

Upper Colorado River Commission



Request for Proposals for Professional Services

RFP #2024-01-IUWG-UCRC

Solicitation Date: December 11th, 2024
Due Date for Submission: January 17th, 2025

I. ADVERTISEMENT

REQUEST FOR PROPOSALS – 2024-01-IUWG-UCRC

EMERY COUNTY IRRIGATION EFFICIENCY PROJECT

The Upper Colorado River Commission (UCRC) hereby issues this Request for Proposals (RFP) Number 2024-01-IUWG-UCRC **to conduct an analysis of irrigation efficiency at the field and canal scale in Emery County, Utah.** For this Project, we seek to contract with a College/University, Research Institute, or Non-Profit that can sponsor a post-doctoral researcher. We will consider other academic candidates on a case-by-case basis. This work will involve the Colorado River Authority of Utah (CRAU) and UCRC staff and will contribute to technical efforts being undertaken by the Upper Division States of Colorado, New Mexico, Utah, and Wyoming. This work will focus on estimating and verifying changes in on-farm water use as well as riparian and incidental use in Emery County, Utah with the goal of supporting water management objectives in Utah and across the Upper Colorado River Basin.

All proposals must be submitted by 12 P.M. Mountain Time, January 17th, 2025, via email to Alyx Richards, Programs Coordinator, at arichards@ucrcommission.com. The RFP number and title should be used in the subject line. By submitting a Proposal for the requested services, each Offeror represents that their Proposal is in compliance with the regulations and requirements referenced within this RFP.

EQUAL OPPORTUNITY EMPLOYMENT: All qualified offerors (Offerors) will receive consideration for contract(s) without regard to race, color, religion, sex or national origin. Consultants for this work shall be required to comply with the President's Executive Order No. 11246, as amended.

A copy of the RFP can be accessed by emailing Alyx Richards, Programs Coordinator, at arichards@ucrcommission.com, or by downloading the RFP at www.ucrcommission.com/blog.

This RFP consists of:

- Section I: ADVERTISEMENT
- Section II: CONTRACT OBJECTIVES
- Section III: INFORMATION TO OFFERORS
- Appendix A: SCOPE OF WORK
- Appendix B: SAMPLE UCRC DRAFT PROFESSIONAL SERVICES AGREEMENT

ANY PROPOSAL RECEIVED BY THE UCRC AFTER THE TIME AND DATE SPECIFIED IN THIS RFP OR THAT IS INCOMPLETE OR NONCOMPLIANT SHALL NOT BE CONSIDERED. THIS RFP MAY BE CANCELLED AND ANY AND ALL PROPOSALS MAY BE REJECTED IN WHOLE OR IN PART IN THE SOLE DISCRETION OF THE UCRC.

II. CONTRACT OBJECTIVES

The UCRC is an interstate water administrative agency established by action of five state legislatures and Congress with the enactment of the 1948 Upper Colorado River Basin Compact. The UCRC's role is to ensure the appropriate allocation of water from the Colorado River to the Upper Division States of Wyoming, Colorado, Utah, and New Mexico and to ensure compliance with the 1922 Colorado River Compact. The UCRC seeks to promote interstate comity, remove causes of present and future controversies, and to assure the storage of water and agricultural and industrial development of the Upper Basin.

On November 15, 2021, President Biden signed the Infrastructure Investment and Jobs Act (IIJA), formally enacting the Bipartisan Infrastructure Law (BIL). The BIL allocates \$8.3 billion through Fiscal Year 2026 for the United States Bureau of Reclamation (Reclamation) to fund western water infrastructure projects. Specifically, \$50 million is authorized to implement the Upper Colorado River Basin Drought Contingency Plan (DCP). In support of the activities contemplated under the DCP, UCRC and the States identified priority infrastructure and project needs, including additional information needed for accurate estimation and verification of both on-field and in-canal irrigation efficiency.

Irrigation efficiency is defined as the amount of water consumed divided by the amount of water diverted. Efforts to increase irrigation efficiency can be made on-farm (e.g., transitioning from flood to sprinkler irrigation) or off-farm (e.g., converting an unlined canal to a pressurized pipe) and can have drastically different impacts on the hydrologic system.

For the purposes of this Project, riparian areas include the natural corridor and vegetation adjacent to water bodies (e.g., streams, rivers). Incidental use areas include any non-agricultural area where non-beneficial ET may be supported by irrigation water via surface or groundwater flow (e.g., along canals).

The UCRC wishes to contract professional services to conduct an analysis of irrigation efficiency at the field and canal scale in Emery County, Utah (the Project). The contractor will work under the direction of the UCRC's designated Project Lead. The Project Lead will coordinate input and guidance from the UCRC and CRAU (UCRC Project Team) to the Contractor. The UCRC Project Team's Objective is to better understand and address the following research questions:

- How do changes in irrigation practices affect evapotranspiration (ET) from irrigated fields over multiple years, as measured using remote-sensing techniques?
- To what extent have changes in irrigation practices impacted the presence and extent of riparian and incidental use areas over multiple years? How well do remote-sensing approaches detect changes in riparian and incidental use areas?
- Based on available data, how have changes in irrigation practices impacted other components of the study region's water balance over multiple years including streamflow, diversions, and reservoir storage and release?

The winning Offeror will be selected based upon an evaluation of approach, demonstrated competence, professional qualifications necessary for the satisfactory performance of the services required, and the proposed budget. **The UCRC, in its sole discretion, may make multiple awards under this solicitation if/when two or more Offerors are necessary for performance of the tasks described in this RFP, or may**

choose not to implement all tasks described in this RFP. The work will commence from the UCRC's award of the contract to the selected Offeror (Contractor) and end on April 30, 2027.¹

¹ The source of funds for the services requested under this RFP is the Infrastructure Investment and Jobs Act (IIJA), which implements the Bipartisan Infrastructure Law (BIL), through the U.S. Bureau of Reclamation (Reclamation) to the UCRC. In accordance with the grant, Reclamation will, through the UCRC, monitor and provide Federal oversight of activities performed under the grant.

III. INFORMATION TO OFFERORS

A. SEQUENCE OF EVENTS

The UCRC will make reasonable efforts to adhere to the schedule outlined below; however, the UCRC reserves the right to modify the schedule.

Table 1. Sequence of events, responsibilities, and dates associated with this RFP.

Action	Responsibility	Date
Issue RFP	UCRC Project Team	December 11 th , 2024
Deadline to Submit Additional Written Questions	Potential Offerors	December 27 th , 2024
Response (Addenda) to Written Questions	UCRC Project Team	January 6 th , 2025
Deadline for Submission of Proposals to UCRC	Offerors	January 17 th , 2025 at 12 pm MT
Proposal Evaluation	UCRC Project Team	January 17 th , 2025 to January 31 st , 2025
Contract Finalization and Award	UCRC	February 21 st , 2025
UCRC Notice of Award	UCRC Project Team	February 28 th , 2025
Notice to Proceed/Kick-off Meeting	UCRC Project Team/Contractor	March 3 rd , 2025

B. ADDENDA AND INTERPRETATIONS

No oral interpretation of the meaning of any Section of the RFP or its appendices will be binding. All questions regarding the interpretation of the RFP and its appendices shall be in writing and emailed to Alyx Richards, Programs Coordinator, at arichards@ucrcommission.com by the deadline listed in the Sequence of Events. The UCRC Project Team will review the questions received and assess the need for any RFP addenda. Under no circumstances shall a potential Offeror make verbal or written inquiries regarding the interpretation of the RFP to the UCRC Project Team except as described in this RFP. Violation of this prohibition may result in the rejection of any Proposal submitted by the offending Offeror.

C. PREPARATION OF PROPOSAL

Proposals shall be limited to ten (10) pages exclusive of the transmittal letter, index or table of contents, section dividers, and resumes. Pages must be 8-1/2" x 11". Minimum font size shall be 11-point Calibri (or similar). Proposals shall be submitted in a searchable PDF format.

