or in-kind) from the Applicant or 3<sup>rd</sup> party and shall be accompanied by a <b>letter of commitment</b> as described in the 2016 WSRF Criteria and Guidelines (submitted on the contributing entity's letterhead). Attach additional sheet if necessary.</p>	
Contributing Entity	Amount and Form of Match (note cash or in-kind)
Total Match	\$0
If you requested a Waiver to the Basin Account matching requirements, indicate the percentage you wish waived.	

Matching Requirements: Statewide Account Requests	
<p><b>Statewide Account</b> grant requests require a 50% match as described in the 2016 WSRF Criteria and Guidelines. A minimum of 10% match shall be from Basin Account funds (cash only). A minimum of 10% match shall be provided by the applicant or 3<sup>rd</sup> party (cash, in-kind, or combination). The remaining 30% of the required match may be provided from any other source (Basin, applicant, or 3<sup>rd</sup> party) and shall be accompanied by a <b>letter of commitment</b>. Attach additional sheet if necessary.</p>	
Contributing Entity	Amount and Form of Match (note cash or in-kind):
The Nature Conservancy	\$47,000
Montezuma Orchard Restoration Project	\$25,000
Southwest Basin Roundtable	\$25,000

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Matching Requirements: Statewide Account Requests	
Total Match	\$97,000
If you requested a Waiver to the Statewide Account matching, indicate % you wish waived. (Max 50% reduction of requirement).	

Related Studies
<p>Please provide a list of any related studies, including if the water activity is complimentary to or assists in the implementation of other CWCB programs.</p>
<p>The water activities in this project are complementary to activities to use crop switching, irrigation efficiency, and ATM's to plan for an ever drier future while preserving agriculture heritage and local economies.</p> <ol style="list-style-type: none"> <li>1. <a href="#">Agricultural Water Conservation in the Colorado River Basin: Alternatives to Permanent Fallowing Research Synthesis and Outreach Workshops – Crop Switching Report</a>. This report from Colorado State University/Colorado Water Institute explores the opportunities, challenges, and next steps in understanding how crop switching can help address water scarcity while minimizing harm to agriculture.</li> <li>2. <a href="#">Colorado Water – Alternative Transfer Methods: An Approach Towards Balancing Municipal and Agriculture Water Needs</a>. This issue of the Colorado Water Institute's regular publication provides an overview of tools and methods for reducing water use in agriculture. It provides a good summary of crop switching and the associated issues and considerations.</li> <li>3. <a href="#">Barley Dreams: An Arizona town gambles on beer to save water</a>. This article from The Nature Conservancy magazine describes a successful crop switch project in Arizona that has helped support the local agriculture economy and improve flows in the Verde River.</li> <li>4. <a href="#">Montezuma Valley Apple Market Study</a>. This study by Montezuma Orchard Restoration Project, funded in part by Colorado Department of Agriculture and United States Department of Agriculture, describes the history of apple orchards and production in Montezuma County, current and potential markets, and challenges and opportunities to meet those markets.</li> <li>5. <a href="#">Business Plan for Producing Apple Juice with a Mobile Juice Unit</a>. This plan written by Montezuma Orchard Restoration Project following completion of a successful <a href="#">feasibility study</a> - both funded in part by Colorado Department of Agriculture and United States Department of Agriculture - lays out the steps needed for MORP to turn on-farm food waste into a value-added juice product following a mission-driven business model.</li> </ol>

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Previous CWCB Grants
List all previous or current CWCB grants (including WSRF) awarded to both the Applicant and Grantee. Include: 1) Applicant name; 2) Water activity name; 3) Approving RT(s); 4) CWCB board meeting date; 5) Contract number or purchase order
None

Tax Payer Bill of Rights
The Tax Payer Bill of Rights (TABOR) may limit the amount of grant money an entity can receive. Please describe any relevant TABOR issues that may affect the applicant.
None



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

<b><u>Colorado Water Conservation Board</u></b>	
<b>Water Supply Reserve Fund</b>	
<b><u>Exhibit A - Statement of Work</u></b>	
<b>Date:</b>	<b>July 1, 2020</b>
<b>Water Activity Name:</b>	<b>Innovations in Irrigation to Support Heritage Apple Orchards in SW Colorado</b>
<b>Grant Recipient:</b>	<b>Montezuma Orchard Restoration Project</b>
<b>Funding Source:</b>	<b>Southwest Basin Account</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>Montezuma Orchard Restoration Project owns 36.35 acres of residential/agricultural land near Cortez, Colorado, irrigated with 35 shares of Montezuma Valley Irrigation Company water. Historically the property was used for orchards, but the majority of the trees were cut out by 1960 in favor of water intensive crops such as alfalfa. In collaboration with its partner The Nature Conservancy (TNC), MORP seeks to restore the site to heritage orchards while demonstrating crop conversion opportunities and water conservation methods to area farmers. The property known as the "Orchard Hub" is located in the San Juan basin on lands that use water from the Dolores River basin.</p> <p>This project will lay the ground work for future education and outreach opportunities tied to water conservation in orchards through the following activities: 1) create an efficient irrigation system design for 20.95 acres of reestablished heritage orchard (divided into three phases of installation) that can be used as a transferable template to farmers in the region, 2) create an irrigation water management plan that utilizes soil moisture monitors to inform irrigation scheduling and application rates, and 3) install the first phase of orchard establishment and irrigation improvements on 6.20 acres of Orchard Hub property.</p>	
<p><b>Objectives:</b> (List the objectives of the project. (PLEASE DEFINE ACRONYMS)).</p>	



