COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Colorado Water Conservation Board

Water Plan

Water Project Summary

Name of Applicant	Palmer Land Conservancy
Name of Water Project	Project-01877 Climate Resilient Agricultural Futures
Grant Request Amount	**$664,987.00**
Primary Category	$514,909.00
Water Storage & Supply	
Additional Funding Category	$150,078.00
Agricultural Projects	
Total Applicant Match	**$0.00**
Applicant Cash Match	
Applicant In-Kind Match	
Total Other Sources of Funding	**$2,471,288.00**
Gates Family Foundation	$500,000.00
CWLT Individual Donor	$50,000.00
Lincoln Institute of Land Policy	$250,000.00
Natural Resources Conservation Service	$965,000.00
Great Outdoors Colorado	$10,000.00
Telluray Foundation	$31,301.00
Colorado Water Conservation Board	$664,987.00
Total Project Cost	**$3,136,275.00**

Applicant & Grantee Information

Name of Grantee: Palmer Land Conservancy
Mailing Address: 102 South Tejon Street, Suite 360 Colorado Springs CO 80903
FEIN: 9,802,836

Organization Contact: Ed Roberson
Position/Title: Conservation Director
Email: ed@palmerland.org
Phone: 719-941-9491

Organization Contact - Alternate: Dillon O'Hare
Position/Title: Community Conservation Manager
Email: dillon@palmerland.org
Phone: 719-632-3236

Description of Grantee/Applicant

Since 1977, Palmer Land Conservancy has worked with individuals, private and public partners, and various communities to protect land forever including 20 of your favorite public parks and open spaces, important working farms and ranches, and iconic scenic views. We passionately promote the conservation and enjoyment of our region's most important natural assets that define why we love Colorado: its natural beauty, locally grown food, and outdoor recreation.

Type of Eligible Entity

- ☐ Public (Government)
- ☐ Public (District)
- ☐ Public (Municipality)
- ☐ Ditch Company
- ☐ Private Incorporated
- ☐ Private Individual, Partnership, or Sole Proprietor
- ■ Non-governmental Organization
- ☐ Covered Entity
- ☐ Other

Category of Water Project

- ■ Agricultural Projects
  Developing communications materials that specifically work with and educate the agricultural community on headwater restoration, identifying the state of the science of this type of work to assist agricultural users among others.
- ☐ Conservation & Land Use Planning
  Activities and projects that implement long-term strategies for conservation, land use, and drought planning.
- ☐ Engagement & Innovation Activities
  Activities and projects that support water education, outreach, and innovation efforts. Please fill out the Supplemental Application on the website.
- ☐ Watershed Restoration & Recreation
  Projects that promote watershed health, environmental health, and recreation.
- ■ Water Storage & Supply
  Projects that facilitate the development of additional storage, artificial aquifer recharge, and dredging existing reservoirs to restore the reservoirs' full decreed capacity and Multi-beneficial projects and those projects identified in basin implementation plans to address the water supply and demand gap.

Location of Water Project

Latitude	38.832026
Longitude	-104.823741
Lat Long Flag	Precise coordinates: Project coordinates are readily definable and precisely define the location of the project
Water Source	Arkansas River, Colorado River, Gunnison River
Basins	Arkansas; Gunnison; Colorado
Counties	Delta; Pueblo; Montrose; Mesa
Districts	

Water Project Overview

Major Water Use Type	Agricultural
Subcategory	Planning (e.g. watershed)
Scheduled Start Date - Design	
Scheduled Start Date - Construction	

Description

This project advances a systems approach to help Colorado farmland conservation organizations and their partners in agriculture protect agricultural water supplies while supporting multi-benefit projects that address

supply shortages and climate change. It uses scenario planning frameworks and decision-support technologies to initiate field-level actions that generate adaptive and restorative watershed-scale impacts. The frameworks and technologies enable organizations to identify, prioritize, and launch projects that improve agricultural-economic outputs, enhance ecosystem function, and optimize water use while addressing supply gaps within the agricultural sector.

WPG funds will help project proponents: (1) execute a multi-benefit, farmland-conservation/ATM-demonstration project in the Arkansas River Basin; (2) enhance the utility of the decision-support tool that informs the project—the Bessemer DSS—and which will be used to guide a series of subsequent, similar projects; (3) export Bessemer DSS approaches and technologies to partners on Colorado's West Slope—expanding water optimization efforts from ditch-scale to complex, multi-ditch, basin-scale environments; (4) develop a complementary technology that enables farmland conservation organizations to catalogue, monitor, and protect water rights in their conservation portfolios; and (5) publish an agricultural water futures roadmap informed by these efforts—to guide the work of farmland conservation organizations across the state.

Measurable Results

	New Storage Created (acre-feet)
	New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Nonconsumptive
	Existing Storage Preserved or Enhanced (acre-feet)
	New Storage Created (acre-feet)
	Length of Stream Restored or Protected (linear feet)
	Efficiency Savings (dollars/year)
	Efficiency Savings (acre-feet/year)
80	Area of Restored or Preserved Habitat (acres)
216	Quantity of Water Shared through Alternative Transfer Mechanisms or water sharing agreement (acre-feet)
	Number of Coloradans Impacted by Incorporating Water-Saving Actions into Land Use Planning
397,740	Number of Coloradans Impacted by Engagement Activity

Water Project Justification

The delivery of irrigation water that has served western agriculture for more than a century is becoming increasingly complex and uncertain—with prolonged drought, extreme weather, and intense competition for limited water supplies inducing significant instability in many of the West's most iconic and productive agricultural landscapes. Colorado's Water Plan considers a range of future conditions that will affect water use; in the 2019 Analysis and Technical Update to the Colorado Water Plan (Technical Update), the majority of scenarios developed to explore future conditions involve a hotter, drier state, with major constraints imposed upon agriculture by climate change (Technical Update, p. xvii).

Climate Resilient Agricultural Futures and Transformations (CRAFT) advances a systems approach to guide agricultural water protection and management in ways that sustain production and restore natural systems in the climate change era. The approach "crafts" a better future for agriculture using exploratory-scenario-planning and decision-support tools to guide on-farm projects that improve production while enhancing ecosystem function. CRAFT is the result of six-years of collaborations involving farmland conservation organizations, producers and producer organizations, water-focused foundations, the CWCB, the Bureau of Reclamation, Colorado State University, Harvard University, and numerous public and private partners. CRAFT's methodology addresses the unbalanced societal, economic, and environmental impacts of 20th century water appropriation and management practices with a 21st century approach that generates outcomes based upon the principles of sustainability, equity, and resilience. At the heart of CRAFT is a scenario-planning approach, backed by sophisticated analytics,

which guides the protection of agricultural water rights in water-constrained contexts—in ways that support better economic, environmental, and land use outcomes.

Colorado's Water Plan calls for the CWCB to "promote scenario planning and the use of adaptive strategies to respond to, mitigate, and prepare for climate change" (Colorado's Water Plan, Sec. 6.1, p. 6-14). It seeks to "provide technical support for [Basin Implementation Plans (BIPs)] through continued decision-support development and maintenance in order to explore municipal, agricultural, industrial, and environmental shortage analyses" (Colorado's Water Plan, Sec. 6.2, p. 6-57). And, it looks to "support the development of multipurpose projects and methods that benefit environmental…water needs as well as water needs for communities or agriculture" (Colorado's Water Plan, Sec. 6.6, p. 6-157). This CRAFT water plan grant (WPG) application—advanced by Palmer Land Conservancy (PLC), Colorado West Land Trust (CWLT), and the Agricultural Water Futures Program of the Babbitt Center for Land and Water Policy at the Lincoln Institute of Land Policy (LILP)—will implement conservation projects, create new conservation action plans, and improve CRAFT technologies and decision support tools to protect agricultural water rights while simultaneously advancing multi-benefit projects that restore natural systems and enhance agricultural economies.