Proposals shall be clear, accurate, and comprehensive. Generic marketing material is discouraged. Excessive or irrelevant material will not be favorably received. The Proposal must include the following information:

1. Letter of transmittal, which includes the following information:
 - Date of submission;

- RFP Number and Title;
 - Name, address, and telephone number of the Offeror;
 - Name of the primary Point of Contact to be used during the RFP process;
 - Statement that the Offeror has the ability to provide the services requested and, if awarded a contract, will comply with the contract terms and conditions set forth in this RFP and the sample Professional Services Contract in Appendix B. Should any Offeror(s) object to any of the UCRC's terms and conditions in the sample Professional Services Contract, the Offeror(s) must provide alternative language for consideration by the UCRC. To propose alternative language, the Offeror shall provide a brief description of the purpose and impact, if any, of each proposed change, and the specific language to be inserted in the Professional Services Contract;
 - Statement to identify the general qualification categories for which the Offeror wishes to be considered; and
 - An authorized signature with the name and title of the person signing for the Offeror.
2. Description of Organization and Team Members
The Offeror will provide a description of the organization and identify the key personnel proposed to complete the work for the Project in the Proposal. The description should clearly identify who will be the Project Manager and serve as the point of contact for the UCRC. It is preferred that the Project Manager and point of contact are the same person. Include resumes of key personnel (limited to two pages each) as an appendix. Respondents must disclose any potential conflicts of interest (See Exhibit D of Appendix B).
3. Project Approach and Schedule
The Offeror will provide a description of the Offeror's proposed approach to meet Project Objectives in the Proposal. The proposed approach should align with the Scope of Work (Appendix A). The Offeror may provide alternative or supplemental tasks for consideration by the UCRC Project Team. The Offeror will provide a timeline of milestones consistent with the proposed approach.
4. Qualifications
The Offeror will provide a summary of the Offeror's qualifications in the Proposal. Qualifications include relevant background, experience, and capabilities for the Project. Provide 3-5 examples of previous work accomplished by the Offeror that is similar in scope to the Project, including examples of work that leverages data to address agricultural and incidental water use. Provide references for each of the examples of previous work which include the client name, location, key participating individuals and their roles, the type of work performed, and the current status of the work.
5. Budget
The Offeror will provide a proposed budget for the Project in the Proposal. The budget shall clearly indicate the hours needed, costs, and expenses broken out by task and subtask and, as applicable, by individual staff who will work on the Project.

The Offeror shall comply with all instructions and provide all the information requested in this RFP. Failure to do so may disqualify the Proposal.

D. NOTICE OF REQUIREMENTS BINDING ON OFFEROR

By submitting a Proposal, the Offeror(s) represents that the Offeror has familiarized himself/herself with the nature and extent of the RFP, including any and all requirements which are a part of this RFP.

E. CORRECTION OR WITHDRAWAL OF PROPOSALS

A Proposal containing a mistake discovered before the deadline to submit proposals may be modified or withdrawn by an Offeror by delivering email notification to the Contract Manager as addressed above. Withdrawn proposals may be resubmitted up to the deadline for the submission of proposals. The UCRC has no responsibility nor obligation to inform an Offeror of any mistakes or omissions it discovers in an Offeror's Proposal. Incomplete or nonconforming Proposals may be rejected without further evaluation by the UCRC Project Team.

F. PROPOSAL EVALUATION

Proposals will be evaluated by the UCRC Project Team on the basis of demonstrated competence and qualifications for the type of services required. The UCRC Project Team will evaluate statements of qualifications and performance data submitted by the Offerors and may conduct interviews with one or more Offerors regarding their qualifications, their proposed approach to the Project, and their ability to furnish the required analyses and services.

Proposals will be evaluated based on the following factors:

1. **Project Approach and Ability of the Offeror to Carry Out and Manage the Project (50%)**
Demonstration of a clear and comprehensive approach to meet Project Objectives in the Proposal; the Offeror's ability to be responsive to the UCRC's needs; the Offeror's ability to realize timetables and quality control objectives; and the Offeror's ability to bring about a successful completion of the Project under the direction of the designated UCRC Project Lead. The UCRC Project Lead will coordinate input and direction from the UCRC Project Team.
2. **Capabilities of the Offeror Team Members (25%)**
Assessment of the capabilities of the individuals that will be engaged in the Project. Qualities and indicators that will receive consideration include the applicable experience of the proposed assigned staff and the specific experience gained on similar projects. If a candidate has not been identified prior to the Proposal submission, we ask that the Offeror describe the capabilities and qualifications they will seek in recruiting a candidate.
3. **Budget (25%)**
Cost will also be considered in the selection process. The selected Offeror will be expected to include intended increases to the rate schedule year-over-year and maintain the proposed rate schedule throughout the contract.

Best and final offers may be allowed, from responsible Offerors who submit responsive proposals that meet minimum qualifications, evaluation criteria, or applicable score thresholds identified in this RFP.

G. SUBCONTRACTORS

The Offeror shall list and state the qualifications for each subcontractor that the Offeror proposes to use to complete the Project tasks. The Offeror is specifically advised that any person or entity proposed for subcontracting must be verified and accepted by the UCRC *prior to the award* of the Contract. This acceptance is contingent upon verification of the subcontractor's eligibility status.

H. COSTS FOR PROPOSAL PREPARATION

Any costs incurred by an Offeror in preparation, transmittal, or presentation of any proposal, or material submitted in response to this RFP, shall be borne solely by the Offeror.

I. OFFEROR'S QUALIFICATIONS

Any Offeror who, after evaluation of the submitted Proposals, is identified by the UCRC Project Team as a potential Contractor for the Project shall submit, upon request, additional information and data to demonstrate that its financial resources, production or service facilities, personnel, and service reputation and experience are adequate for the tasks described in the Draft Implementation Plan (Appendix A).

J. AWARD CONTRACT TERMS AND CONDITIONS

The Contract for the Project will follow a format specified by the UCRC and shall be in substantially the same form, and contain the same terms and conditions, as the sample Professional Services Contract in Appendix B.

The finalized Professional Services Contract shall be signed by the successful Offeror and returned within an agreed upon timeframe after the date of the Notice of Award. No contract shall be effective until it has been fully executed by all parties.

APPENDIX A

SCOPE OF WORK

EMERY COUNTY IRRIGATION EFFICIENCY PROJECT

1. GENERAL PROJECT INFORMATION

On November 15, 2021, President Biden signed the Infrastructure Investment and Jobs Act, formally enacting the Bipartisan Infrastructure Law (BIL). The BIL allocates \$8.3 billion through Fiscal Year 2026 for the United States Bureau of Reclamation (Reclamation) western water infrastructure projects. Specifically, \$50 million is authorized to implement the Upper Colorado River Basin Drought Contingency Plan (DCP). In support of the activities contemplated under the Upper Colorado River Basin DCP, the Upper Colorado River Commission (UCRC) and the Upper Division States of Colorado, New Mexico, Utah, and Wyoming identified priority infrastructure and project needs, including the completion of special studies to investigate enhancing instrumentation and tools to quantify and track water supply, use, and conservation in the Upper Basin.

Projects that reduce water use are one mechanism for enhancing drought resilience in the Upper Basin consistent with the DCP. Two related concepts, water conservation and irrigation efficiency, have been proposed to achieve this goal². For the purposes of this Project, we differentiate between these two efforts and use the following definitions. *Water conservation* is defined as saving water that otherwise would have been evaporated or consumed by vegetation including in riparian and incidental use areas (e.g., phreatophytes or mature trees) or agricultural crops. *Irrigation efficiency* is defined as the act of saving water that is not consumed by vegetation or evaporated and can be measured by the amount of water consumed divided by the amount of water diverted. Efficiency improvements can be made on-farm (e.g., transitioning from flood to sprinkler irrigation) or off-farm (e.g., converting an unlined canal to a pressurized pipe) and have different anticipated impacts.

While enhancing irrigation efficiency, primarily through infrastructure improvements, is often successful in reducing the volume of water diverted to sustain agricultural production, tradeoffs often occur.³ For example, changes to enhance irrigation efficiency can sometimes increase water consumption overall —often referred to as the ‘paradox of irrigation efficiency,’² and may have broader consequences including decreases in riparian and incidental use area vegetation, reduced environmental flows, and loss of habitat among other factors. As the Upper Division States consider irrigation efficiency projects under DCP and other related activities, it is increasingly important to understand potential long-term or widespread trade-offs and overall impacts associated with various irrigation efficiency enhancements and how they can be measured at different temporal (e.g., monthly, annual, interannual) and spatial (e.g., field, basin) scales. Although there is

² Udall, B., & Peterson, G. (2017). *Agricultural water conservation in the Colorado River Basin: Alternatives to permanent fallowing research synthesis and outreach workshops. Part 5 of 5: Irrigation efficiency and water conservation in the Colorado River Basin: A literature review and case studies*. Colorado Water Institute, Colorado State University.
https://www.crbagwater.colostate.edu/files/CWI_Completion_Report232_Part5.pdf

³ Grafton, R. Q., Williams, J., Perry, C. J., Molle, F., Ringler, C., Steduto, P., ... & Allen, R. G. (2018). The paradox of irrigation efficiency. *Science*, 361(6404), 748-750.

publicly available research that focuses on the tradeoffs in irrigation efficiency in the Upper Basin generally^{2,4}, a detailed analysis of these changes using new remotely sensed tools like OpenET in key tributaries remains limited.