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

1. Advance the mission of the Montezuma Orchard Restoration Project (MORP) to preserve Colorado's fruit growing heritage and to restore an orchard culture and economy to the southwestern region through the establishment of heritage orchard and efficient irrigation system with water management plan on the MORP orchard hub property.
2. Create a transferrable template for irrigation system design and operation to support further heritage orchard establishment in the SW that assesses how apple orchards, irrigation efficiency and irrigation water management can support a resilient agricultural economy in the SW in the face of climate change and diminishing water resources.

Tasks
Provide a detailed description of each task using the following format: (PLEASE DEFINE ACRONYMS)
<b><u>Task 1 – Irrigation System Design:</u></b>
<b>Description of Task:</b>
Working with an engineering consultant, this task will involve both the overall design for complete irrigation system on the entire orchard hub property as well as more detailed engineering for Phase 1. MORP anticipates installing the irrigation system in phases due to the availability of funding, labor, and other resources. The conceptual design allows for this phasing.
<b>Method/Procedure:</b>
The consulting engineer will utilize information on water rights, historical water availability, location of existing ditches and other irrigation system controls, property elevation and contours, and proposed phasing of irrigation system installation and orchard establishment in their design of the irrigation system. In contrast with conventional orchard production, the MORP heritage orchard will be planted on standard rootstock at a lower density to support a more resilient orchard with longer tree life. The irrigation system will be designed as an integrated dual system that allows for infrequent flood irrigation to support deep root development with precision micro-sprinklers for regular watering.
<b>Grantee Deliverable: (Describe the deliverable the grantee expects from this task)</b>



Last Update: March 17, 2020

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Tasks
MORP will receive a conceptual orchard infrastructure design including map(s) and a brief memo describing infrastructure and project phases of approximately equal size (acres) including an engineer's opinion of probable cost (OPCC) for full system buildout. MORP will also receive the design and construction drawings for Phase 1 of the irrigation system. This design and drawings will meet NRCS standards and specifications where applicable and be completed with a standard of care similar to NRCS TSP irrigation design projects in western Colorado.
<b>CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)</b>
MORP will provide a summary memo to the CWCB noting the completion of this task. Upon request, MORP can provide the overall conceptual design and the detailed design for Phase 1, along with associated maps and construction drawings.



Last Update: March 17, 2020

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

Tasks
Provide a detailed description of each task using the following format: (PLEASE DEFINE ACRO-NYMS)
<b>Task 2 – Create Irrigation Water Management Plan</b>
<b>Description of Task:</b>
Create an irrigation water management plan for the MORP orchard hub property that utilizes soil moisture monitors to inform irrigation scheduling and application rates for each phase of orchard growth (establishment, etc.). Evaluate potential changes in consumptive water use and changes in the volume and timing of diversions for the MORP orchard as compared to grass pasture and alfalfa.
<b>Method/Procedure:</b>
Work with a qualified engineering consultant and researchers at Southwestern Colorado Research Center to create an irrigation water management plan that conforms to NRCS technical standards while meeting the specific needs of growing heritage apples in the SW region.  Use the irrigation water management plan and data on consumptive irrigation requirements to evaluate potential changes in water use and water management; Evaluate how potential changes might impact regional water resources if heritage orchards were established on significant acreage in the SW (e.g. 500-1,000 acres).
<b>Grantee Deliverable: (Describe the deliverable the grantee expects from this task)</b>
Completed irrigation water management plan.  Report on potential changes in water use and water management between heritage orchards and grass pasture/alfalfa and implications for the SW region.
<b>CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)</b>
Completed IWM plan; Summary memo on potential changes in water use/water management.

Last Update: March 17, 2020

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Tasks	
Provide a detailed description of each task using the following format: (PLEASE DEFINE ACRO-NYMS)	
<b><u>Task 3 – Phase 1 Installation</u></b>	
<b>Description of Task:</b>	
This task will involve the purchase and installation of the Phase 1 irrigation system following the completion of the detailed engineering in Task 1. It will include all necessary improvements and additions to the main irrigation ditch delivery system as outlined in the conceptual design for the entire property, the irrigation infrastructure for the first phase of orchard establishment, and soil moisture sensors to support advanced irrigation water management. Under the dual-purpose irrigation concept, this will include gated pipe for occasional flood irrigation as well as the micro-sprinkler precision irrigation system. Operations of the irrigation system, including the creation of an Irrigation Water Management plan and the use of soil moisture sensors, is covered under Task 2.	
<b>Method/Procedure:</b>	
MORP will use a combination of in-house labor and hired contractors to prep the site and purchase and install the irrigation system as outlined in the engineering specifications from Task 1.	
<b>Grantee Deliverable: (Describe the deliverable the grantee expects from this task)</b>	
Completed installation and operational irrigation system for Phase 1.	
<b>CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)</b>	
MORP will prepare a report, including photos, summarizing the installation and operation of Phase 1 of the irrigation system, including a discussion of how MORP plans to include irrigation and water conservation in orchards as part of their regular education and outreach activities.	