WPG funds will be used to advance five undertakings. The undertakings, and their alignments with Colorado's Water Plan and BIP goals, are as follows:

1. Execute a multi-benefit, farmland-conservation/ATM-demonstration project in the Arkansas River Basin

Lead Organization: PLC

In 2009, the Board of Water Works of Pueblo (Pueblo Water), the City of Pueblo's municipal water provider, purchased 5,540 Bessemer Ditch shares from Pueblo County farmers. The purchase of the senior native rights provides some "insurance" against the threats that climate change imposes upon Pueblo Water's junior Colorado River rights, which make up a substantive portion of its water portfolio. The purchase will dry one-third (5,000 of 15,000 acres) of the farmland in three farm communities: St. Charles Mesa, Vineland, and Avondale. A 2017 study issued by Innovative Conservation Solutions (ICS) illustrates how the purchase is poised to dry-up some of Pueblo County's best farmland. Colorado's Water Plan seeks to avoid agricultural-to-municipal water transfers that result in dry-up. When dry-up must occur, both Colorado's Water Plan and the Arkansas BIP call for identified projects and processes (IPPs) to find ways to remove water from marginally productive lands in order to maintain irrigation on what ICS calls "Critical Production Areas" (CPA) (Arkansas BIP, Sec. 4, p. 216). From 2016-2019, CRAFT project proponents worked with Pueblo Water to establish a "substitution of dry-up" provision in its decree that makes strategic dry-up approaches more feasible. The substitution of dry-up provision enables remaining farmers and conservation groups to purchase CPAs that will otherwise be dried and restore water to those lands by substituting less productive areas for dry-up. These Dry-Up Candidate Areas (DCAs) focus dry-up on marginal farmlands with low production yields, where nonpoint source impairments can be mitigated and where wetlands, riparian corridors, and native ecosystems can be restored. The approach is voluntary and market based. In ICS studies undertaken with Bessemer farmers, it was determined that substitution of dry-up projects could improve farm real estate values, increase per-acre yields, and provide new farm access to both existing and new farm operations—significantly benefitting a farmer's bottom line. At scale, they could help maintain—even improve—Pueblo County's agricultural economy. This proposal advances the first substitution of dry-up project on the Bessemer: a buy-protect-sell transaction advanced by PLC, in partnership with Bessemer farmers, which creates multiple production and conservation benefits and has both farmland protection and water-sharing/ATM components.

Water plan goals addressed by this CRAFT undertaking include:

• [Execute] perpetual agricultural agreements, such as conservation easements (Colorado's Water Plan, Sec. 6.5.2, p. 6-143).
• [Execute] contractual agreements that allow for more long-term flexibility (an example is the [Continued Farming Program] in the Arkansas Basin [managed] by Aurora Water) (Colorado's Water Plan, Sec. 6.5.1, p. 6-143).
• [Develop] incentives to keep water in irrigated agriculture, in addition to developing alternative methods for urban transfer (Colorado's Water Plan, Sec. 6.5.1, p. 6-143).

2. Enhance the utility of the Bessemer DSS—the decision-support tool that informs the conservation/ATM demonstration project, and which will be used to guide a series of subsequent projects

Lead Organization: PLC

CRAFT proponents are looking to retain irrigation on as many as 3,000 Bessemer CPA acres that will otherwise be dried. In addition to substitution of dry-up projects, ATMs that retain more total irrigated land in production are being pursued. A 2021 ICS study funded by the CWCB indicates that continuing farming programs, supported by adjudicated augmentation plans, are highly viable on the Bessemer. Rotational fallow programs are also feasible. In addition to supporting the 2021 study, the CWCB also financed the development of the Bessemer DSS, a new technology designed to guide the development of substitution and ATM projects in ways that retain or improve Bessemer-driven agricultural-economic outputs. This dynamic modeling tool identifies farmland protection priorities, suggests on-farm BMPs (such as converting to sprinkler or drip irrigation, or restoring native vegetation), estimates the costs of those BMPs, quantifies obtainable water quality improvements, and forecasts agricultural-economic impacts under different dry-up and production scenarios. It enables users to compare, with GIS mapping and robust visual dashboards, what dry-up looks like under a "do-nothing" scenario compared with alternatives, and it allows users to create alternatives based upon their own preferences and inputs. For example: Do they want to protect CPAs, improve water quality, or both? Do they want to promote ATMs, or do they want to enable Pueblo Water to develop its full municipal yield, thus drying up 5,000 acres? If the latter, do they want to support substitution projects to keep the best lands in production while restoring important ecological areas? If so, on how many acres? The DSS generates scenarios based on these inputs. It then creates a field-level ranking system that shows what actions can be taken on what fields to best achieve the objectives of the alternative scenario. The DSS model demonstrates how integrated land use and water management creates better production, land use, and environmental outcomes; it shows how optimizing limited water supplies (through strategic land repurposing, more efficient irrigation systems, and water-sharing ATMs) can result in higher economic outputs on fewer irrigated acres while significantly improving water quality. WPG funds will be used to improve the performance of the tool and enable the DSS technology to be applied in larger, more complex environments—where producers face significant water supply constraints and viable pathways to preserve agriculture while restoring and sustaining natural systems are difficult to identify.

Water plan goals addressed by this CRAFT undertaking include:

• Integrate land use and water planning (Colorado's Water Plan, Sec. 6.3, p. 6-59-90)
• Promote scenario planning and the use of adaptive strategies to respond to, mitigate, and prepare for climate change" (Colorado's Water Plan, Sec. 6.1, p. 6-14).
• Provide technical support for [Basin Implementation Plans (BIPs)] through continued decision-support development and maintenance in order to explore municipal, agricultural, industrial, and environmental shortage analyses" (Colorado's Water Plan, Sec. 6.2, p. 6-57).
• [Ensure] agricultural economic productivity [keeps] pace with growing state, national, and global needs, even if some acres go out of production (Colorado's Water Plan, Sec. 6.5.2, p. 6-138).
• [Promote] municipal-agricultural water-use sharing [through]…methods [that] reduce the consumptive use of crops, which makes water available for municipalities by sharing the historic consumptive use amount

(Colorado's Water Plan, Sec. 6.4, p. 6-116)
• Support the development of multipurpose projects and methods that benefit environmental…water needs as well as water needs for communities or agriculture" (Colorado's Water Plan, Sec. 6.6, p. 6-157).
• Evaluate new water-supply projects and the potential for multiple benefits, including water quality protection and enhancement. Strive to ensure that project plans incorporate all water quality benefits (Colorado's Water Plan, Sec. 7.3, p. 7-32).
• Examine ways to design and operate new or existing supply projects to advance water quality objectives. Actively pursue incorporation of these design and operation considerations into proposed projects (Colorado's Water Plan, Sec. 7.3, p. 7-32).

3. Export Bessemer DSS approaches and technologies to partners in the Colorado and River and Gunnison River basins—expanding decision-making capabilities from ditch-scale to complex, multi-ditch, basin-scale environments

Lead Organization: CWLT

CRAFT proponents will execute a planning effort that develops a series of production, water rights, hydrological, and ecological analyses with a twofold purpose: (i) to produce a water strategy and conservation plan that guides CWLT agricultural water protection efforts; and (ii) to lay the analytical foundation necessary to build a robust, Bessemer-style decision support tool for key production regions in the Colorado and Gunnison River basins—one that expands the decision-making capabilities of the Bessemer DSS to more complex, multi-ditch, basin-scale environments impacted by climate change. This effort will advance the Colorado River BIP goal of "[developing] water-conscious land use strategies." It will support multiple BIP objectives and outcomes, including: (i) "sustain agriculture [by identifying] multi-purpose storage projects and methods that address the annual 100,000 acre-feet agricultural shortage;" (ii) "minimize potential for transfer of agricultural water rights [by promoting] conservation easements [and establishing] a set of quantifiable factors of agriculture pressures that can be measured and evaluated...to incentivize production and reduce [transfers];" and (iii) "maintain Interstate Compact deliveries to Lake Powell [and] ensure sufficient Lake Powell water level for uninterrupted hydroelectric power production" (Colorado BIP, p. 42-72) (note: Bessemer-style DSS tools would be highly effective in helping to evaluate demand management scenarios). The water strategy and conservation plan will examine water protection, production enhancement, and habitat restoration project priorities. It will develop new conservation easement language required by multi-benefit projects and identify potential conservation finance stacks available to advance those projects. It will also identify non-traditional projects that build climate resilience; for example: sustaining water-short orchards in Delta County through the development of a local ag-protection water bank; securing capital for ditch companies to improve infrastructure while addressing salinity control; supporting ag-to-ag water-sharing exchanges that preserve perennial crops in water-short-years; etc. CWLT will produce a detailed water strategy and conservation plan that outlines all findings, goals, and objectives. Consultants will assess the needs and opportunities for Bessemer DSS-style, decision-support tools to inform projects and will create a workplan for tool development, which will be undertaken in a subsequent phase of effort.