2. PROJECT AREA

Irrigation efficiency tradeoffs will be assessed in agricultural and adjacent lands within Emery County in Central Utah (Figure 1). Emery County is comprised of several rural agricultural communities and supports roughly 32,848 irrigated acres.⁵ Emery County is bordered by the Green River on the Eastern edge and contains the San Rafael River (mean annual flow = 46.3 cfs), which is a major tributary to the Green River. The San Rafael River is fed primarily by three tributary systems—Ferron Creek, Cottonwood Creek, and Huntington Creek (see Figure 1)—which begin in the northwest part of the County and then flow through agricultural valleys before forming the San Rafael River. Each system is comprised of a number of irrigation and canal companies. These three drainages comprise the Project Area (Figure 1).

Over the past thirty years, a number of agricultural efficiency projects have occurred in the Project Area. Most projects have been pursued through the Colorado River Basin Salinity Control Program with efforts also facilitated directly by water users, the Upper Colorado River Basin Fund Memorandum of Agreement (MOA), the Board of Water Resources, and others. Projects pursued through the Salinity Control Program are intended to reduce the salt loading to the Colorado River by reducing or eliminating runoff, seepage, or deep percolation of agricultural water.

In the mid to late 1990s, the Bureau of Reclamation (Reclamation) began funding the conversion of unlined canals and laterals to pressurized pipe systems within the Ferron, Cottonwood, and Huntington drainages in the Project Area (Table 1). The systems were converted to pressurized pipe with the intention that the Natural Resources Conservation Service's (NRCS) cost-sharing program (Environmental Quality Incentives Program, EQIP) would be used to help pursue on-farm changes from flood to sprinkler irrigation (Table 1). These changes, coupled with investment in real-time flow monitoring, have improved water management and irrigation efficiencies throughout the area. Beginning in 1992, Emery Water Conservancy District (EWCD, a prominent wholesale water provider in the area) obtained a drought mitigation grant from Reclamation that helped support flow monitoring at select sites throughout the district. This monitoring system has expanded over the years.

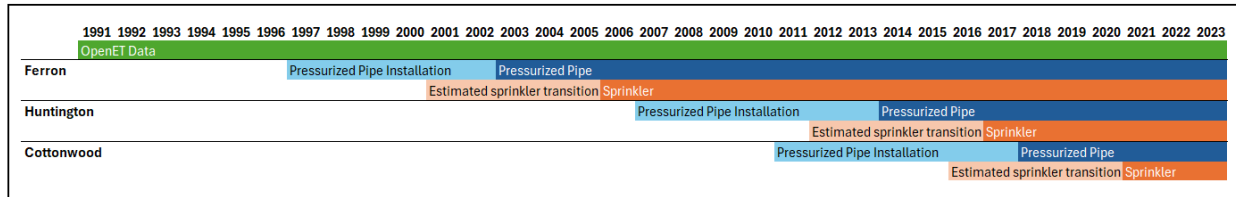
⁴ Scott, C. A., Vicuña, S., Blanco-Gutiérrez, I., Meza, F., & Varela-Ortega, C. (2014). Irrigation efficiency and water-policy implications for river basin resilience. *Hydrology and Earth System Sciences*, 18(4), 1339-1348.

⁵ National Agricultural Statistics Service. (2017). *2017 Census of Agriculture: Emery County, Utah*. United States Department of Agriculture. https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/Utah/cp49015.pdf



Figure 1. Map of the Project Area situated within Emery County with inset of the Project Area relative to the confluence of the Green and Colorado Rivers.

Table 2. Timeline of remotely sensed data availability and estimated irrigation changes in the Project Area from 1991-2023 by major drainage.⁶



3. PROJECT OBJECTIVE

The Project Objective is to answer three research questions that can help inform the implementation of the Upper Basin’s DCP.

1. How do changes in irrigation practices affect evapotranspiration (ET) from irrigated fields over multiple years, as measured by OpenET?
2. To what extent have changes in irrigation practices impacted the presence and extent of riparian and incidental use areas over multiple years? How well does OpenET detect changes in ET in riparian and incidental use areas?
3. Based on available data, how have changes in irrigation practices impacted other components of the water balance over multiple years including streamflow, diversions, and reservoir storage and release?

Because of the systematic and widespread irrigation changes in the Project Area over the last 30 years, there is a unique opportunity to understand the long-term, basin-scale impacts of implementing irrigation changes leveraging modern tools and data (Table 1). The entire period of interest for this Project is 1991–2023.

4. PROJECT TASKS

The completion of at least five tasks was determined to be necessary to meet the Project Objective of answering the three above research questions. The tasks are listed below.

Task 1: Review, compile, and/or modify existing data sources to quantify consumptive water use via remotely sensed data and vegetation productivity in the Project Area via:

1. **Remotely Sensed Data:** The first step involves gathering a wide range of remotely sensed data to determine historical ET from agricultural fields and adjacent riparian and incidental use areas. This will be accomplished by integrating ET data (e.g., OpenET), agricultural imagery (e.g., Crop Data Layer or National Agricultural Imagery Project raster data), and other related datasets. Additional data and information will be provided by the Colorado River Authority of Utah (Authority), UCRC, or entities within the Project Area.
 - a. Evaluation is also likely to include various measures of vegetation productivity to better understand changes in agricultural and riparian and incidental use areas. These measures include Soil Moisture, Canopy Chlorophyll Content Index, Enhanced Vegetation Index,

⁶ This table was assembled based on irrigation timelines described in Green et al., (2020). Green, A., Hansen, R., Narayanan, R., & Green, C. (2020). Case study of Emery County real-time monitoring and control system implementation.

Global Vegetation Moisture Index, Normalized Difference Vegetation Index (NDVI), Normalized Difference Moisture Index, Moisture Stress Index, and Wetness. These indices will help provide a more comprehensive picture of the health and changes in vegetation over time. Additional products may also be necessary to estimate precipitation.

2. **Field Boundary; Riparian and Incidental Use Area Extents:** This step involves defining the geographic boundaries for agricultural fields and riparian and incidental use areas within the Project Area for the period of interest (1991-2023). This may involve creating automated processes, modifying existing datasets (e.g., existing Bureau of Reclamation/ State field boundaries or the CoRIP database⁷), or manually developing boundary shapefile datasets. This detailed information is crucial for ensuring any changes in ET also account for expansions or reductions in agricultural and riparian and incidental use areas.
 - a. Part of this effort will involve a process to determine the maximum extent for both agricultural and riparian and incidental use areas. This process should make room for annual updates that allow for the development of shapefiles that reflect changes in extent. Such changes could be detected using indices like NDVI, where appropriate.
 - b. Evaluation of this component should also include a comparison of this Project's refined extents to other available datasets and automated approaches (e.g., Bureau of Reclamation, CoRIP) to provide insight about the value of additional refinement efforts at a larger scale in the Upper Basin.
3. **Calculate Evapotranspiration and other metrics for Agricultural, Riparian, and Incidental Use Areas Extents.** Using available methods⁸ and datasets, develop ET estimates for the period of interest while also controlling for climate and land use variability over time.

Task 2: Assess the impact of changes in irrigation practice on agricultural ET using OpenET. The first research question for this Project is: How do changes in irrigation practices affect ET from irrigated fields, as measured by OpenET? Efforts to detect water use changes from irrigation changes using remotely sensed tools could further support informed decision-making in the region and may include:

1. **Use community input and available literature to develop a more accurate timeline (Table 1) and associated geospatial dataset at the finest spatial resolution possible given data availability to describe historical irrigation changes in the Project Area.** Precise dates when irrigation changes occurred will be sourced from Reclamation, NRCS, local entities, or estimated using aerial imagery. Other sources of information may include the IRR-Mapper and Utah's Water-Related Land Use Dataset. Irrigation changes of interest primarily include unlined canals transitioning to pressurized pipe systems and fields transitioning from flood to sprinkler irrigation.

⁷ Woodward, B. D., Evangelista, P. H., Young, N. E., Vorster, A. G., West, A. M., Carroll, S. L., ... & Jarnevich, C. (2018). Co-Rip: A riparian vegetation and corridor extent dataset for Colorado river basin streams and rivers. *ISPRS International Journal of Geo-Information*, 7(10), 397.

⁸ Pearson, C., Minor, B., Morton, C., Volk, J., Dunkerly, C., Jensen, E., ReVelle, P., Kilic, A., Allen, R., Huntington, J.L., Historical Evapotranspiration and Consumptive Use of Irrigated Areas of the Upper Colorado River Basin. (2024, in-review). Report submitted to the Bureau of Reclamation.