Last Update: March 17, 2020

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

Tasks
Provide a detailed description of each task using the following format: (PLEASE DEFINE ACRO-NYMS)
<b><u>Task 4 – Phase 1 Orchard Establishment</u></b>
<b>Description of Task:</b>
Following the installation of the irrigation system in Task 3, this task will involve installing wildlife fencing and planting orchard trees on the Phase 1 block of the MORP property.
<b>Method/Procedure:</b>
Under this task, MORP will: <ul style="list-style-type: none"><li>• Purchase and install wildlife fencing to prevent deer and elk from disturbing apple trees.</li><li>• Identify priority apple varieties for overall MORP property and Phase 1.</li><li>• Obtain trees for Phase 1 from MORP nursery, etc.</li><li>• Plant trees and irrigate according to IWM plan.</li></ul>
<b>Grantee Deliverable: (Describe the deliverable the grantee expects from this task)</b>
Completed installation of wildlife fencing and tree planting on Phase 1.
<b>CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)</b>
Upon completion of this task, MORP will provide a summary update to CWCB describing the apple varieties MORP anticipates planting on the entire property and which varieties were selected and planted for Phase 1 along with maps and photos.



Last Update: March 17, 2020

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Tasks
Provide a detailed description of each task using the following format: (PLEASE DEFINE ACRO-NYMS)
<b><u>Task 5 – Develop a Transferrable Template to support orchard expansion</u></b>
<b>Description of Task:</b>
To support MORP's vision of helping revitalize heritage orchards and an orchard economy in the SW, this task will help transfer knowledge from the MORP orchard hub property to others in the SW that is either planted in orchards currently or is considering planting orchards. Through this task, MORP will develop a transferrable template for the design and operation of an advanced irrigation system that supports heritage orchards. This will include steps for designing an appropriate irrigation system, as well as information on irrigation water management, funding sources, and other support.
<b>Method/Procedure:</b>
MORP will work with a consultant to prepare the template based on the irrigation design and water management plan prepared for the MORP orchard hub property. MORP will make the template available on their website and incorporate into their outreach and education work.
<b>Grantee Deliverable: (Describe the deliverable the grantee expects from this task)</b>
Completed template that outlines how irrigation design and water management work can be applied to other properties in the SW that assesses how apple orchards, irrigation efficiency and irrigation water management can support a resilient agricultural economy in the SW in the face of climate change and diminishing water resources.
<b>CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)</b>
Complete template, link to website.



Last Update: March 17, 2020

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Tasks
Provide a detailed description of each task using the following format: (PLEASE DEFINE ACRO-NYMS)
<b><u>Task 6 – Grant Administration</u></b>
<b>Description of Task:</b>
This task will involve timely updates on project implementation and budget.
<b>Method/Procedure:</b>
MORP CoDirectors have worked on six state and federal grant projects and will participate in all levels of project coordination, implementation, reporting, and evaluation with oversight from MORP's Board of Directors and fiscal sponsor Onward! A Legacy Foundation.
<b>Grantee Deliverable: (Describe the deliverable the grantee expects from this task)</b>
Grantee will follow project timeline and keep record of accomplishments and receipts for accurate and timely reports and reimbursements.
<b>CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)</b>
Timely progress reports, reimbursement requests based on actual expenditures, and final report.



Last Update: March 17, 2020

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## Budget and Schedule

**Exhibit B - Budget and Schedule:** This Statement of Work shall be accompanied by a combined [Budget and Schedule](#) that reflects the Tasks identified in the Statement of Work and shall be submitted to CWCB in excel format. A separate excel formatted Budget is required for engineering costs to include rate and unit costs.

## Reporting Requirements

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

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

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

## 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.



Last Update: March 17, 2020

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

## 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.

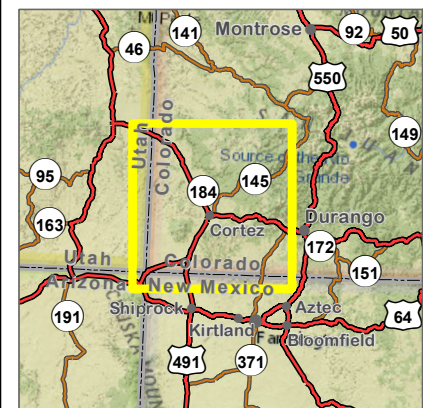
**EXHIBIT B - BUDGET AND SCHEDULE - Direct & Indirect (Administrative) Costs**