Water plan goals addressed by this CRAFT undertaking include:

• [Develop] incentives to keep water in irrigated agriculture (Colorado's Water Plan, Sec. 6.5.1, p. 6-143).
• [Support] perpetual agricultural agreements, such as conservation easements (Colorado's Water Plan, Sec. 6.5.2, p. 6-143).
• Promote scenario planning and the use of adaptive strategies to respond to, mitigate, and prepare for climate change" (Colorado's Water Plan, Sec. 6.1, p. 6-14).
• Support the development of multipurpose projects and methods that benefit environmental…water needs as well as water needs for communities or agriculture" (Colorado's Water Plan, Sec. 6.6, p. 6-157).

• Provide technical support for [Basin Implementation Plans (BIPs)] through continued decision-support development and maintenance in order to explore municipal, agricultural, industrial, and environmental shortage analyses" (Colorado's Water Plan, Sec. 6.2, p. 6-57).

4. Develop a complementary technology that enables farmland conservation organizations to catalogue, monitor, and protect water rights in their conservation portfolios

Lead Organization: CWLT

Dynamic modeling tools like the Bessemer DSS help land trusts identify innovative conservation opportunities, support agricultural economies, and evaluate tradeoffs associated with different landscape-scale actions. Land trusts using conservation easements also require tools to manage their deeded conservation interests, particularly water rights. They need to understand how and in what ways those rights may be at risk given the impacts of climate change or other external factors. Colorado's Water Plan supports conservation easements. Tools to effectively manage conservation easement interests, which have a recurring cost for land trusts, are an essential component of that support. ICS and CWLT representatives pioneered development of Locate—a Salesforce technology now used by The Nature Conservancy and over 50 of the nation's largest land trusts—more than a decade ago. Through this project, CWLT will work with contractors to create a new Locate application that helps land trusts manage their water rights portfolio and consider how CRAFT strategies can build resilience in these portfolios. The application will be made available to land trusts and other Locate users across Colorado.

Water plan goals addressed by this CRAFT undertaking include:

• [Support] perpetual agricultural agreements, such as conservation easements (Colorado's Water Plan, Sec. 6.5.2, p. 6-143).

5. Publish an agricultural water futures roadmap informed by these efforts—to guide the work of farmland conservation organizations across the state

Lead Organization: Babbitt Center/LILP

CRAFT is a replicable approach to agricultural water protection and management that can be applied in water-constrained contexts across the West. The Babbitt Center and LILP will standardize and articulate CRAFT approaches in a LILP Policy Focus Report and deliver that report to land trusts and their partners in agriculture in Colorado and across the nation. LILP Policy Focus Reports are published by Columbia University Press. The roadmap will accelerate adoption of CRAFT principles, approaches, and tools among land trusts and their partners in agriculture.

Water plan goals addressed by this CRAFT undertaking include:

• The CWCB and the basin roundtables will continue to use and promote scenario planning and the use of adaptive strategies to respond to, mitigate, and prepare for climate change. In partnership with project proponents, the CWCB will also encourage and facilitate the adoption of adaptive strategies for municipal, industrial, agricultural, environmental, and recreational needs as Colorado moves into the future. (Colorado's Water Plan, Sec. 6.1, p. 6-14).

The CRAFT partnership is powerful. PLC and CWLT have nearly a century of agricultural land protection efforts and 250,000 conserved acres between them. The two land trusts have been working together on CRAFT

projects since 2017. LILP has collaborated with land trusts on conservation matters for decades. The organization convened the group that formed the Land Trust Alliance back in 1982. LILP's history with CRAFT goes back to 2015. It began providing CRAFT projects with technical, financial, and policy assistance from the Babbitt Center in 2019. ICS, which pioneered the CRAFT approach in the Arkansas River Basin, serves as the lead consultant on Colorado CRAFT projects. ICS's partner, The Freshwater Trust, joined the effort in 2019 and develops the analytical models and decision support tools that support CRAFT. PLC, CWLT, LILP, ICS and TFT are aided on this WPG project by a number of technical experts and consultants, including Lyons Gaddis Attorneys & Counselors, J-U-B Engineers, CDR Associates, and BackOffice Thinking. Similar CRAFT work, funded by the City of Thornton, the Metro and South Platte basin roundtables, the CWCB, the Bureau of Reclamation, the Walton Family Foundation, and the Mighty Arrow Foundation (but which is not part of this grant application) is taking place in the South Platte (Cache la Poudre) Basin. CRAFT work in these three basins supports a learning community that can inform future work in other basins, particularly those facing mandatory curtailments, such as the Republican and Rio Grande.

Related Studies

Navigating the Wake of Municipal Water Sales: Alternatives to Improve Agricultural and Economic Outcomes on the Bessemer Ditch
Investing in Water Optimization: New Markets for Conservation on Colorado's Bessemer Ditch
The Economic Impacts of Dry-Up on Colorado's Bessemer Ditch: A Scenario-Based Analysis with a Review of 1041 Requirements, Best Management Practices, and Mitigation Policy Recommendations

Taxpayer Bill of Rights

NA

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.

Reporting Requirements

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

Final Report: At completion of the project, the applicant shall provide the CWCB a Final Report on the applicant's letterhead that: (1) Summarizes the project and how the project was completed. (2) Describes any obstacles encountered, and how these obstacles were overcome. (3) Confirms that all matching commitments have been fulfilled. (4) Includes photographs, summaries of meetings and engineering reports/designs. The CWCB will pay out the last 10% of the budget when the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the purchase order or grant will be closed without any further payment.

Payment

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

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

Performance Measures

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

WATER SHARING AGREEMENTS AND ALTERNATIVE TRANSFER METHODS SUPPLEMENTAL APPLICATION

Introduction & Purpose

The Colorado Water Plan sets a goal of supporting alternative transfer methods ("ATMs") and water-sharing agreements that address water supply gaps, while minimizing permanent dry-up of irrigated agriculture and reducing socioeconomic impacts to communities from traditional "buy-and-dry" transactions. ATMs and water-sharing agreements include a variety of approaches such as short-term leases and interruptible water supply agreements. ATMs and water-sharing agreements can meet a variety of water supply needs including drought recovery, environmental and recreational flows, groundwater sustainability, and compact compliance.

Colorado Water Plan grant funding for water-sharing agreements and alternative transfer methods aims to address the key barriers to the adoption, promote innovative uses of these tools to address water supply challenges, and encourage the development of projects that demonstrate the feasibility of water-sharing agreements and ATMs as a water supply tool. The grant fund prioritizes the development of new water-sharing arrangements and ATMs that seek to address an identified water supply gap, while generating significant regional and community benefit, and answer known research gaps in project development. Funding may be utilized for all stages of the water-sharing agreement and ATM project development process, but cannot be used for participation in any water court proceeding.

Application Questions

*The grant fund request is referred to as "project" in this application.

Does the proposed project build upon the work of former alternative water transfer methods and water sharing agreements, address critical barriers that have been identified (e.g. permanency, risk, infrastructure) in the Colorado Water Plan, or help address known research gaps? Does the proposed project address one or more key recommendation(s) in the 2020 *"Alternative Transfer Methods in Colorado"* status report?

PLC's substitution/ATM project on the Bessemer Ditch will accomplish the following:

1. Restore permanent water to an 80-acre CPA—a farm with Class 1 soils and optimal growing characteristics, which will otherwise be permanently dried by Pueblo Water's acquisition.
2. "Transfer" permanent water from an 80-acre DCA (composed of marginal production land that contributes to nonpoint-source impairments in the Arkansas River and its tributaries) to the CPA.
3. Extend the lease-back from Pueblo Water to the DCA from 2029 until at least 2039—retaining more Bessemer-irrigated land in production for a longer period of time.
4. Develop ecological restoration and revegetation plans for the DCA. Implement measures to restore areas with vegetative buffers and improve irrigation practices to mitigate water quality impairments while maintaining production through the lease extension period.
5. Permanently protect the CPA by means of a conservation easement, and create reserved rights in the easement that enable the farm owner to enter into other ATM (water-sharing or rotational-fallow) agreements with Pueblo Water—to potentially extend the lease-back period on other CPAs where Pueblo Water purchased Bessemer shares.