- a. **Gather and format input data:** Data and information for quantifying ET include:
 - eeMETRIC data from OpenET;
 - effective precipitation data, as appropriate;
 - Any in situ data obtained from existing instrumentation, as relevant.
- b. **Select relevant indices from the Sentinel-2 and Landsat-8 data repositories:**
There are various indices derived from remotely sensed data to monitor vegetation productivity from Sentinel and Landsat or other satellites with similar resolution:
 - Review existing literature and conduct an exploratory analysis to determine which indices should be included in the comparative analysis of irrigation practices in this Project;
 - As appropriate, incorporate historical values for baseline comparison.
- c. **Assess whether changes in ET are observed under transition in irrigation practices and are detectable using OpenET and other measures of vegetation productivity:** This task may include the following steps:
 - Assess whether any differences in ET under changing irrigation practices can be detected using OpenET assessed against an EC Tower located within the Project Area;
 - Assess differences in remotely sensed indices and/or Irr-Mapper under changing irrigation practices;
 - Compare values obtained before and after changing irrigation practices and implement statistical tests to determine significance;
 - Quantify any impacts at various temporal (e.g., month, annual, interannual) and spatial (e.g., field, basin) scales;
 - To the extent possible, determine whether changes in ET are due to changes in irrigation practice or other compounding variables (e.g., crop type, climate change, etc.).

Task 3: Evaluate how changes in irrigation practices affect riparian and incidental use areas and determine OpenET's effectiveness in detecting changes in riparian and incidental use area ET. The second research question motivating this Project is: To what extent have changes in irrigation practices impacted the presence and extent of riparian and incidental use areas? And how well does OpenET detect changes in riparian and incidental use area ET? Reductions in riparian area, wetland extent, and habitat can be associated with transitions to more efficient irrigation practices.⁹ Understanding how these changes can be monitored while controlling for climate and land use variability over time and measured using OpenET, various vegetation productivity indices, and available shapefiles that characterize riparian extent can help understand impacts associated with irrigation changes in the context of the Upper Basin DCPs. Steps to conduct this work could include:

- a. **Gather and format input data:** Format data obtained from Task 1 for quantifying ET from riparian and incidental use areas including:
 - eeMetric data from 1991 to 2023 from Reclamation.
- b. **Select relevant indices from the Sentinel-2 and Landsat-8 data repositories:**
There are various indices derived from remotely sensed data to monitor vegetation productivity from Sentinel and Landsat or other satellites with similar resolution:

⁹ Donnelly, J. P., Jensco, K., Kimball, J. S., Moore, J. N., Ketchum, D., Collins, D. P., & Naugle, D. E. (2024). Beneficial 'inefficiencies' of western ranching: Flood-irrigated hay production sustains wetland systems by mimicking historic hydrologic processes. *Agriculture, Ecosystems & Environment*, 370, 109051.

- Review existing literature and conduct an exploratory analysis to determine which indices should be included in the comparative analysis of irrigation practices in this Project;
 - As appropriate, incorporate historical indices for baseline comparison.
- c. **Assess whether changes in ET and vegetation extents for riparian and incidental use areas are detectable using OpenET and other measures of vegetation productivity and are attributable to changes in irrigation practice:** This task may include the following steps:
- Assess whether any differences in ET from riparian and incidental use areas under changing irrigation practices can be detected using OpenET;
 - Assess differences in remotely sensed indices and/or the Wetland Evaluation Tool (WET)¹⁰ under changing irrigation practices;
 - Compare values obtained before and after changing irrigation practices and implement statistical tests to determine significance.
 - Quantify any impacts at various temporal (e.g., month, annual, interannual) and spatial (e.g., field, basin) scales.
- d. **Identify gaps in using OpenET in riparian and incidental use settings.** Accurate quantification of riparian and incidental use area ET is of interest to Utah and the Upper Basin states generally. Uncertainty can arise from remote sensing tools and from extents used to map riparian and incidental use boundaries. This task focuses on assessing the uncertainty introduced through remote sensing or inaccurate riparian and incidental use boundary and extent data. This step may consider the following:
- Conducting a review of available information on riparian and incidental use in Utah and the Upper Basin states;
 - Evaluate the sufficiency of existing in situ monitoring equipment for ground-truthing and verification of OpenET in riparian and incidental use settings in the Project Area, Utah, and the Upper Basin states;
 - Install instrumentation (e.g., sap flow sensors or large aperture scintillometers) to complement in situ monitoring, as appropriate in Project Area;
 - Estimate and compare OpenET based estimates of ET against in situ measurements available for the Project Area, Utah, or the Upper Basin states, if available;
 - Evaluate commonly used shapefiles from databases (e.g., National Wetlands Inventory products or the CO-RIP¹¹ database against boundaries).

Task 4: Evaluate the effects of changes in irrigation practice on key components of the water balance within the Project Area (e.g., streamflow, reservoir storage and release, and diversions).

The third research question motivating this Project is: Based on available data, how have changes in irrigation practices impacted other components of the water balance including streamflow, diversions, soil moisture, and reservoir storage and releases? This should also include some control for climate and land use variability over time. Steps for this could include:

- a. **Identify components of the water balance to be evaluated:** Key inputs needed prior to initiating the comparative water balance evaluation will be identified and documented, including:
- Define the geographic boundaries for the water balance components and develop a Project area schematic;

¹⁰ <https://iwjv.org/solution-based-science/wet/>

¹¹ <https://datadryad.org/stash/dataset/doi:10.5061/dryad.3g55sv8>

- Review existing academic literature, grey literature, and insights from the community regarding hydrology and water resource management in the Project Area.
- b. **Gather and format data:** Aggregate data¹² and information from available sources, which may include:
 - Historical streamflow data in Utah available from the United States Geological Survey (USGS), Emery Water Conservancy District, or other sources;
 - Historical records of diversions, return flows, or delivery reports from the Utah Division of Water Rights, Emery Water Conservancy District, or other sources;
 - Historical records of reservoir storage and release available from Emery Water Conservancy District, Ferron Canal and Reservoir Company, PacifiCorp and other sources;
 - Other data sources or information as needed (e.g., precipitation, soil moisture from in-situ sensors or gridded products, water rights information, etc.).
- c. **Evaluate how changes in irrigation practice have influenced key water balance components in the Project Area.**
 - Assess whether any differences in the water balance components can be detected under known transitions in irrigation practice;
 - Compare values obtained before and after changing irrigation practices and implement statistical tests to determine significance;
 - Quantify any impacts at various temporal (e.g., month, annual, interannual) and spatial (e.g., canal, river, basin) scales.
 - To the extent possible, determine whether changes in water balance components are due to changes in irrigation practice or other compounding variables (e.g., hydraulic variability, climate change, etc.).

Task 5: Report of Project. Monthly and/or quarterly progress reports to the UCRC Project Team are desirable to ensure progress. Progress reports to other local and state entities in the Project Area are also expected to keep entities apprised of research developments. A final report (to UCRC and the Upper Division States) of major research findings is expected.

5. TIMELINE AND DELIVERABLES

Anticipated deliverables from this work include one peer-reviewed journal article, all data/code used for the study, a final report of major research findings and lessons learned that could be applicable elsewhere in the Upper Basin, including considerations provided from the UCRC Project Team, and the potential for a presentation at a selected conference.

Summary of Deliverables:

- Monthly/quarterly progress reports to UCRC Project Team,
- Final Report to UCRC Project Team and UDS,
- One peer-reviewed journal article,
- All data/code used for the Project,

¹² Many of these variables are compiled in an existing dataset and will be made available by the Authority.

- Summary of lessons learned that could be applicable elsewhere in the Upper Basin,
- Presentation at one conference.

Table 3. Timeline and Deliverables.

	2025 Quarters			2026 Quarters				2027 Quarters				
Task 1	Grey	Blue	Blue	Blue	White	White	White	White	White	White	Grey	Grey
Task 2	Grey	White	Blue	Blue	Blue	Blue	Blue	Blue	White	White	Grey	Grey
Task 3	Grey	White	Blue	Blue	Blue	Blue	Blue	Blue	White	White	Grey	Grey
Task 4	Grey	White	Blue	Blue	Blue	Blue	Blue	Blue	Blue	White	Grey	Grey
Task 5	Grey	White	White	White	White	White	Blue	Blue	Blue	Blue	Grey	Grey

BUDGET

Total Cost Limitation Amount (CLA) Not to Exceed

\$350,000

APPENDIX B

UCRC PROFESSIONAL SERVICES CONTRACT #2024-01-IUWG-UCRC

This Professional Services Contract (“Contract”) is entered into between the Upper Colorado River Commission (“UCRC”) and the _____ (“Contractor”), collectively the “Parties”, effective as of the date of execution by both Parties.