**Grantee Name: Montezuma Orchard Restoration Project**

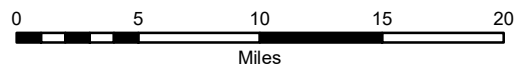
<b>Task No.</b> <sup>(1)</sup>	<b>Description</b>	<b>Start Date</b> <sup>(2)</sup>	<b>End Date</b>	<b>Matching Funds (cash &amp; in-kind)<sup>(3)</sup></b>	<b>WSRF Funds (Basin &amp; Statewide combined)<sup>(3)</sup></b>	<b>Total</b>
1	Irrigation System Design	11/1/2020	11/1/2023	\$ 11,900	\$ -	\$ 11,900
2	Create Irrigation Water Management Plan	11/1/2020	11/1/2023	\$ -	\$ 5,000	\$ 5,000
3	Phase 1 Installation	11/1/2020	11/1/2023	\$ 35,100	\$ 51,400	\$ 86,500
4	Phase 1 Orchard Establishment	11/1/2020	11/1/2023	\$ 25,000	\$ -	\$ 25,000
5	Develop Transferrable Template to establish orchard expansion	11/1/2020	11/1/2023	\$ -	\$ 5,000	\$ 5,000
6	Grant Administration	11/1/2020	11/1/2023	\$ -	\$ 3,500	\$ 3,500
						\$ -
						\$ -
						\$ -
						\$ -
						\$ -
						\$ -
						\$ -
						\$ -
						\$ -
<b>Total</b>				\$ 72,000	\$ 64,900	\$ 136,900

- Additionally, the applicant shall provide a progress report every 6 months, beginning from the date of contract execution





- State Line
- County Boundary
- US Highway
- State Highway
- Lake/Reservoir
- River



Coordinate System: NAD 1983 UTM Zone 13N



1:500,000

## Montezuma Orchard Resotration Project

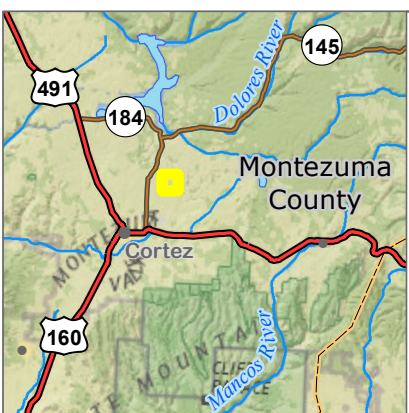
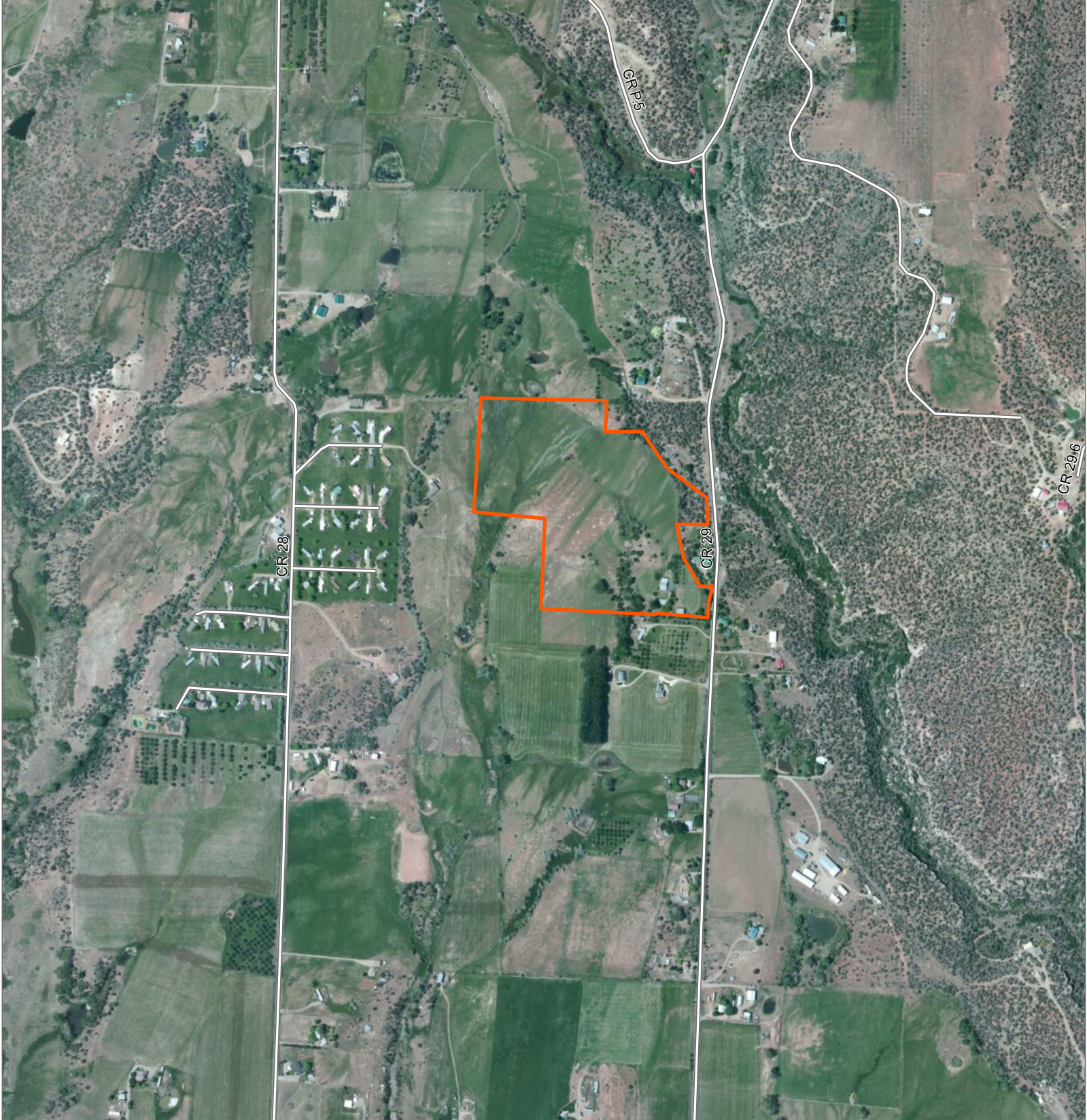
**Jasper Hall / Olson  
Orchard Property**  
"Orchard Hub"  
Vicinity Map