This project combines strategic land repurposing efforts with ATM strategies to keep irrigated land in production either longer or permanently. The ATM strategies include both continuing-farming programs supported by leases and/or adjudicated augmentation plans, as well as rotational-fallow programs. When

dry-up must occur, under the Bessemer substitution approach it occurs strategically—keeping the best lands in production while reclaiming areas to improve water quality, restore ecosystem function, and rebuild soil carbon. The approach meets the following ATM criteria in the ATM status report:

- Reduces the permanent dry-up of agricultural lands (the project permanently protects Prime Farmland (CPAs) that will otherwise be dried).
- Prevents the dry-up of irrigated lands at high-risk of dry-up in the next decade (the project does not mitigate hypothetical dry-up; it mitigates dry-up on land with leased water, with most leases terminating in 2029).
- Secures a water transfer to a new use for a term of 10 years or more (the project does this on two fronts: (i) it restores permanent water to the CPA that will otherwise be dried; and (ii) it extends leases to the DCA farm beyond a ten-year period (through 2039)).
- The water right ownership is retained in whole by the agricultural sector (the project restores irrigation rights on the CPA and puts Bessemer shares serving this land back into farmer ownership).
- Water remains in agricultural use as much as possible (in the case of the CPA, production will likely be sustained every year, but no less than 7 out of 10 years; in the case of the DCA, it could continue unabated through 2039 or longer; the water lease could also be transferred to a higher value farm at risk of going dry and the DCA could be reclaimed sooner).
- Provides a net economic benefit to agricultural working lands and rural communities (by making better use of limited water resources, the project improves annual yields and farm real estate values; it also supports greater total agricultural-economic outputs in the region).

The project has already surmounted significant barriers: it is enabled by Pueblo Water's decree; it takes advantage of "water optimization" market principles that incentivize this type of ATM activity (the market for substitutions exists because optimizing water use in this manner makes farm operations more profitable); and it has purchase options for the DCA in place.

Does the proposed project address a specific water supply shortfall and provide benefits to multiple sectors, including agricultural, municipal/industrial, environmental, and recreation sectors? How and to what extent the proposed project will improve water supply reliability in general in the region upon implementation of the project (e.g. reducing conflict over water resource management, increasing resilience to drought, sustaining agricultural and rural communities, etc.)?

The project addresses a projected shortfall. The shortfall will induce dry-up across one-third of all Bessemer-irrigated farmland. The project provides benefits to multiple sectors. It expands water-sharing capacity that avoids dry-up, and, when dry-up must occur, it occurs strategically—enabling the best lands to be retained in production while purposefully reclaiming areas to improve water quality, restore ecosystem function, rebuild soil carbon, and improve land use outcomes. These efforts can turn what would otherwise be a fragmented agricultural landscape into a landscape defined by concentrations of highly productive farms surrounded by healthy natural areas and riparian corridors. This project, and others like it, can be carried out in ways that promote water sharing or provide Pueblo Water with its full municipal yield. Either way, greater resilience is built into the farm community.

Are there complex issues, including issues of law or policy, that would need to be resolved before the project could be implemented? Can the project be implemented under existing legal frameworks? Does the project have local support and include diverse partnerships? Does the project complement or help implement other ongoing or recent planning or programming efforts in the project region?

As stated, the major issues of law and policy have been resolved. The retained jurisdiction process that will enable the project to move forward under Pueblo Water's decree is a 120-day process. Approvals need to be secured by Pueblo Water, the Bessemer Irrigating Ditch company, and Division 2 Water Court following review of an engineering report that quantifies historical consumptive use on the DCA and ensures the substitution maintains the consumptive use equivalencies of the CPA, thereby preventing expansion. (WPG funds will support the engineering report but will not be used in the retained jurisdiction process; no funding for the retained jurisdiction process is included in the grant budget.)

The project has the support of local farmers. Pueblo Water and the Bessemer Irrigating Ditch Company both endorsed the inclusion of the substitution of dry-up provision in Pueblo Water's decree, and (while this substitution/ATM project needs to be evaluated on its own merits following development of the engineering report) both entities are supportive of the alternative dry-up approach substitutions embrace. The project is the result of six years of planning, and project proponents look forward to implementing it.

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Colorado Water Conservation Board
Water Plan Grant – Statement of Work – Exhibit A

Statement Of Work	
Date:	**December 1, 2021**
Name of Grantee:	**Palmer Land Conservancy (Primary), Colorado West Land Trust, Lincoln Institute of Land Policy**
Name of Water Project:	**Climate Resilient Agricultural Futures and Transformations (CRAFT)**
Funding Source:	**Water Storage and Supply/Agricultural Projects**

Water Project Overview:

Climate Resilient Agricultural Futures and Transformations (CRAFT) will help Colorado farmland conservation organizations and their partners in agriculture protect agricultural water supplies while supporting multi-benefit projects that address supply shortages and climate change. CRAFT uses scenario planning frameworks and sophisticated decision-support technologies to support a systems approach to identifying, prioritizing, and launching land and water conservation projects that improve agricultural-economic outputs, enhance ecosystem function, and optimize water use to address supply gaps within the agricultural sector.

A systems approach to agricultural water protection and management in Colorado is critical at this time. The effects of rapid global change are seeding potential for collapse across entire agricultural-economic systems. In Weld County (South Platte Basin), Colorado, which ranks 8th in the nation for overall market value of agricultural products sold and is responsible for 27% of all Colorado agricultural sales, 18% of farmlands have been dried by municipal acquisitions in the past 15 years. On some of the largest ditches, more than 65% of the water that continues to irrigate farms is now in municipal ownership—meaning the majority of lands that continue to produce crops are poised to be dried. In the San Luis Valley (Rio Grande Basin), climate-reduced snowpack and groundwater overdraft has resulted in mandatory curtailment. Pumping reductions of 92,000 acre-feet per year in Subdistrict 1 are required to meet 2030 deadlines—a 36% cut in water use on 166,000 production acres, equivalent to 65,000 acres of dry-up in an area where agriculture provides 31% of all basic household income. In Delta, Mesa, and Montrose counties, Colorado's fruit-growing capital (Colorado and Gunnison basins), investment speculation—highlighted by the New York Times article, "Wall Street Eyes Billions in the Colorado's Water"—is creating a complex overlay across an already climate-stressed environment: the counties lie at the epicenter of the country's largest 2C hotspot. The accelerated effects of global warming in this region (more than double the global average) are inducing water shortages that forced producers to reduce forage outputs by 90%, sell 85% of cattle herds, and cut young orchard groves in order to maintain irrigation on mature production trees. In Pueblo County (Arkansas Basin), the Board of Water Works of Pueblo (Pueblo Water), the water utility for the City of Pueblo—long considered one of Colorado's most water-secure cities—purchased Bessemer Irrigating Ditch Company shares on 5,000 acres to balance a water rights portfolio heavily reliant on junior Colorado River supplies, which are increasingly at risk. The purchase will dry-up one third of the farmlands in communities where agriculture is the targeted growth sector, where Pueblo Chile and other high value products are reaching new markets, and where former Whole Foods CEO Walter Robb recently invested in the establishment of a regional food council.

These are not temporary crises. They are enduring, systemic, multi-faceted, transboundary, trans-jurisdictional, wickedly complex problems. To tackle them, a systems-level approach is needed—one that addresses the unbalanced societal, economic, and environmental impacts of 20th century water appropriation and management practices with a 21st century, climate-responsive approach that guides outcomes based upon the principles of sustainability, equity, and resilience.

Project Objectives:

The purpose of this proposal is to position Colorado's land trusts as champions and purveyors of this systems-level change. Advanced by Palmer Land Conservancy (PLC), Colorado West Land Trust (CWLT), and the Babbitt Center for Land and Water Policy at the Lincoln Institute of Land Policy (LILP)—this effort will create new farmland protection plans, implement multi-benefit farmland conservation projects, and improve CRAFT technologies and decision support tools to protect agricultural water rights and sustain agricultural economies while restoring natural systems. It will develop a CRAFT roadmap for land trusts and their partners in agriculture—a LILP Policy Report, published by LILP and Columbia University Press, which outlines approaches to building climate-resilient agricultural communities that support healthy natural systems in rapidly changing, water-constrained contexts. The report will highlight case studies from Colorado and the West.

This WPG, if funded, would support CRAFT implementation work in the Arkansas River Basin and launch CRAFT planning efforts in the Colorado and Gunnison River basins. PLC will lead efforts in the Arkansas Basin. CWLT will lead efforts in the Colorado and Gunnison basins. The Babbitt Center will lead efforts to develop and publish the CRAFT roadmap/policy report. While the CRAFT approach meets multiple WPG funding category objectives, PLC-led efforts in the Arkansas Basin, because they focus on conservation/ATM implementation projects, may best align with the Water Storage and Supply Projects category; CWLT-led efforts in the Colorado and Gunnison basins, because they focus more heavily on agricultural land and water conservation planning, may best align with the Agricultural Projects Category. The project partners have structured this application so the PLC and CWLT components can be evaluated as separate projects with stand-alone budgets if desired—an option discussed with CWCB staff. Tasks one and two, focusing on the Arkansas Basin, are PLC-led. Tasks three and four, focusing on the Colorado Basin, are CWLT led. The project proponents are not sure if or how the roadmap/policy report (Task 5) would be considered under a split-project funding scenario.