- **RECITALS**

THE PARTIES enter into this Contract on the basis of the following recitals:

- A. The Upper Colorado River Commission (“UCRC”) was established by Article VIII of the Upper Colorado River Basin Compact (“Upper Basin Compact”). The UCRC is composed of commissioners representing their respective states: Colorado, New Mexico, Utah, and Wyoming (collectively, the “Upper Division States” or “States”) and a commissioner representing the United States. It was created to perform all functions required by the Upper Basin Compact and to do all things necessary, proper, or convenient in the performance of its duties either independently or in cooperation with any state or federal agency.
- B. Pursuant to the terms of the “United States Department of the Interior Assistance Agreement R23AP00295 Between Bureau of Reclamation and the Upper Colorado River Commission for Upper Basin Infrastructure Investment & Jobs Act and Drought Contingency Plan Implementation Activities” Notice of Award, as amended on April 26, 2024 (R23A900295-02) and as further amended on November 22, 2024 (R23A900295-03) (“BIL Award”), the UCRC is operationalizing the drought contingency planning and implementation of the Upper Basin Drought Contingency Plan by identifying and contracting for the completion of certain projects.
- C. The UCRC issued a request for proposals (“RFP”) seeking qualified applicants to provide certain professional services to implement the Upper Basin Drought Contingency Plan and selected Contractor pursuant to its procurement standards and the applicable laws and regulations that govern the use of the BIL Award.
- D. The UCRC desires to obtain professional services from the Contractor to quantify consumptive water use via remotely-sensed data, assess the impact of irrigation practice changes on agricultural and riparian ET, and evaluate how these changes affect key water balance components like streamflow, reservoir storage, and diversions.
- E. The Contractor has represented to the UCRC that the Contractor possesses the necessary skill to provide such services as are required for the BIL Project and is willing to do so pursuant to the terms of this Contract.

- **CONTRACT**

In consideration of the foregoing recitals and the covenants and promises contained herein, the Parties agree as follows:

1. TERM

This Contract will begin upon execution of this Contract by both Parties and will expire on _____ (“Contract Term”) unless extended by amendment pursuant to Paragraph 19 (Amendment and Waiver), or unless terminated at an earlier date, pursuant to Paragraph 3(g) (Appropriations) or Paragraph 4 (Termination)

2. SCOPE OF WORK

(a) *Generally.* The Contractor will perform the work described in the Scope of Work, attached hereto as **Exhibit A** and made a part hereof.

(b) *Definitions.* For purposes of this Contract, the following definitions will apply:

(1) *Contract Manager:* The UCRC staff member authorized by the UCRC to manage and administer the professional service contracts under the BIL Award. The Contract Manager coordinates with the Project Manager and the Contractor. The Contract Manager will also review Contractor reporting, evaluate completed work, process invoices, and make payment to the Contractor. For the purposes of this Contract, the Contract Manager is hereby designated as _____.

(2) *Project Manager:* The Project Manager will coordinate with the Contract Manager on the assignment of task orders to the Contractors. The Project Manager will then oversee and manage all Contractor activities related to task progress and execution, evaluating completed work, and the disposition of submitted deliverables to the Contract Manager. For the purposes of this Contract, UCRC staff member _____ has been designated as the Project Manager.

(c) *Review of Progress Reports; Invoices; Deliverables.* The Contract Manager will coordinate with the Project Manager and the Contractor concerning their progress reporting and invoicing for the duration of the Contract. The Contractor will provide progress reports in a format and at such times as described in the Scope of Work. The Project Manager and Contract Manager will review submitted progress reports, related invoices, and deliverables with final approval or rejection by the Contract Manager. If any problems arise while performing its duties, the Contractor will advise the Project Manager first, and if the problem cannot be resolved at that level, the Contractor will notify the Contract Manager.

(d) *Compliance with the BIL Award terms and conditions.* In performing the services described in the Scope of Work, the Contractor shall comply with all BIL Award terms and conditions (“BIL Conditions”) attached as **Exhibit E**, that apply to the Contractor and any subcontractors it may retain. All such applicable BIL Conditions and procurement standards are incorporated into and made part of this Agreement by this reference as though set forth fully herein.

3. COMPENSATION, PAYMENT, STATUS UPDATES, REPORTING

(a) *Cost Limitation.* The total amount payable by the UCRC under this Contract will not exceed (\$XXX,XXX.XX), inclusive of applicable gross receipt tax (“Cost Limitation Amount”). The Cost Limitation Amount is a maximum and not a guarantee that the work to be performed will equal the Cost Limitation Amount. The Contractor will be paid based upon the Cost Schedule provided as **Exhibit B** hereto.

The Contractor is responsible for not billing in excess of the Cost Limitation Amount. The Contractor will not be compensated or reimbursed for work performed, or expenses incurred, in excess of the Cost Limitation Amount.

(b) *Quarterly Status Updates.* The Contract Manager and Project Manager will conduct teleconference calls or webinars with the Contractor approximately every quarter for the duration of the Contract Term. The Project Manager and Contractor will each provide a brief update as to their status and overall progress on their respective tasks.

(c) *Progress Reporting; Invoice Submission.* The Contractor will submit a short narrative report describing progress, along with signed invoices, semi-annually to the Contract Manager in a format similar to **Exhibit C** hereto. The invoices will contain the contract number, a short narrative description of the work conducted during the prior reporting period, upcoming tasks, any issues encountered, changes in approach, and a calculation of payment due, based upon the hourly rate identified in the Cost Schedule, and supported by documentation reflecting dates, tasks, and hours billed. The invoices will also contain all travel and other expense reimbursement requests for work performed prior to or during the invoiced period and will include supporting receipts. The Contractor will be entitled to receive payment only for work properly invoiced and supported by appropriate documentation. All narrative reports and invoices for services must be received by the Contract Manager no later than twenty (20) calendar days after the end of each semi-annual reporting period, which reporting periods end on March 31st and September 30th of each year of the Contract. Invoices received after their respective due dates will not be paid. Payment of the amount invoiced, or any part thereof, will not relieve the Contractor of any unperformed obligations or foreclose the UCRC's right to recover incorrect, excessive, or illegal payments. Payment will be tendered to the Contractor within thirty (30) days after the date of acceptance of the Contractor's services. If payment is made by mail, the payment will be deemed tendered on the date it is postmarked. However, the UCRC will not incur late charges, interest, or penalties for failure to make payment within the time specified herein.

(d) *Exception to Invoices.* If the Contract Manager finds that the services performed or the deliverables provided pursuant to this Contract are unacceptable, the Contract Manager will send to the Contractor a letter of exception explaining the deficiency, along with details of how the Contractor may remediate the deficiency. The Contract Manager will provide the letter of exception as soon as practicable, but in no event later than thirty (30) days following receipt of the Contractor's invoice for such services.

(e) *Property.* Unless prior written approval is given by the Contract Manager, the Contractor will not be reimbursed for any personal property in excess of \$1,000 over the Contract Term that the Contractor might acquire or store during, and related to, performance of this Contract.

(f) *Mistake in Compensation.* The Contractor will reimburse the UCRC for amounts paid to it in error within thirty (30) days of delivery of written notice of such error. The Contractor will promptly notify the Contract Manager if the Contractor independently becomes aware of such an error. Interest will accrue at the statutory rate upon any amounts not reimbursed to the UCRC after the thirtieth (30th) day following the date of such notice to the Contractor.

(g) *Appropriations.* The terms of this Contract are contingent upon sufficient appropriations and authorizations being made by the U.S. Bureau of Reclamation and available to the UCRC for the performance of this Contract. If the UCRC, in its sole discretion, determines that sufficient appropriations or authorization are not available, this Contract will terminate immediately upon written notice by the UCRC to the Contractor and the Contractor will be reimbursed pursuant to Paragraphs 4(c) and 4(d). The UCRC's decision as to whether sufficient appropriations are available will be final and will be accepted by the Contractor. If the UCRC proposes an amendment to the Contract to unilaterally reduce funding, the Contractor will have the option to terminate the Contract or to agree to the reduced funding within thirty

(30) days of receipt of the proposed amendment, with any such termination subject to Paragraphs 4(c) and 4(d).

4. TERMINATION

(a) *Grounds.* The UCRC may terminate this Contract for any or no reason. The Contractor may only terminate this Contract based upon the UCRC's uncured, material breach of this Contract or as allowed in Paragraph 3(g) of this Contract.

(b) *Notice; Opportunity to Cure.*

(1) Except as otherwise provided in Paragraph 4(b)(3), the UCRC will give the Contractor written notice of termination at least thirty (30) days prior to the intended date of termination. If the UCRC terminates this Contract for cause, the UCRC's notice will (i) identify the Contractor's material breaches of this Contract upon which the termination is based, and (ii) state what the Contractor must do to cure such material breaches. The UCRC's notice of termination will only be effective if (i) the Contractor does not cure all material breaches within the thirty (30) day notice period, or (ii) in the case of material breaches that cannot be cured within thirty (30) days, if the Contractor does not, within the thirty (30) day notice period, notify the UCRC of its intent to cure and begin with due diligence to cure the material breach, and the Contractor's plan to cure the breach is accepted in writing by the UCRC.