Montezuma County, Colorado

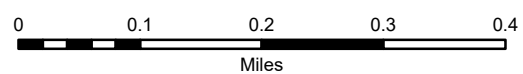


Date: 4/20/2020





- Jasper Hall / Olson Orchard Property "Orchard Hub"
- Local Roads
- State
- County



Coordinate System: NAD 1983 UTM Zone 13N



## Montezuma Orchard Resotration Project

**Jasper Hall / Olson Orchard Property**  
"Orchard Hub"  
**Project Area Map**

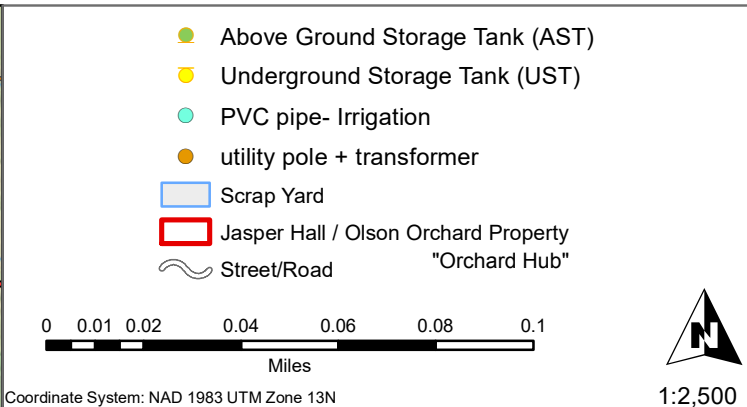
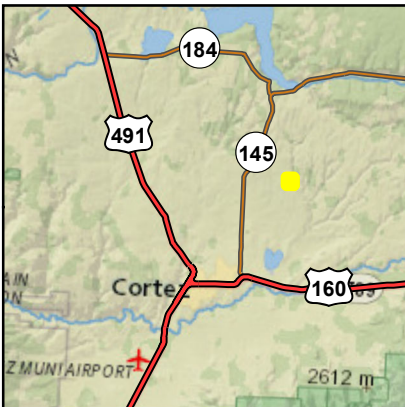
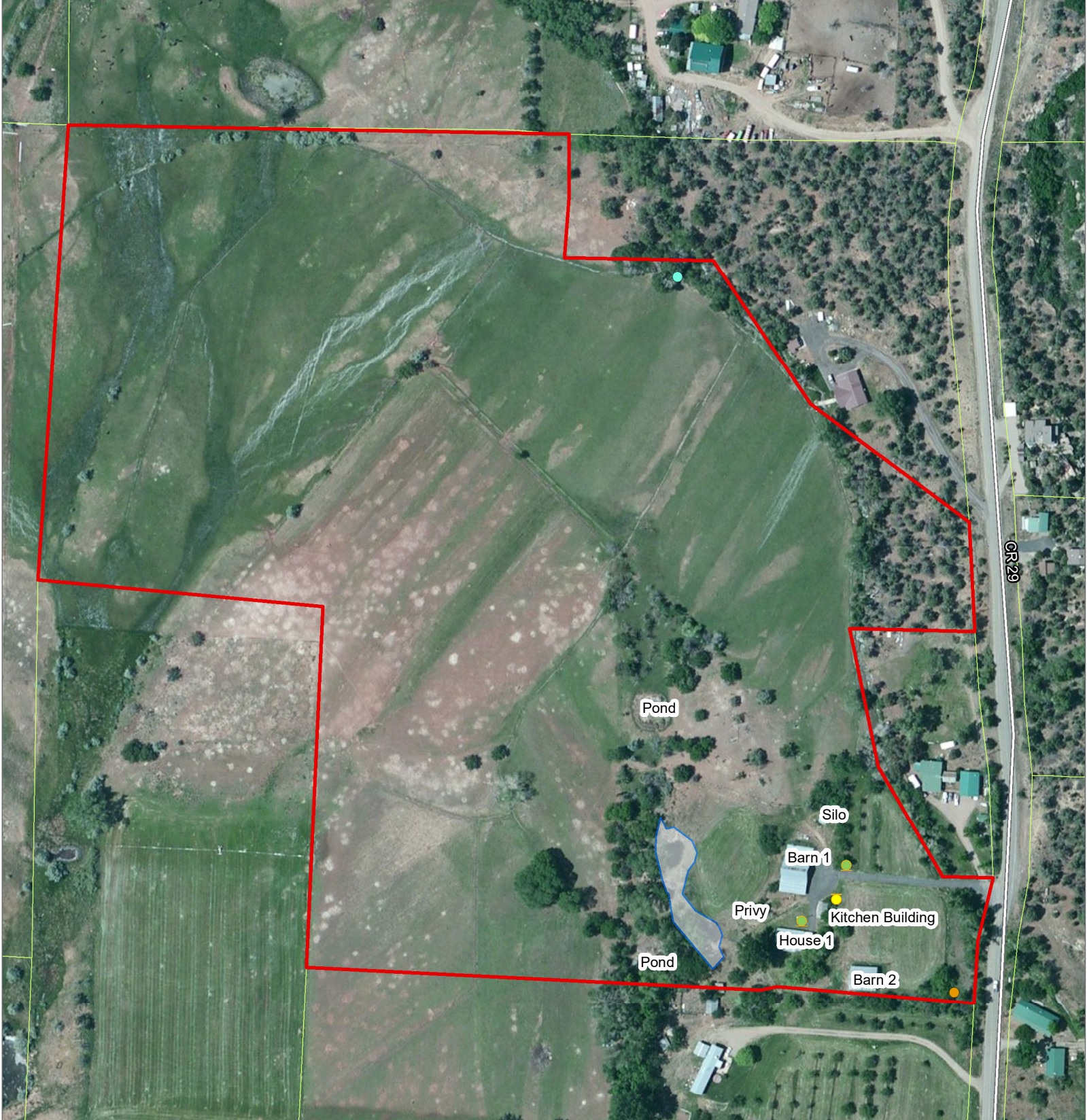
Montezuma County, Colorado