Tasks

Task 1 – Substitution/ATM Demonstration Project (Arkansas Basin/PLC)

Description of Task:

Pueblo Water's purchase of 5,540 Bessemer Ditch shares from Pueblo County farmers (which balances a water rights portfolio heavily reliant on at-risk, junior Colorado River supplies) will dry one-third (5,000 of 15,000 acres) of the farmland in three farm communities: St. Charles Mesa, Vineland, and Avondale. Furthermore, dry-up will occur on some of Pueblo County's best farmland. Irrigation will continue across a fragmented system of more marginal production lands. From 2016-2019, CRAFT project proponents worked with Pueblo Water to establish a "substitution of dry-up" provision in its decree to enable more strategic dry up approaches and water sharing opportunities. The substitution of dry-up provision enables remaining farmers and conservation groups to purchase Critical Production Areas (CPAs), which are poised to be dried, and restore permanent water to those lands by substituting less productive areas for dry-up. These Dry-Up Candidate Areas (DCAs) include farmlands with poor soils that produce low yields, in places where nonpoint source impairments can be mitigated and where wetlands, riparian corridors, and native ecosystems can be restored. In studies undertaken with Bessemer farmers that modeled projects based on farmers' business needs and objectives, it was determined that substitution of dry-up projects could be profitable—improving farm real estate values, increasing per-acre yields, and providing high quality farm access to both existing and new farm operations. This task will execute the first substitution of dry-up project on the Bessemer: a transaction advanced by PLC, in partnership with Bessemer farmers, which creates multiple production and conservation benefits and has both farmland protection and water-sharing/ATM components.

Method/Procedure:

PLC will execute the substitution/ATM demonstration project as a buy-protect-sell transaction. Dispossession, at the end of the project, will put properties back into the hands of local farmers. The purpose of executing the project as a buy-protect-sell transaction is to test assumptions and demonstrate proof of concept before initiating and supporting farmer-led substitution projects. The substitution demonstration project will be undertaken as follows:

PLC will buy an 80-acre DCA property owned by Jim Hanratty. This DCA comes with 72 shares of Bessemer water that surface irrigate 65 acres of ground. The property has shallow Class 3-8 soils with poor water retention characteristics. It produces low yields, has steep slopes, and contributes to nonpoint-source impairments in the Arkansas River and Sixmile Creek. PLC will install test wells on the Hanratty DCA to verify forecasted water quality impacts resulting from the transaction.

PLC will then buy a CPA, where Pueblo Water owns water (Pueblo Water shares continue to irrigate farms through temporary lease-back arrangements). (PLC is negotiating with multiple sellers.) It will "move" the Hanratty DCA shares to the new CPA property, thereby restoring permanent irrigation to the CPA—using a retained jurisdiction process that guides the substitution of dry-up. PLC will protect the CPA property with a conservation easement, install drip or sprinkler systems, and execute other on-farm improvements. The conservation easement will include a water sharing/ATM provision that could be utilized by Pueblo Water. It would enable the water utility to extend leases on other CPA land beyond 2039. (Note: once lands are dried by Pueblo Water, they cannot be reirrigated.) This, in turn, by keeping more ground in production for a longer period of time, creates opportunities for additional substitutions and ATMs to be established. (The most viable ATMs on the Bessemer are continuing farming (water-sharing) programs or rotational fallowing programs. For more information, see the Innovative Conservation Solutions (ICS) report: *The Economic Impacts of Dry-Up on Colorado's Bessemer Ditch*.)

PLC will work with Pueblo Water on revegetation plans for the DCA property. It will, at the end of the project, dispose of both properties. Proceeds will be returned to investors (in the case of program related

investments) or reinvested into future substitutions (in the case of grants). (Note: dispossession will likely occur after the end of the grant contract period; however, the substitution will be accomplished during the contract period, and cost-benefit analyses and other impacts will be assessed and reported on as part of the grant-funded effort.)

Expected benefits and outcomes include: (a) restoration of permanent water to an 80-acre CPA; (b) cessation of irrigation on an 80-acre DCA, which is contributing to nonpoint-source impairments in the Arkansas River and Sixmile Creek; (c) permanent protection of the CPA by means of a conservation easement; (d) potential for a new ATM to enable Pueblo Water to retain more irrigated land in production longer or permanently; (e) improvements to water quality and yields on the CPA through drip and/or sprinkler irrigation installation; and (f) ecological restoration and rebuilding of soil carbon on the DCA. The pilot transaction is expected to produce a financial return on investment that takes advantage of the land value capture inherent in substitution markets (water, applied to the best ground, increases farm real estate values).

Deliverable:

Task 1 deliverables include:

1. The acquisition of properties, initiation of substitution of dry-up efforts, and deployment of BMPs (e.g., new irrigation systems).

2. A technical report, describing the transaction and the application of the substitution of dry-up provision. Acquisition costs, transaction costs, water quality data, BMP implementation, conservation financing methods, anticipated ROI, difficulties encountered, and lessons learned will all be considered.

Tasks

Task 2 – Scalability Assessment and Decision Support System Upgrades (Arkansas Basin/PLC)

Description of Task:

CRAFT proponents are looking to retain irrigation on as many as 3,000 Bessemer CPA acres that will otherwise be dried. In addition to substitution of dry-up projects, ATMs are being explored. A 2021 ICS study funded by the CWCB indicates that a continuing farming program, supported by an adjudicated augmentation plan, may be the preferable ATM vehicle on the Bessemer. Rotational fallow programs are also feasible. A scalability assessment, involving outreach to farmers, county government officials, Pueblo Water staff, and other stakeholders, will assess optimal pathways to retain more CPAs in production in light of the 2021 study.

In addition to supporting the study, the CWCB financed the development of the Bessemer DSS, a new technology designed to guide the development of substitution and ATM projects in ways that retain or improve Bessemer-driven agricultural-economic outputs. This dynamic modeling tool identifies farmland protection priorities, suggests on-farm BMPs (such as converting to sprinkler or drip, or restoring native vegetation), estimates the costs of those BMPs, quantifies obtainable water quality improvements, and forecasts agricultural-economic impacts under alternative dry-up and production scenarios. It enables users to compare, with GIS mapping and robust visual dashboards, what dry-up looks like under a "do-nothing" scenario compared with alternatives, and it allows users to create alternatives based upon their own preferences and inputs. For example: Do they want to protect CPAs, improve water quality, or both? Do they want to promote ATMs, or do they want to enable Pueblo Water to develop its full municipal yield, thus drying up 5,000 acres? If the latter, do they want to support substitution projects to keep the best lands in production while restoring important ecological areas? If so, on how many acres? The DSS generates scenarios based on these inputs. It then creates a field-level ranking system that shows what actions can be taken on what fields to best achieve the objectives of the alternative scenario. The DSS model demonstrates how land use and water management can be better integrated, and it shows how optimizing limited water supplies can result in higher economic outputs on fewer irrigated acres while significantly improving water quality.

For example, the Bessemer DSS forecasts the water quality impacts of the substitution/ATM demonstration project. Reclamation and revegetation on the Hanratty DCA results in sediment uplift of 3.3 tons per acre per year, nitrogen uplift of 35.2 pounds per acre, and phosphorus uplift of 2.3 pounds per acre. From a water quality standpoint, this is a high-value transaction: the DCA ranks 19th in the DSS (out of 1,430 total fields) for sediment uplift potential and 60th for nitrogen. The Bessemer DSS also calculates the impacts transactions like this could have if brought to scale. For example, if similar projects are executed across 1,500 of the 5,000-plus-acre dry-up area—with irrigation improvements installed on eligible lands and just a slight increase in water-efficient, high-value crops —total economic output on the 10,000 acres of lands that remain after dry-up will be higher than current production on the existing 15,000 ($31.1 million instead of $29.1 million); employment will remain constant (530 FTEs); sediment loading will be reduced 85%; nitrogen 83%; and phosphorus 85%. These kinds of data outputs—made possible by the integration of economic input-output models with The Freshwater Trust's (TFT) BasinScout technology—are exceptionally useful to change agents (land trusts), regulators (Pueblo County), and those subject to regulations (Pueblo Water).