(2) The Contractor will give the UCRC written notice of termination at least thirty (30) days prior to the intended date of termination. If the termination is for cause, the Contractor's notice will (i) identify all the UCRC's material breaches of this Contract upon which the termination is based, and (ii) state what the UCRC must do to cure such material breaches. The Contractor's notice of termination will only be effective if (i) the UCRC does not cure all material breaches within the thirty (30) day notice period, or (ii) in the case of material breaches that cannot be cured within thirty (30) days, if the UCRC does not, within the thirty (30) day notice period, notify the Contractor of its intent to cure and begin with due diligence to cure the material breach.

(3) Notwithstanding the foregoing, this Contract may be terminated immediately by UCRC pursuant to Paragraphs 3(g) and 13(c) of this Contract.

(c) *Liability Upon Termination.* Except as otherwise expressly allowed or provided under this Contract, the UCRC's sole obligation upon termination of this Contract will be to pay for: (i) work performed prior to the date of termination, and (ii) any non-cancellable obligations approved by the UCRC prior to the issuance of the notice of termination; provided, however, that a notice of termination will not nullify or otherwise affect either Party's liability for pre-termination defaults under or breaches of this Contract. The Contractor will submit an invoice for such performed work and non-cancellable obligations within thirty (30) days of the date of termination. This provision is not exclusive and does not waive either Party's legal rights and remedies resulting from the other Party's default or breach of this Contract.

(d) *Termination Management.* Immediately upon receipt by either the UCRC or the Contractor of a notice of termination of this Contract, the Contractor will: 1) not incur any further obligations for salaries, services or any other expenditure of funds under this Contract without the written approval of the Contract Manager; 2) comply with all directives issued by the UCRC in the notice of termination as to the performance of work under this Contract; and 3) take such action as the UCRC will direct for the protection, preservation, retention or transfer of all property titled to the UCRC and records generated under this Contract. Unless otherwise agreed to in writing by the Contract Manager, any personal property or equipment provided to, or purchased by, the Contractor with contract funds with an original cost of \$1,000 or more will become the property of the UCRC upon termination of this Contract and will be submitted to

the UCRC as soon as practicable thereafter.

5. TRANSFER OF MATERIALS

Upon expiration or termination of this Contract, the Contractor will assist and cooperate with the Contract Manager in the orderly and timely transfer to the UCRC of files, documents, memoranda, notes, data, models, and related materials, whether provided by the UCRC to the Contractor or created by the Contractor pursuant to this Contract. The Contract Manager or Project Manager may request such transfer of materials at any time during the Contract Term.

6. DISPUTES

The Contractor and the Contract Manager will attempt to informally resolve any dispute that may arise in relation to this Contract. The Contractor, acting through the Contract Manager, will report in writing any dispute not so resolved to the Executive Director of the UCRC within thirty (30) days of the Contractor's knowledge of the circumstances giving rise to the dispute. The Executive Director will deliver his decision to the Parties within fifteen (15) days of receipt of the written dispute and the decision will be final unless, within ninety (90) days from the date of the decision, the Contractor notifies the UCRC that the Contractor intends to seek appropriate legal relief pursuant to Paragraph 16.

Upon receiving such notice, the UCRC reserves the right to, within fifteen (15) days of receipt of the notice, formally consider the dispute before the Contractor may seek legal relief. The Contractor's failure to use the procedure described in this Paragraph 6 will be deemed acceptance of the Executive Director's decision and constitute a waiver of any further claim or remedy available at law or in equity relating to the dispute.

7. STATUS OF CONTRACTOR

(a) *Independent Contractor; Costs of Business.* The Contractor and its agents and employees are independent contractors performing professional services for the UCRC and are not employees of the UCRC. The Contractor and its agents and employees will not accrue leave, retirement, insurance, bonding, or any other benefits afforded to employees of the UCRC as a result of this Contract. The Contractor acknowledges that all sums received hereunder are reportable by the Contractor for tax purposes, including without limitation, self-employment and business income tax.

(b) *Authority of Contractor.* The Contractor will not purport to bind the UCRC, nor its officers or employees, to any obligation not expressly authorized herein. Without the UCRC's express written permission, the Contractor will not, in any manner, reference the UCRC in such a way that states or implies the UCRC's endorsement of the Contractor or the Contractor's work. The Contractor may use the UCRC as a reference. The Contractor agrees not to purport to bind the UCRC unless the Contractor has express written authority to do so, and then only within the strict limits of that authority.

(c) *Other Contractors.* The UCRC may, for any reason, enter into other agreements for services related or identical to the services contemplated by this Contract, whether or not this Contract has expired or been terminated. The Contractor will fully cooperate with the UCRC and its other contractors.

(d) *Subcontracting.* The Contractor will not subcontract any portion of the services to be performed under this Contract without the prior written approval of the Contract Manager. No such subcontract will relieve the primary Contractor from its obligations and liabilities under this Contract, nor will any subcontract obligate direct payment to any subcontractor from the UCRC.

8. RELEASE

By accepting payment of the amounts due under this Contract, the Contractor releases the UCRC, its officers, and employees, from all liabilities and obligations whatsoever related to this Contract or the services provided hereunder. Payment to the Contractor by the UCRC will not, however, constitute final release of the Contractor. Should audit or inspection of the Contractor's records subsequently reveal outstanding Contractor obligations, the UCRC shall inform the Contractor of the outstanding obligations and the Contractor will remain liable to the UCRC for such obligations, and all payments by the UCRC to the Contractor will be subject to any appropriate recoupment by the UCRC.

9. RECORDS AND FINANCIAL AUDIT

The Contractor will maintain detailed time and expenditure records that indicate the date, time, nature, and cost of services rendered during the Contract's term and effect. The Contractor will retain those records for a period of at least three (3) years from the date of final payment under this Contract. The records will be subject to inspection by the UCRC, and the U.S. Bureau of Reclamation. The UCRC will have the right to audit billings both before and after payment. Payment under this Contract will not foreclose the right of the UCRC to recover excessive or illegal payments.

10. INDEMNIFICATION

The Contractor agrees to indemnify, hold harmless, and release UCRC and all UCRC's officers, agents, volunteers and employees from and against any and all loss, damages, injury, liability, suits and proceedings arising out of the performance of this Contract which are caused solely by the negligent acts, wrongful acts, errors, or omissions of the Contractor's officers, agents, employees, or volunteers. UCRC agrees to indemnify, hold harmless, and release the Contractor and all the Contractor's officers, agents, volunteers and employees from and against any and all loss, damages, injury, liability, suits and proceedings arising out of the performance of this Contract which are caused solely by the negligence of UCRC or UCRC's officers, agents, employees, or volunteers, it being the intent of the parties that the Contractor will not indemnify, hold harmless or release UCRC from UCRC's own willful misconduct, gross negligence, or UCRC's negligent acts or omissions, and UCRC will not indemnify, hold harmless or release the Contractor from the Contractor's own willful misconduct, gross negligence, or the Contractor's negligent acts or omissions. If both parties are negligent or otherwise at fault, they shall each bear their proportionate share of any allocated fault or responsibility. Nothing contained in this Contract shall be construed as waiving immunity, the monetary damage limitations, or any other provision set forth in applicable State or Federal laws. If any action, suit, or proceeding related to the services performed by the Contractor or any of the Contractor's officers, agents, employees, servants, or subcontractors under this Contract is brought against the Contractor, the Contractor will, as soon as practicable but no later than ten (10) days after it receives notice thereof, notify the Contract Manager.

11. INSURANCE

The Contractor will maintain in full force and effect during the term of this Contract the insurance coverage set forth below, from a company authorized to write such insurance in the state(s) in which the Contractor is licensed or registered to do business. Upon request by the Contract Manager, the Contractor will furnish the UCRC with a certificate of such policy in a form satisfactory to the UCRC. Such certificate and policy will provide that the UCRC will be given fifteen (15) days advance written notice before the policies are canceled, materially changed, or not renewed. The UCRC reserves the right to reject insurance or insurers tendered by the Contractor. If such insurance or insurer is rejected, the Contractor will be granted reasonable additional time to obtain alternative coverage acceptable to the UCRC, but performance of services under this Contract may be suspended by the UCRC during such time.

(a) *Comprehensive General Liability Insurance.* The Contractor must have comprehensive general liability insurance with liability limits of not less than One Million Dollars (\$1,000,000) combined single limit of liability for bodily injury, including death, and property damage in any one occurrence. Said general liability insurance must include coverage for all operations performed by the Contractor. Contractual liability coverage will specifically insure the indemnification provisions of this Contract as coverage provides and the UCRC will be named as an additional insured.