7.5-min USGS Quadrangle: Dolores West



Date: 7/9/2020





# Montezuma Orchard Restoration Project

## Site Detail Map

Montezuma County, Colorado  
Section 5, Township 36N, Range 15W

**Ecosphere**  
Environmental Services

Date: 7/9/2020



PRELIMINARY  
PLANS  
NOT FOR  
CONSTRUCTION

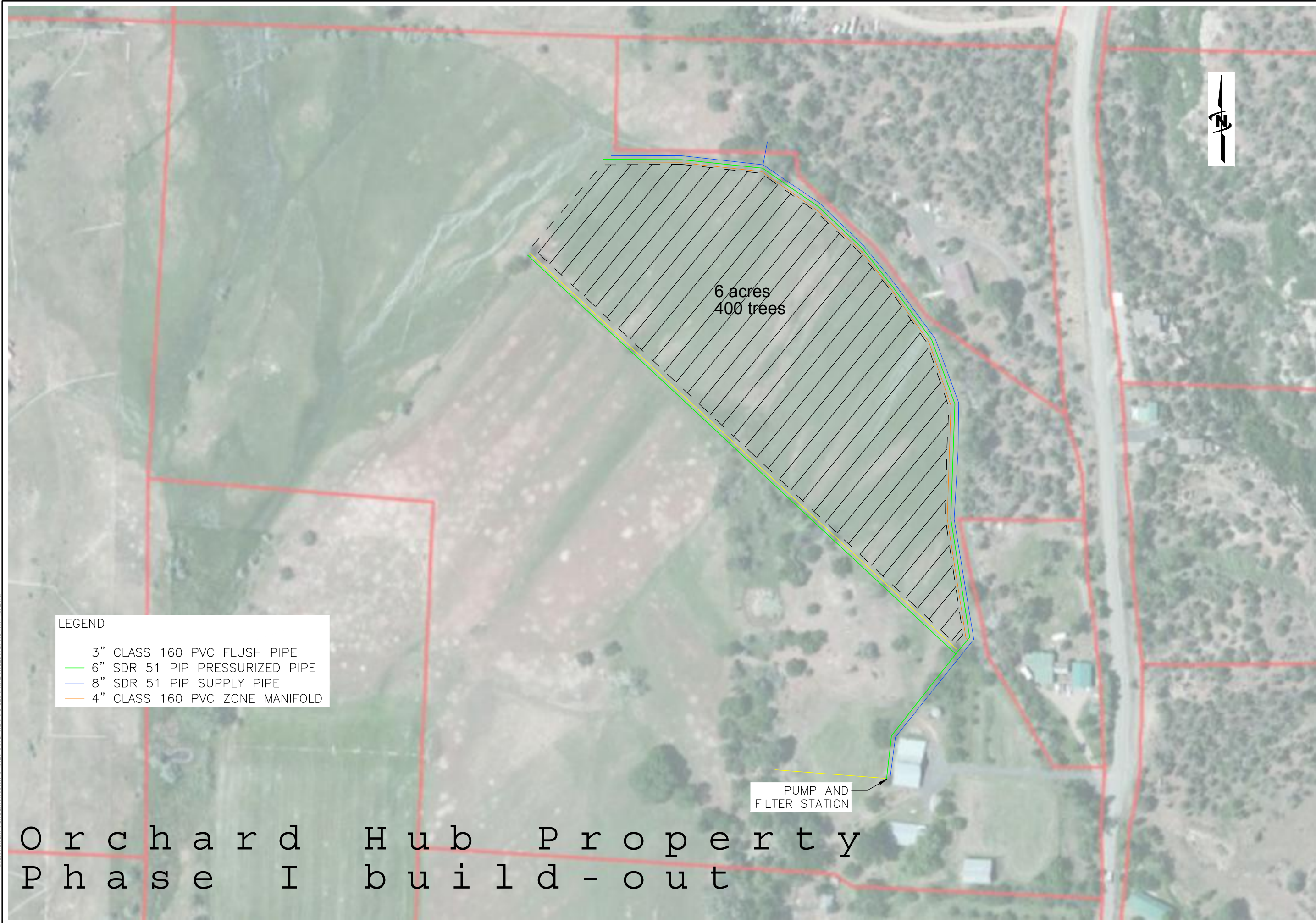
[illegible][illegible]