WPG funds, in addition to supporting the scalability assessment, will be used to improve the performance of the Bessemer DSS and enable the DSS technology to be applied in larger, more complex environments—larger basins with multiple surface and groundwater irrigation systems—where producers face significant water supply constraints and viable pathways to preserve agriculture while restoring and sustaining natural systems are difficult to identify.

Method/Procedure:
ICS, working with CDR Associates, will execute the scalability assessment. The organizations will conduct outreach to farmers and other Pueblo County stakeholders to understand aspirations and concerns regarding the future of farming in Pueblo County. They will work with county officials to explore opportunities and options to scale substitution and ATM projects in light of Pueblo County 1041 permit requirements, which mandate that water supply projects to address impacts to agriculture, address impacts to the local economy, and not significantly degrade any current or foreseeable future sector of the local economy—including agriculture. Pueblo Water has yet to apply for and secure its 1041 permit, which it will need in order to develop its water supplies. CDR will engage Pueblo Water to understand what voluntary cooperative agreements can be brokered, which help both Pueblo County agriculture and the City of Pueblo meet their water needs. TFT will improve the usability of the DSS by streamlining the flow of data and enhancing the stability of the data management steps in the application. It will restructure and redesign the DSS for more universal CRT applications. BasinScout analytics will be modified to account for crop rotations when estimating annual sediment and nutrient runoff, so that the tool can differentiate between the runoff driven by crop and irrigation systems (which change over time) and the runoff driven by unchanging bio-geo-physical factors such as soil type and field slope. This will improve the water quality impact estimation and targeting processes in the DSS. The tool will also be modified to dynamically estimate additional, relevant economic impacts for CRAFT scenarios. Finally, BasinScout includes a field-level feasibility assessment that determines, among other things, what type of irrigation modifications are feasible; TFT will update this methodology to better reflect the on-the-ground realities of Bessemer Ditch farms, which are highly conducive to drip systems. The revised DSS will have the ability to download scenario data and be portable across devices for onsite evaluations.
Deliverable:
Task 2 deliverables include: 1. A CPA protection scalability assessment. 2. A new, web-accessible version of the Bessemer DSS, as described above.

Tasks
Task 3 – Water Strategy & Conservation Plan (Colorado & Gunnison Basins/CWLT)
Description of Task:
CWLT will bring CRAFT approaches and technologies to its work in the Colorado and Gunnison basins. It will execute a planning effort that develops a series of production, water rights, hydrological, and ecological assessments to serve two purposes: (i) produce a water strategy and conservation plan that guides CWLT agricultural water protection efforts; and (ii) lay the analytical foundation necessary to build a robust, Bessemer-style decision support tool for key production regions in the Colorado and Gunnison basins—one that expands the decision-making capabilities of the Bessemer DSS to more complex, multi-ditch, basin-scale environments impacted by climate change. Assessments will focus on farm communities in the Grand, North Fork, and Uncompahgre valleys, which are home to some of the country's most valuable orchard ground, ranch lands, and scenic agritourism areas. These communities lie at the epicenter of America's largest 2C hot-spot. The accelerated effects of global warming here are more than double the global average. Increasing temperatures and persistent drought are resulting in a host of production challenges, and a higher percentage of water rights are falling out of priority than ever before. CRAFT assessments will identify opportunities to protect and optimize irrigation on these lands. The work is of national importance, since it addresses climate change impacts that are going to appear in other geographies as temperatures increase.
Method/Procedure:
ICS and TFT will execute geospatial, hydrological, and water rights analyses to inform CWLT planning. CWLT will lead community outreach efforts that, in combination with assessments, help establish conservation objectives on Colorado's Western Slope in order to advance two CWLT goals: (1) enhance the viability, sustainability, and resilience of agricultural communities and economies; and (2) protect and preserve natural habitats. Analyses of agricultural lands in Delta, Mesa, and Montrose counties will examine water security through qualitative engagements with stakeholders and quantitative data analytics. Assessments from these efforts will enable CWLT to: (a) prioritize land and water protection activities in more resilient, water-secure production areas; and (b) determine how to make important production areas that are less water-secure more resilient. Assessments will also examine potential types and structures of water protection projects, types and structures of production enhancement projects, types and structures of habitat enhancements projects, easement language restrictions required by various projects, and potential conservation finance stacks available to support projects. Consultants will identify what types of non-traditional projects can key off of existing policy, regulatory, and market drivers to address the unmet needs of communities in priority geographies—for example: increasing the resiliency of conserved, water-short orchards in Delta County through the development of a local ag-protection water bank; securing capital for ditch companies to improve infrastructure while addressing salinity control; supporting ag-to-ag water-sharing exchanges that preserve perennial crops in water short-years; etc. ICS and CWLT will produce a final plan document that outlines all findings, goals, and objectives. TFT will assess the needs and opportunities for Bessemer DSS-style, decision-support tools to inform projects and will develop a workplan for tool development. Development of the tool will be undertaken in a subsequent phase of effort.

Deliverable:
Task 3 deliverables include: 1. A CWLT water strategy and conservation plan, to include: a. goals and objectives; b. geographic priorities; c. production and ecosystem priorities; d. suggested projects and approaches; e. sample conservation easement language; and f. financing strategies. 2. A Colorado/Gunnison River Basin decision support tool workplan.

Tasks
Task 4 – Locate Water Rights Monitoring Technology (Colorado & Gunnison Basins/CWLT)
Description of Task:
Dynamic modeling tools like the Bessemer DSS will help land trusts identify innovative conservation opportunities, support agricultural economies, and evaluate tradeoffs associated with a variety of landscape-scale actions. Land trusts using conservation easements also require tools to manage their deeded conservation interests, particularly water rights. They need to understand how and in what ways those rights may be at risk given the impacts of climate change or other external factors. ICS and CWLT representatives pioneered development of Locate—a Salesforce technology now used by The Nature Conservancy and over 50 of the nation's largest land trusts—more than a decade ago. WPG funds will support CWLT's work with contractors to create a new Locate application that helps land trusts manage their water rights portfolio and consider how CRAFT strategies can build resilience in these portfolios. The application will be made available to land trusts and other Locate users across Colorado.
Method/Procedure:
ICS and TFT will work with CWLT to develop a conservation easement water rights encumbrance typology. The typology will consider factors such as: (1) appropriation and adjudication dates and type of water rights (surface, storage, groundwater, etc.); (2) important aspects of those rights (pre- vs. post-compact, percentage of time in priority, etc.); (3) delivery considerations (direct flow rights, shares in mutual ditch, linked to an augmentation plan, etc.); (4) climate risk considerations (climate model factors, potential effects of a shortage declaration, etc.); and (5) other considerations (special agreements, subordinations, etc. that might affect rights). Colorado land trusts that use the Locate application—including Colorado Open Lands, Colorado Cattlemen's Agricultural Land Trust, The Nature Conservancy, and others—will be engaged in typology development, to ensure the application meets a range of land trust needs. CWLT will then work with BackOffice Thinking, ICS, and TFT to create a new Locate application that will enable land trusts to catalogue and manage their water rights portfolio in ways that support CRAFT strategies. The application will enable display of geospatial water rights data and portability between BasinScout technologies.
Deliverable:
Task 4 deliverables include: 1. A new Salesforce Locate application, delivering functions as described above.

Tasks
Task 5 – Policy Focus Report (CRAFT Roadmap) (LILP)
Description of Task:
CRAFT is a replicable approach to agricultural water protection and management that can be applied in water-constrained contexts across the West. The Babbitt Center and LILP will help test and standardize CRT approaches and technological tools and bring these approaches and tools to land trusts and their partners across the country. A LILP Policy Focus Report will accelerate adoption of CRAFT among land trusts and their partners in agriculture.
Method/Procedure:
The Babbitt Center will participate in and help guide the CRAFT efforts advanced through this grant and conduct research and produce background reports on similar efforts taking place across the West. It will host two expert convenings to distill lessons learned and evaluate paths forward. It will develop a CRT roadmap based on this work, extrapolating upon, adding to, and exploring the nuances within the four critical components that have been identified as necessary to CRAFT efforts over the past six years (CRAFT assessments, CRAFT drivers, CRAFT technologies, and CRAFT capacity). The effort will culminate in publication and dissemination of a LILP Policy Focus Report. Columbia University will publish the report. LILP Policy Focus Reports deliver concise, evidence-based recommendations for policy makers, local leaders, students and scholars, and concerned citizens.
Deliverable:
Task 5 deliverables include: 1. Two convenings. 2. White papers and reports. 3. A LILP Policy Focus Report that creates a roadmap for CRAFT efforts, published by Columbia University Press.