(b) *Automobile Insurance.* The Contractor must have automobile insurance with liability limits of not less than One Million Dollars (\$1,000,000) combined single limit of liability for bodily injury, including death, and property damage in any one occurrence. Said automobile policy of insurance must include coverage for all operations performed by the Contractor, coverage for the use of all owned, non-owned, hired automobiles, vehicles, and other equipment. Contractual liability coverage will specifically insure the indemnification provisions of this Contract and the UCRC will be named as an additional insured.

(c) *Workers' Compensation Insurance.* The Contractor agrees to comply with all applicable laws and rules of the state(s) within which the Contractor does business pertaining to workers compensation benefits for employees. If the Contractor fails to comply with the applicable laws and rules when required to do so, this Contract may be terminated by the UCRC.

(d) *Professional Liability Insurance.* The Contractor will maintain in full force and effect during the term of this Contract professional liability insurance, also known as malpractice insurance, with liability limits of not less than One Hundred Thousand Dollars (\$100,000).

12. WORK PRODUCT, COPYRIGHT, TRADEMARK, OWNERSHIP OF MATERIALS

The Contractor warrants that nothing the Contractor produces pursuant to this Contract will infringe upon or violate any right to confidentiality or property right, whether intellectual or otherwise, of any third party. The Contractor will, subject to the provisions of paragraph 10, indemnify, defend, and hold harmless the UCRC, its officers, and employees, from and against any and all loss, cost, liability, or expense arising out of the breach or claimed breach of the foregoing warranty. Nothing the Contractor produces or develops, in whole or in part, pursuant to this Contract will be the subject of an application for copyright, trademark, or other property right by or on behalf of the Contractor.

13. CONFLICT OF INTEREST

(a) The Contractor will submit all potential conflicts of interest to the UCRC using the Disclosure and Certification Form attached hereto as **Exhibit D**.

(b) The Contractor specifically represents and warrants that:

(1) The Contractor does not employ, has not employed, and will not employ during the term of this Contract any UCRC employee while such employee was or is employed by the UCRC and participating directly or indirectly in the UCRC's contracting process.

(2) The Contractor has not contributed, and, during the term of this Contract, will not contribute or provide any gratuity to an employee or third-party contractor of the UCRC, including: gifts or favors; money; a loan; employment; admission to an event; a meal valued at more than \$50, lodging, or travel; entertainment for which a charge is normally made; or a raffle, drawing for a prize, or lottery.

(c) The Contractor's representations and warranties in (a) and (b) of this Paragraph 13 are material representations of fact upon which the UCRC relied when this Contract was entered into by the Parties. The Contractor will provide immediate written notice to the UCRC if, at any time during the term of this

Contract, the Contractor learns that the Contractor's representations and warranties in (a) and (b) of this Paragraph 13 were erroneous on the effective date of this Contract or have become erroneous by reason of new or changed circumstances. If, at any time, it is determined by the UCRC that the Contractor's representations and warranties in (a) and (b) of this Paragraph 13 were erroneous on the effective date of this Contract or have become erroneous by reason of new or changed circumstances, in addition to other remedies available to the UCRC, and notwithstanding anything in the Contract to the contrary, the UCRC may immediately terminate the Contract.

(d) The provision or acceptance of bribes, gratuities, and kickbacks by the Contractor will be subject to prosecution under federal law or, in the absence of applicable federal law, under the laws of the State of Utah.

14. FORMAT OF ELECTRONIC DELIVERABLES

Text documents and spreadsheet deliverables provided to the UCRC in an electronic format pursuant to this Contract will be prepared, stored, and delivered in Microsoft Corporation- produced software (e.g., Word or Excel), unless the Contract Manager approves the use of an alternate software format in writing. Database, spatial, and geographic information system deliverables provided to the UCRC in electronic format pursuant to this Contract will be prepared, stored, and delivered in a software format approved of in writing by the Contract Manager. The Contractor will be responsible for requesting and obtaining the Contract Manager's written approval of the software format the Contractor proposes to use prior to beginning the preparation of such deliverables. Should the Contractor utilize a software format not approved in writing by the Contract Manager, the Contractor will bear all costs or expenses, of any type whatsoever, incurred by the Contractor or the UCRC in converting or otherwise preparing such electronic deliverables into a software format acceptable to the UCRC.

15. EQUAL OPPORTUNITY COMPLIANCE

The Contractor agrees to abide by all federal rules and regulations pertaining to equal employment opportunity. In accordance with all such laws, the Contractor assures that no person in the United States will, on the grounds of race, religion, color, national origin, ancestry, sex, age, physical or mental disability, or serious medical condition, spousal affiliation, sexual orientation or gender identity, be excluded from employment with or participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity performed under this Contract. If the Contractor is found not to be in compliance with these requirements during the life of this Contract, the Contractor agrees to take appropriate steps to correct these deficiencies.

16. REMEDIES

The Parties may pursue any remedies available to them at law or equity, for violation of any of the terms herein.

17. CONFIDENTIALITY AND RELEASE OF INFORMATION

The Contractor will maintain the confidentiality of all information provided by the UCRC, derived from such information, or otherwise learned or developed by the Contractor pursuant to this Contract. The Contractor will neither use nor disclose such information without the UCRC's express written permission and will promptly notify the UCRC of any unauthorized disclosure and assist in investigating any unauthorized disclosure and preventing the recurrence thereof. The confidentiality obligations included in this Paragraph survive the expiration or termination of this Contract. The Contractor assumes responsibility for all liability caused by any violation of this Paragraph.

Throughout the duration of this Contract term, the Contractor will secure from the UCRC written approval prior to the release of any information that pertains to the potential work or activities covered by this Contract. Failure to adhere to this requirement may result in termination of the Contract.

18. NOTICES

Any notice required to be given to either Party by this Contract will be in writing and will be delivered via electronic mail (email), in person, by courier service or by U.S. mail, either first class or certified, return receipt requested, postage prepaid, as follows:

To UCRC: Chuck Cullom
 50 S 600 E Suite 100
 Salt Lake City, UT 84111
 Telephone: 801-531-1150
 Email: ccullom@ucrcommission.com

To Contractor: [INSERT ADDRESS, PHONE, EMAIL HERE]

19. AMENDMENT AND WAIVER

(a) This Contract will not be altered, changed, or amended except by an instrument in writing executed by the Parties.

(b) A Party's failure to require strict performance of any provision of this Contract will not waive or diminish that Party's right thereafter to demand strict compliance with that or any other provision. No waiver by a Party of any of its rights under this Contract will be effective unless express and in writing, and no effective waiver by a Party of any of its rights will be effective to waive any other rights.

20. ASSIGNMENT

The Contractor will not assign or transfer any rights, obligations, duties, or other interest in, or claim for money due under, this Contract without the prior written consent of the UCRC, which consent may be withheld in the UCRC's sole and absolute discretion.

21. INTERPRETATION

The captions and paragraph headings used herein are for descriptive purposes only and do not limit, define, or enlarge the terms of this Contract. Unless otherwise indicated by the context, use of the singular, plural, or a gender will include the other, and the use of the words "include" and "including" will be construed as if "without limitation" or "but not [be] limited to" were annexed thereafter.

22. APPLICABLE LAW; VENUE

The Contract will be enforced, governed by and construed in accordance with applicable law. Venue for resolution of any dispute brought in federal court will be the United States District Court for the District of Utah. Venue for resolution of any dispute brought under state law will be the Utah Third District Court in Salt Lake City, Utah.

23. SURVIVAL

Terms of this Contract that provide for rights, duties, or obligations that expressly or logically extend beyond its expiration or termination, including the Contractor's indemnity obligations, will survive such expiration or termination.

24. INVALID TERM OR CONDITION

If any term or condition of this Contract is held invalid or unenforceable, the remainder of this Contract will not be affected and will be valid and enforceable.

25. INCORPORATION AND MERGER

Each of the recitals set forth at the beginning of this Contract, and any exhibits referenced herein and attached hereto, are incorporated into this Contract by this reference. This Contract incorporates all agreements, covenants, promises and understandings between the Parties concerning the subject matter hereof, and all prior or contemporaneous agreements and understandings are merged into this Contract. No prior agreement or understanding, oral or otherwise, of the Parties or their agents will be valid or enforceable unless embodied in this Contract. This Contract may be executed in multiple counterparts, each of which will be deemed an original.

26. AUTHORITY

If the Contractor is other than a natural person, the individual(s) signing this Contract on behalf of the Contractor represent and warrant that they have the power and authority to bind the Contractor, and that no further action, resolution, or approval from the Contractor is necessary to enter into a binding contract.