FILE: 81-20-002 MORP SP
JUB PROJ. #: #####
DRAWN BY: ##
DESIGN BY: ###
CHECKED BY: ###

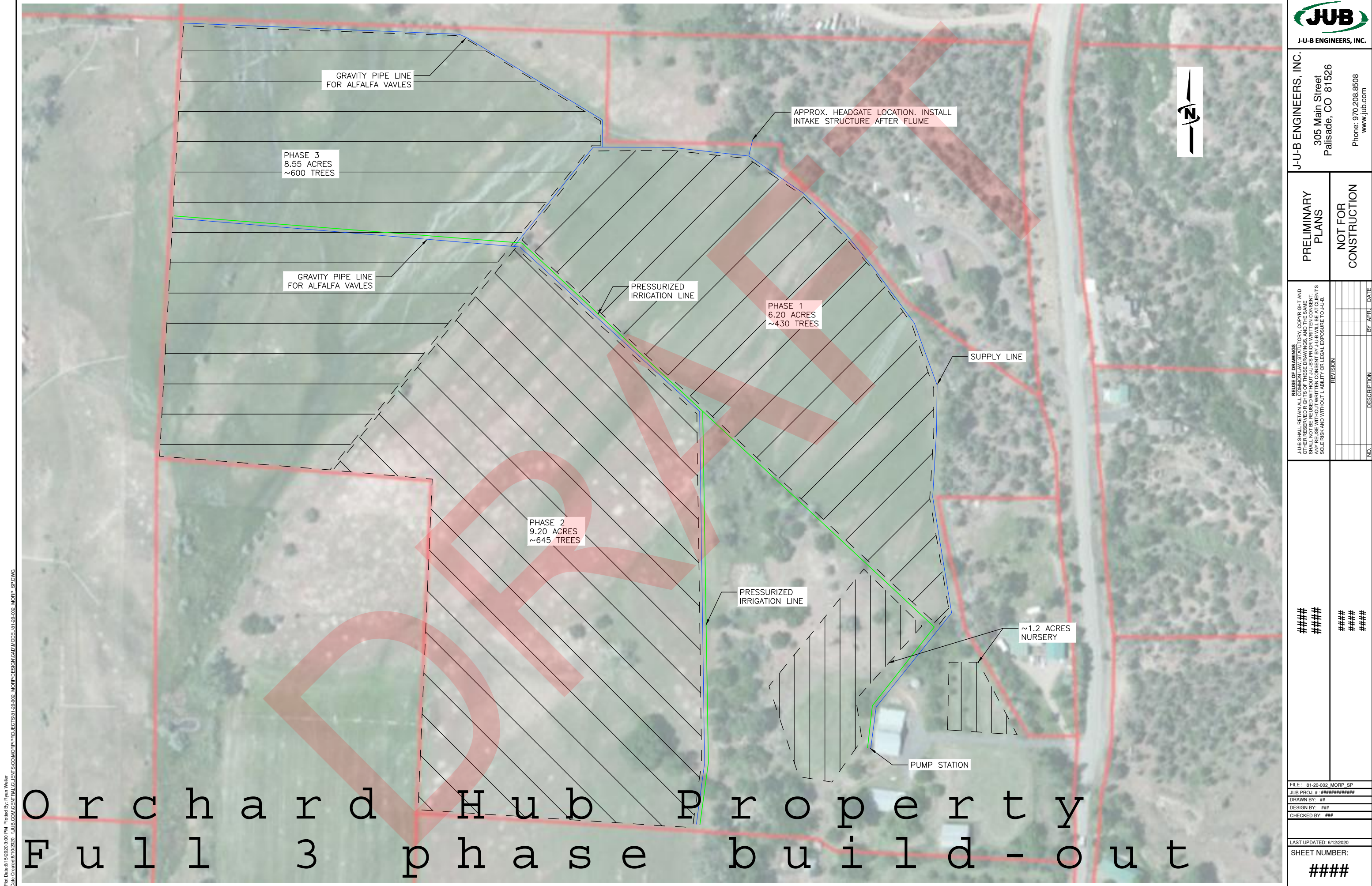
LAST UPDATED: 7/1/2020

SHEET NUMBER:


####







Plot Date: 9/15/2020 3:00 PM, Plotted By: Ryan Walker, Date Created: 10/10/2020, JUB.COM\CENTRAL\CLIENTS\COMORP\PROJECTS\81-20-002, MORP\DESIGN\CAD\MODEL\81-20-002, MORP, SP.DWG



J-U-B ENGINEERS, INC.

J-U-B ENGINEERS, INC.

305 Main Street  
Palisade, CO 81526

Phone: 970.208.8508  
www.jub.com

PRELIMINARY PLANS

NOT FOR CONSTRUCTION

REUSE OF DRAWINGS

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REVISION		NO.	DESCRIPTION	BY	DATE

####

####

####

####

FILE: 81-20-002 MORP.SP

JUB PROJ. #: #####

DRAWN BY: ###

DESIGN BY: ###

CHECKED BY: ###

LAST UPDATED: 6/12/2020

SHEET NUMBER:

####





The Nature Conservancy in Colorado  
2424 Spruce Street  
Boulder, CO 80302

tel (303) 444-2950  
fax (303) 444-2985  
[nature.org/colorado](http://nature.org/colorado)

July 6, 2020

Southwest Basin Roundtable  
Attn: Mike Preston

RE: Montezuma Orchard Restoration Project WSRF Grant Application

Dear Mr. Preston and members of the Southwest Basin Roundtable,

On behalf of The Nature Conservancy, I am pleased to offer our support for the Montezuma Orchard Restoration Project grant application. This project is in line with our organization's goal to provide sustainable food and water, and we believe it will help further develop the solutions necessary to maintain robust agriculture and healthy streams as we face increasing demands and decreasing water supplies here in Colorado and throughout the broader river basin.

The Nature Conservancy and the Montezuma Orchard Restoration Project (MORP) are pursuing a joint initiative to support heritage apple orchards entitled: *Growing Southwestern Colorado's Orchard Culture and Economy*. Through this initiative, the Conservancy will be working with MORP to establish heritage apple trees on a recently purchased property near Cortez that will be the hub for the broader initiative. With support from the Southwest Basin Roundtable, the Conservancy and MORP will implement best practices in irrigation management on the property; explore the economic viability of orchard cultivation in the region; test irrigation strategies in order to refine our understanding of how to best sustainably provide food and manage water; support related marketing, education, and outreach activities; and pilot a sustainable agriculture operation that provides wildlife habitat and carbon sequestration benefits.