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.

Reporting Requirements

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

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

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

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

Payment

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

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

Performance Measures

Performance measures for this contract shall include the following:
(a) Performance standards and evaluation: Grantee will produce detailed deliverables for each task as specified. Grantee shall maintain receipts for all project expenses and documentation of the minimum in-kind contributions (if applicable) per the budget in Exhibit C. Per Grant Guidelines, the CWCB will pay out the last 10% of the budget when the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the purchase order or grant will be closed without any further payment.
(b) Accountability: Per Grant Guidelines full documentation of project progress must be submitted with each invoice for reimbursement. Grantee must confirm that all grant conditions have been complied with on each invoice. In addition, per Grant Guidelines, Progress Reports must be submitted at least once every 6 months. A Final Report must be submitted and approved before final project payment.

(c) Monitoring Requirements: Grantee is responsible for ongoing monitoring of project progress per Exhibit A. Progress shall be detailed in each invoice and in each Progress Report, as detailed above. Additional inspections or field consultations will be arranged as may be necessary.
(d) Noncompliance Resolution: Payment will be withheld if grantee is not current on all grant conditions. Flagrant disregard for grant conditions will result in a stop work order and cancellation of the Grant Agreement.

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Colorado Water Conservation Board

Water Plan Grant - Exhibit C
Budget and Schedule

Prepared Date: 12/01/2021

Name of Applicant: Palmer Land Conservancy (Primary), Colorado West Land Trust, Lincoln Institute of Land Policy

Name of Water Project: Climate Resilient Agricultural Futures and Transformations (CRAFT)

Project Start Date: 04/01/2021

Project End Date: 03/31/2024

Task No.	Task Description	Task Start Date	Task End Date	Grant Funding Request	Match Funding	Total
1	Substitution/ATM Demonstration Project	4/1/2021	3/31/2024	$377,087	$969,653	$1,346,740
2	Scalability Assessment and Decision Support System Upgrade	4/1/2021	12/31/22	$69,573	$178,902	$248,475
3	Water Strategy & Conservation Plan	4/1/2021	12/31/22	$70,720	$97,662	$168,382
4	Locate Water Rights Monitoring Technology	4/1/2021	3/31/22	$44,441	$61,371	$105,812
5	Policy Focus Report (CRAFT Roadmap)	4/1/2021	3/31/24	$0	$275,000	$275,000
	Arkansas Basin Project Management	4/1/2021	3/31/24	$68,249	$175,496	$243,745
	Colorado/Gunnison Basin Project Management	4/1/2021	3/31/23	$34,916	$48,218	$83,134
			Total	$664,987	$1,806,301	$2,471,288

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Colorado Water Conservation Board

Water Plan Grant - Detailed Budget Estimate
Fair and Reasonable Estimate

Prepared Date: 12/01/2021
Name of Applicant: Palmer Land Conservancy (Primary), Colorado West Land Trust, Lincoln Institute of Land Policy
Name of Water Project: Climate Resilient Agricultural Futures and Transformations (CRAFT)

	Project Proponents				Direct Project Costs					Lead Consultants					Subcontractors							
Task/Sub-task	Colorado West Land Trust	Lincoln Institute of Land Policy	Palmer Land Conservancy	Subtotal	Property Acquisition	Property Holding	Equipment	Licenses	Subtotal	Innovative Conservation Solutions	The Freshwater Trust	J-U-B Engineers	Lyons Gaddis Attorneys & Counselors	Subtotal	BackOffice Thinking	CDR Associates	Retained Experts	Subtotal	Project Total	CWCB Funds	Matching Funds
	Varies	Varies	Varies		Lump Sum	Lump Sum	Lump Sum	Lump Sum		$ 225	$ 175	$ 193	$ 250		Varies	210	Varies				
Task 1 - Substitution/ATM Demonstration Project (PLC)																					
a. CPA Farmland Acquisition				$ -	$ 240,000				$ 240,000	$ 1,800			$ 9,000	$ 10,800				$ -	$250,800	$ 70,224	$ 180,576
b. DCA Farmland Acquisition				$ -	$ 736,470	$ 55,770			$ 792,240	$ 1,800			$ 9,000	$ 10,800				$ -	$803,040	$ 224,851	$ 578,189
c. Substitution of Dry-Up Legal and Engineering				$ -					$ -	$ 5,400		$ 63,000	$ 24,000	$ 92,400				$ -	$92,400	$ 25,872	$ 66,528
d. Substitution of Dry-Up Water Quality Baseline Monitoring				$ -					$ -	$ -		$ 27,000		$ 27,000				$ -	$27,000	$ 7,560	$ 19,440
e. CPA Irrigation Upgrades (80 Acres)				$ -			$ 160,000		$ 160,000	$ -				$ -				$ -	$160,000	$ 44,800	$ 115,200
f. Pilot Project Report				$ -					$ -	$ 13,500				$ 13,500				$ -	$13,500	$ 3,780	$ 9,720
																			$1,346,740	**$377,087**	**$969,653**
Task 2 - Scalability Assessment and Decision Support System Upgrades (PLC)																					
a. Scalability Assessment				$ -					$ -	$ 39,800			$ 8,000	$ 47,800		$ 45,850		$ 45,850	$93,650	$ 26,222	$ 67,428
b. DSS Rebuild				$ -					$ -	$ 5,400	$ 68,250			$ 73,650				$ -	$73,650	$ 20,622	$ 53,028
c. New Logic Models for Potential Conditions Load				$ -					$ -	$ 2,700	$ 20,125			$ 22,825				$ -	$22,825	$ 6,391	$ 16,434
d. IMPLAN Licensing for Dynamic Economic Modeling				$ -				$ 8,000	$ 8,000	$ 1,400	$ 2,800			$ 4,200				$ -	$12,200	$ 3,416	$ 8,784
e. Bessemer-Specific Irrigation BMP Methodology				$ -					$ -	$ 2,700	$ 10,500			$ 13,200				$ -	$13,200	$ 3,696	$ 9,504
f. Export and Download Capabilities				$ -					$ -	$ 1,800	$ 11,900			$ 13,700				$ -	$13,700	$ 3,836	$ 9,864
g. UI/UX Improvements				$ -					$ -		$ 19,250			$ 19,250				$ -	$19,250	$ 5,390	$ 13,860
																			$248,475	**$69,573**	**$178,902**
Arkansas Basin Project Management (PLC)																					
a. Project Management			$ 176,700	**$ 176,700**					$ -	$ 8,100	$ 1,400		$ 1,000	$ 10,500		$ 1,680		$ 1,680	$188,880	$ 52,886	$ 135,994
b. Coordination and Grant Reporting				$ -					$ -					$ -				$ -	$0	$ -	$ -
c. Overhead			$ 44,865	**$ 44,865**					$ -					$ -				$ -	$44,865	$ 12,562	$ 32,303
d. Travel			$ 3,600	**$ 3,600**					$ -	$ 2,000				$ 2,000		$ 1,400	$ 3,000	**$ 4,400**	$10,000	$ 2,800	$ 7,200
e. Other Direct Expenses				$ -					$ -					$ -				$ -	$0	$ -	$ -
																			$243,745	**$68,249**	**$175,496**
Task 3 - Water Strategy & Conservation Plan (CWLT)																					
a. Outreach				$ -					$ -	$ 14,850		$ 4,632	$ 3,000	$ 22,482				$ -	$22,482	$ 9,442	$ 13,040
b. Data Gathering				$ -					$ -	$ 1,800	$ 3,960	$ 772		$ 6,532				$ -	$6,532	$ 2,743	$ 3,789
c. Geospatial Analysis				$ -					$ -	$ 5,400	$ 15,840	$ 1,544	$ 2,000	$ 24,784				$ -	$24,784	$ 10,409	$ 14,375
d. Analytical Assessment				$ -					$ -	$ 5,400	$ 5,940	$ 1,544	$ 10,000	$ 22,884			$ 7,200	$ 7,200	$30,084	$ 12,635	$ 17,449
e. Geographic Prioritization				$ -					$ -	$ 7,200	$ 8,580	$ 1,544	$ 2,000	$ 19,324				$ -	$19,324	$ 8,116	$ 11,208
f. Goals and Objectives Development				$ -					$ -	$ 3,600			$ 1,000	$ 4,600				$ -	$4,600	$ 1,932	$ 2,668
g. Project Development Approach (Type and Focus)				$ -					$ -	$ 7,200	$ 1,320	$ 772	$ 1,000	$ 10,292				$ -	$10,292	$ 4,323	$ 5,969
h. Non-traditional Projects Identification				$ -					$ -	$ 4,500	$ 2,640	$ 3,860	$ 2,000	$ 13,000				$ -	$13,000	$ 5,460	$ 7,540
i. DSS Needs Identification and Scope of Work Development				$ -					$ -	$ 3,600	$ 3,960			$ 7,560				$ -	$7,560	$ 3,175	$ 4,385
j. Capacity and Capital Needs Assessment				$ -					$ -	$ 3,600	$ 660			$ 4,260				$ -	$4,260	$ 1,789	$ 2,471
k. Final Plan Development				$ -					$ -	$ 21,600	$ 1,320	$ 1,544	$ 1,000	$ 25,464				$ -	$25,464	$ 10,695	$ 14,769
																			$168,382	**$70,720**	**$97,662**
Task 4 - Locate Water Rights Monitoring Technology (CWLT)																					
a. CE Water Encumbrance Inventory				$ -					$ -					$ -				$ -	$0	$ -	$ -
b. CE Water Encumbrance Typology Development				$ -					$ -	$ 8,100	$ 2,640	$ 3,088	$ 10,000	$ 23,828				$ -	$23,828	$ 10,008	$ 13,820
c. CE Water Encumbrance Catalogue Development				$ -					$ -	$ 5,400	$ 19,800	$ 1,544	$ 4,000	$ 30,744				$ -	$30,744	$ 12,912	$ 17,832
d. Locate Integration				$ -					$ -	$ 3,600	$ 2,640			$ 6,240	$ 45,000			$ 45,000	$51,240	$ 21,521	$ 29,719
																			$105,812	**$44,441**	**$61,371**
Colorado/Gunnison Basins Project Management (CWLT)																					
a. Project Management	$ 45,450			**$ 45,450**					$ -	$ 8,100	$ 5,940	$ 3,474	$ 4,500	$ 22,014				$ -	$67,464	$ 28,335	$ 39,129
b. Coordination and Grant Reporting	$ 6,520			**$ 6,520**					$ -	$ 5,400				$ 5,400				$ -	$11,920	$ 5,006	$ 6,914
c. Overhead				$ -					$ -					$ -				$ -	$0	$ -	$ -
d. Travel				$ -					$ -	$ 2,000		$ 250	$ 1,500	$ 3,750				$ -	$3,750	$ 1,575	$ 2,175
e. Other Direct Expenses				$ -					$ -					$ -				$ -	$0	$ -	$ -
																			$83,134	**$34,916**	**$48,218**
Task 5 - Policy Focus Report (CRAFT Roadmap) (LILP)																					
a. Convenings		$ 15,000		**$ 15,000**					$ -					$ -				$ -	$15,000	$ -	$ 100,000
b. White Papers		$ 110,000		**$ 110,000**					$ -					$ -				$ -	$110,000	$ -	$ 25,000
c. Policy Focus Report		$ 150,000		**$ 150,000**					$ -					$ -				$ -	$150,000	$ -	$ 150,000
																			$275,000	**$0**	**$275,000**
TOTAL																			**$2,471,288**	**$664,987**	**$1,806,301**