27. THIRD PARTY BENEFICIARIES

No Party to this Contract intends to, and this Contract does not, confer any right or entitlement to benefits from this Contract on any person or entity that is not a Party to this Contract, regardless of the legal theory on which such a claim is made.

28. COUNTERPARTS

This Contract may be executed in counterparts, each of which is deemed an original, but all of which together constitute one and the same instrument.

IN WITNESS WHEREOF, the Parties have entered into this Contract.

● **CONTRACTOR**

UCRC

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Chuck Cullom, Executive Director
Upper Colorado River Commission

EXHIBIT B

SAMPLE COST TABLE

RFP Number: 2024-01-IUWG-UCRC

Project Title: Emery County Irrigation Efficiency Project

Project Period: From award to Contract End Date

Cost Category	Hourly Rate	Estimated Hours	Item Cost	Project Total
Salary/Benefits Rate Schedule				
Principal (Engineer or Attorney)			-----	
Senior Project Manager			-----	
Project Engineer			-----	
Administrative Support			-----	
Other...			-----	
Supplies & Materials	-----	-----		
Subrecipient Contracts	-----	-----		
Travel	-----	-----		
Total Direct Cost	-----	-----		
Indirect Cost (Add % indirect here)	-----	-----		
Total Cost				

EXHIBIT C

SAMPLE PROGRESS REPORT AND INVOICE

Date of Submission

UCRC Contract Manager
Address

Dear Contract Manager/Project Manager,

The following comprises a progress report, invoice, and supporting documentation of expenses related to the BIL Project (#UCRC-____) and its Scope of Work. This progress report and invoice covers the period from _____ 202_ to _____ 202_. During this reporting period, the following tasks and activities were completed:

- SOW Task Order #1 – Description of Work Conducted (% of Task Complete)

Work planned for the next reporting period includes:

- SOW Task Order #2 – Description of Work to be Conducted

Issues Encountered:

Changes in Approach or Staffing:

Please let us know if you have any questions on the above tasks or attached invoice and related documentation.

Thank You,

CONTRACTOR NAME _____ CONTRACT #: _____

INVOICE # _____

EIN# _____

REPORTING PERIOD: JUL. 1, 2020 - DEC. 31, 2020

INVOICE DATE: JAN 15, 2021

DATE	CATEGORY	EXPENSE DESCRIPTION	RATE	HOURS	TOTAL
					\$
7/1/2020	TRAVEL	AIRFARE*			500.00
			\$		\$
7/1/2020	PERSONNEL	PRINCIPAL INVESTIGATOR	135.00	104.00	14,040.00
					\$
7/1/2020	OTHER EXPENSE	STAMPS			5.00
					\$
				TRAVEL TOTAL	500.00
					\$
				PERSONNEL TOTAL	14,040.00
					\$
				OTHER EXPENSE TOTAL	5.00
					\$
				ALL CATEGORY TOTAL	14,545.00

*Pre-approved travel – see attached memo from UCRC approving travel expense

FOLLOWED BY SUPPORTING DOCUMENTATION TIMESHEETS, RECEIPTS, ETC.

EXHIBIT D

CONTRACTOR CONFLICT OF INTEREST CERTIFICATION AND DISCLOSURE FORM

Upper Colorado River Commission Contract #2024-01-IUWG-UCRC

The Upper Colorado River Commission (UCRC) strives to provide full, fair, and open solicitation, competition, and sole-sourced contracting that is free of actual or perceived unfair advantage or conflict of interest. This document is intended to provide guidance on when a conflict of interest may exist, and instructions for disclosure of actual and/or perceived conflicts of interest. This document is not intended to be and should not be construed as legal advice. If you are unsure whether a conflict of interest exists, please consult your legal counsel.

In this document, “Offeror” means the person(s) or entity submitting a bid or proposal to a solicitation, an entity that has been selected for a sole-sourced contract, any subcontractors, and all related entities including parent companies, subsidiaries, and companies owned, controlled, or owned and controlled by the same or closely related people.

The Offeror, by signing the Disclosure and Certification form attached, certifies that to the best of its knowledge there are no relevant facts or circumstances that could give rise to actual or perceived conflicts of interest, or has determined that one or more conflicts of interest exist and has disclosed all relevant facts pertaining to such conflict/s.

When does a conflict of interest exist?

A conflict of interest occurs when any of the following circumstances arise:

- **Lack of Impartiality or Objectivity.** When the Offeror is unable, or potentially unable, to provide impartial or objective assistance or advice to the Commission due to existing professional or personal relationships, past, present, or currently planned contracts or activities, or any other circumstances related to the work to be performed for this solicitation.
- **Unequal Access to Information.** The Offeror has an unfair competitive advantage through obtaining access to nonpublic information during the performance of an earlier contract.

Conflicts of interest may exist at an organizational level and at a personal level. Conflicts of interest may be “actual” or they may be “perceived,” meaning a reasonable person with knowledge of all the material facts believes there appears to be a conflict, whether or not the organizations or individuals involved are in relationships that actually create or experience bias or unfair advantage. Actual, potential, and perceived conflicts of interest are collectively referred to as “conflicts of interest” in this document.

Please note that the information provided serves as a guide only, and a conflict may arise in other situations not described in this document.

Disclosure of Conflict of Interest

An Offeror shall either: (1) disclose all conflicts of interest, or (2) certify that the Offeror is unaware of any facts or circumstances that would give rise to a conflict of interest in performing work under this solicitation. **A disclosure will not necessarily disqualify the Offeror from being awarded a contract.**

Failure to Disclose

If, in the UCRC's sole discretion, a conflict is discovered after the award or execution of a contract, the UCRC may cancel the contract if it deems such termination necessary. If the contractor was aware of a potential conflict of interest prior to the award, or discovered an actual or potential conflict after award and did not disclose, or misrepresented, relevant information to the contracting officer, the UCRC may terminate the contract for default, or pursue such other remedies as may be permitted by law or equity.

Instructions for Preparation of Disclosure and Certification Regarding Conflict of Interest Form

The Offeror must determine whether a conflict of interest exists. Offerors and their subcontractors must complete and submit the attached Disclosure and Certification Regarding Conflict of Interest form ("Disclosure and Certification Form"), including forms for all proposed subcontractors. If the Offeror determines that a conflict of interest exists, it must, when completing the Disclosure and Certification form, disclose the particular conflict of interest and provide a general description of the nature of the conflict of interest. The UCRC, in their sole discretion, will make the final determination as to whether a conflict of interest exists and, if so, whether to disqualify the Offeror or proceed with the evaluation of Offeror's proposal and possible award of a contract.

Disclosure and Certification Regarding Conflict of Interest

Name: _____ (the "Offeror")

Relationship: _____ (i.e. contractor, Contractor, subcontractor, etc.)

1. Certification. The Offeror hereby acknowledges that it has read the UCRC Conflict of Interest Guidelines and has, to the best of its knowledge and belief:

(Choose One)

_____ Certified that there are no relevant facts or circumstances which could give rise to actual or reasonably foreseeable conflicts of interest that would impinge on its ability to render impartial, technically sound, and objective assistance or advice, or result in the Offeror having an unfair competitive advantage. (Offeror may provide an explanation or any supporting documentation).

OR

_____ Determined that one or more conflicts of interest exists.

Offeror must identify and provide a description of the conflict of interest on Attachment 1.

The Disclosure and Certification Regarding Conflict of Interest form(s) must be submitted to the UCRC Contract Manager.

2. Subcontractors. The Offeror must include a signed copy of this certification form for each of its subcontractors. The Offeror must submit all subcontractor forms to the Commission.

3. Continuing Obligations. The Offeror has a continuing obligation to the Commission to disclose conflicts of interest during the solicitation or, if awarded a contract, throughout the duration of the contract.

4. Failure to Disclose. If the Offeror was aware of a potential conflict of interest prior to award, or discovered an actual or potential conflict after award and did not disclose, or misrepresented, relevant information to the contracting officer, the Commission may terminate the contract for default, or pursue such other remedies as may be permitted by law or equity.

By signing below, the Offeror certifies that the information contained in this form is accurate to the best of its knowledge and that the Offeror agrees to comply with the requirements herein. By signing below, the Offeror further acknowledges its continuing obligation to the UCRC to disclose, as soon as practicable, conflicts of interest to the UCRC, through the Contract Manager, during the solicitation phase or, if awarded a contract, at any time a conflict of interest arises throughout the duration of the contract.

Signed:

_____ Title:

Name: _____ Date:

ATTACHMENT 1

Description of Conflict of Interest: Please identify all relevant facts relating to past, present, or planned interest(s) of the Offeror's team (including subcontractors, etc.) that may result in, or could be perceived as, a conflict of interest in connection with this solicitation. Please attach additional pages, as necessary.

EXHIBIT E

BIL CONDITIONS