To support this work, the Conservancy has agreed to provide up to \$47,000 in cash match. I strongly encourage the Southwest Basin Roundtable to fully support this important project.

Thank you for your time and consideration.

Sincerely,

A handwritten signature in cursive script that reads "Diana Lane".

Diana Lane, PhD  
Director of Sustainable Food and Water Programs, The Nature Conservancy – Colorado



SOUTHWESTERN COLORADO  
RESEARCH CENTER  
COLORADO STATE UNIVERSITY

16898 Road Z  
Yellow Jacket, CO 81335

July 6, 2020

Montezuma Orchard Restoration Project  
(970)- 565-3099  
MORP@montezumaorchard.org

Mr. Preston and members of the Southwest Basin Roundtable,

I am happy to extend this letter in support of the Montezuma Orchard Restoration Project (MORP) "*Innovations in Irrigation to Support Heritage Apple Orchards in SW Colorado*". I feel that the efforts of this organization provide a critical educational, stewardship, and infrastructure role for the local community.

Colorado State University's Southwestern Colorado Research Center (SWCRC) staff anticipate a number of collaborative roles with the Montezuma Orchard Restoration Project. To support this project, SWCRC will assist MORP in water monitoring and management activities to demonstrate irrigation efficiencies at the MORP orchard hub property. In addition, we have an ongoing project at multiple Agricultural Experiment Station locations trialing heritage and cider apple varieties. The work that MORP does in the region is invaluable, including hosting pruning and grafting workshops with our local Extension offices.

I am excited for the many opportunities that exist through partnerships with MORP to develop and promote our local food system in Montezuma County and the surrounding region. Please feel free to contact me with any additional questions.

Sincerely,

Katie Russell, Ph.D.

Manager/Research Scientist  
Colorado State University  
Southwestern Colorado Research Center