November 27, 2021

Colorado Water Conservation Board
Colorado Department of Natural Resources
1313 Sherman St., Room 718
Denver, CO 80203

To whom it may concern:

I am writing to express my support for Palmer Land Conservancy's December 2021 application for the CWCB Water Plan Grant. As a the CWCB's former Agriculture and Rural Resiliency Policy Specialist, I am well versed in the details related to a wide range of water supply projects, and I have extensive experience evaluating the merits of potential grant applications. Having worked closely with Palmer on a CWCB-funded project in previous years, I am confident that the water conservation work Palmer is leading in Pueblo County will have positive implications not just locally, but in other water-challenged regions of Colorado.

While Palmer is the applicant for this grant, I am thrilled that the project is a joint effort between Palmer and the Colorado West Land Trust (CWLT). Palmer and CWLT are leading cutting-edge, impactful work related to water and irrigated farmland on their respective sides of the state. Their partnership will produce concrete on-the-ground solutions to water scarcity, as well as lessons that can be shared and applied by other water-focused groups in the state. Additionally, the Babbitt Center for Land and Water Policy, the Lincoln Institute of Land Policy, The Freshwater Trust, and Innovative Conservation Solutions will all be contributing to this project, which further expands the team's expertise, ability to efficiently execute, and capacity to share knowledge when the project is complete.

I believe this project fits well within the CWCB's criteria and goals, and I believe the CWCB's funding will be fully leveraged to ensure the greatest impact. Thank you for your consideration.

Regards,

Alex Funk

Alexander Funk
Director of Water Resources and Senior Counsel

November 30, 2021

Colorado Water Conservation Board
Colorado Department of Natural Resources
1313 Sherman St., Room 718
Denver, CO 80203

To whom it may concern:

I am writing to express my support for Palmer Land Conservancy's December 2021 application for the CWCB Water Supply Grant. As a Pueblo native and the current Coordinator of the Pueblo Food Project, I have a deep understanding of agriculture's critical role in Pueblo County. Agriculture has long been a vital part of Pueblo's economic and cultural identity, and it is imperative that we implement creative solutions to ensure that Pueblo farms are not dried up foregoing our food future. For more than six years, Palmer Land Conservancy has been leading innovative water conservation work on the Bessemer Ditch—a project that offers practical, realistic strategies to ensure that the most productive farms remain in production, while also allowing for Pueblo's municipal growth. This proposed CWCB grant will allow Palmer to leverage its current resources to continue to push forward these important community conservation initiatives.

While Palmer is the primary applicant for this grant, I am thrilled that the project is a joint effort between Palmer and the Colorado West Land Trust (CWLT). Palmer and CWLT are leading cutting-edge, impactful work related to water and irrigated farmland on their respective sides of the state. Their partnership will produce concrete on-the-ground solutions to water scarcity, as well as lessons that can be shared and applied by other water-focused groups in the state. Additionally, the Babbitt Center for Land and Water Policy, the Lincoln Institute of Land Policy, The Freshwater Trust, and Innovative Conservation Solutions will all be contributing to this project, which further expands the team's expertise, ability to efficiently execute, and capacity to share knowledge when the project is complete.

I fully support Palmer's application and greatly appreciate the CWCB's interest in supporting innovative and effective water conservation initiatives.

Warmly,

Monique Marez

Monique Marez
Strategic Advisor, Pueblo Food Project

PUEBLO COUNTY
COLORADO

BOARD OF COUNTY COMMISSIONERS

Epimenio Griego, District 1 | Garrison M. Ortiz, District 2 | Chris Wiseman, District 3

November 30, 2021

Colorado Water Conservation Board
Colorado Department of Natural Resources
1313 Sherman St., Room 718
Denver, CO 80203

To whom it may concern:

I am writing to express my support for Palmer Land Conservancy's December 2021 application for the CWCB Water Supply Grant. In my current role as Pueblo County Commissioner, as well as throughout my entire career, I have worked closely with Colorado's agricultural communities. I have seen first-hand the role that effective and intentional water management plays in maintaining and bolstering agricultural communities, and I am grateful for the important contributions from the CWCB. I have been very impressed with Palmer's ongoing water conservation work on Pueblo County's Bessemer Ditch, and I support their efforts to implement these cutting-edge practices in Pueblo County and beyond.

While Palmer is the primary applicant for this grant, I am thrilled that the project is a joint effort between Palmer and the Colorado West Land Trust (CWLT). Palmer and CWLT are leading cutting-edge, impactful work related to water and irrigated farmland on their respective sides of the state. Their partnership will produce concrete on-the-ground solutions to water scarcity, as well as lessons that can be shared and applied by other water-focused groups in the state. Additionally, the Babbitt Center for Land and Water Policy, the Lincoln Institute of Land Policy, The Freshwater Trust, and Innovative Conservation Solutions will all be contributing to this project, which further expands the team's expertise, ability to efficiently execute, and capacity to share knowledge when the project is complete.

I feel that this project will be impactful here in Pueblo County, as well as in other water-challenged regions of Colorado. I support this application and greatly appreciate your consideration.

Regards,

Chris Wiseman

Chris Wiseman
Pueblo County Commissioner, District 3

Historic Courthouse
215 W. 10th Street
Pueblo, CO 81003

719.583.6000 (main)
719.583.6701 (fax)
http://county.pueblo.org