PHIL WEISER
Attorney General

NATALIE HANLON LEH
Chief Deputy Attorney General

ERIC R. OLSON
Solicitor General

ERIC T. MEYER
Chief Operating Officer

STATE OF COLORADO
DEPARTMENT OF LAW

RALPH L. CARR
COLORADO JUDICIAL CENTER
1300 Broadway, 10th Floor
Denver, Colorado 80203
Phone (720) 508-6000

Natural Resources and
Environment Section

AGENDA

Colorado Natural Resources Trustees Meeting
December 10, 2020
10:00 am to 12:00 pm
Location: Zoom Meeting
Link to Meeting: https://zoom.us/j/94089982637
Meeting ID: 940 8998 2637
Note: A hyperlink to the meeting will be emailed to Trustees and staff and will be posted on the Trustee website:
https://coag.gov/office-sections/natural-resources-environment/trustees/whats-new/

Open Session

1. Approval of Minutes from September 24, 2020 Meeting and October 12, 2020 Meeting – 5 Minutes

   Action Items:
   (1) Review and approve minutes from September 24, 2020 meeting
   (2) Review and approve minutes from October 12, 2020 meeting

   Documents:
   (1) Draft Minutes from September 24, 2020 meeting
   (2) Draft Minutes from October 12, 2020 meeting

2. Quarterly NRD Fund Accounting for Third Quarter 2020 – (Jennifer Talbert) – 5 Minutes

   Action Items: None

   Document:
   (1) CDPHE Funds Spreadsheet

3. California Gulch – (Ed Perkins) – 5 Minutes

   Action Items: None

Documents: None

4. Idarado – (Doug Jamison, Ross Davis) – 10 Minutes

Action Items: None

Document:
(1) Powerpoint slides from Ross Davis

5. Summitville – (Emily Splitek, Susan Newton, Ed Perkins) – 45 Minutes

Action Items:
(1) Consider approval of three project proposals

Documents:
(1) Memo from Emily Splitek
(2) Draft Resolution
(3) Wenck, Inc. Proposal
(4) Rio Grande Headwaters Land Trust (RiGHT) Proposal
(5) Trout Unlimited Proposal

6. Uravan – (Doug Jamison) – 5 Minutes

Action Items: None

Documents: None

7. West Creek – (Jennifer Talbert, David Banas, Ed Perkins) – 5 Minutes

Action Items: none

Document:
(1) Memo from Jennifer Talbert

Executive Session

8. Bonita Peak Mining District

Open Session

9. Report from Executive Session

ITEM #1

Colorado Natural Resource Damages Trustees
Meeting Minutes
September 24, 2020
(Approved _____, 2020)

In Attendance:

TRUSTEE DELEGATES
Natalie Hanlon Leh, Chief Deputy Attorney General
Ginny Brannon, Director, Division of Reclamation, Mining & Safety, Colorado Department of Natural Resources (DNR)
John Putnam, Director of Environmental Programs, Colorado Department of Public Health and Environment (CDPHE)

TRUSTEE STAFF
Amy Beatie, Deputy Attorney General, Natural Resources and Environment Section (NRE)
David Kreutzer, First Assistant Attorney General, NRE
David Banas, Senior Assistant Attorney General, NRE
Jason King, Senior Assistant Attorney General, NRE
Emily Splitek, Assistant Attorney General, NRE
Jennifer Talbert, CDPHE
Doug Jamison, CDPHE
Susan Newton, CDPHE
Ed Perkins, Colorado Parks and Wildlife, DNR (CPW)
Robert Harris, CPW

OTHER STATE STAFF
Jeff Statler, CDPHE
Melody Mascarenaz, CDPHE
Mindi May, CPW
Laura Kelly, Paralegal, NRE
Dan Graeve, Administrative Assistant, NRE
Jessica Ogle, Intern, NRE

Open Session

Chief Deputy Attorney General Natalie Hanlon Leh, who represented Attorney General Weiser as Chair, called the meeting (held via Zoom) to order at approximately 10:00 a.m. on September 24, 2020. The meeting's purpose was to brief the Trustees on the current status of issues relating to Natural Resource Damages (NRD) projects, and to request direction and/or approval for various actions.

Minutes

After attendees introduced themselves, Chief Deputy Hanlon Leh presented the minutes from the June 18, 2020 Trustee Meeting. Director Putnam moved to approve the minutes. Director Brannon seconded the motion, and the motion was unanimously approved.

Rocky Mountain Arsenal
David Banas updated the Trustees about two Rocky Mountain Arsenal projects.

First, in 2014, the Trustees allocated approximately $3 million to Commerce City's Second Creek Project, but the project never came to fruition. Staff has been working with Commerce City over the last several months to find a replacement project. In August 2020, Commerce City informed Mr. Banas that they were close to acquiring a parcel of land that Commerce City plans to restore. Staff will continue to work with Commerce City with the goal of having a project proposal for the Trustees at the next meeting in December.

Second, Bluff Lake Nature Center, another recipient of 2014 funds, is hoping to use its remaining funds to pursue a plan to keep water in their lake year-round. For the last few years, they have been working to purchase recycled water from Denver Water. In August 2020, they determined it was in their best interest to abandon that plan and focus on developing an augmentation program. Bluff Lake hopes to submit its proposal for an augmentation project to the Trustees at the next meeting in December.

Uravan/Idarado
Doug Jamison updated the Trustees about Uravan and Idarado, two longstanding NRD accounts. In recent years, Trustees have approved projects that will consume the remaining funds in both accounts so they can be closed.

For Uravan, Mr. Jamison explained that in 2015, the Trustees approved use of the remaining Uravan funds to conduct additional restoration of abandoned mines within the San Miguel and Dolores basins. At present, CDPHE is working with DMRS to implement two reclamation projects at uranium mills. He reported that one project is set to begin later this fall, and the other project is set to begin in the summer of 2021.

For Idarado, Mr. Jamison explained that the NRD funds are split within areas of the Uncompahgre and San Miguel watersheds. The Trustees approved two projects in 2018 and 2019 on the Uncompahgre River: 1) the Silver Mountain Mine Land Acquisition project which is converting some old mining claims into conservation easements (currently underway); and 2) the Governor Basin project which is restoring alpine and aquatic habitat (delayed due to Covid restrictions but is expected to move forward in 2021). The Trustees also approved the Society Turn project in 2019 on the San Miguel River (currently underway). Mr. Jamison noted that this river restoration project is being implemented in conjunction with some remediation work and in partnership with the Town of Telluride.

Director Putnam inquired about the possibility of some future NRD projects in the western part of Montrose County in the Dolores basin. He inquired about whether a riparian restoration project could support economic development as well as natural resources restoration. Mr. Jamison noted that the current project was one of the original Uravan projects approved by the Trustees 15 years ago, and that the Trustees could change focus if there was a need in other areas that had been impacted by Uravan's activities. Director Putnam suggested that, given the State's deep concern regarding and focus on the environmental and economic changes in that area, it

would be worth looking into other opportunities, perhaps working with other groups focused on that area. Jennifer Talbert offered to reach out to the community and research some other options. David Banas will add this item to the agenda for the next Trustee meeting.

Summitville

Emily Splitek reported that three project proposals were submitted, and staff determined that they all met initial criteria and were worth further consideration. Trustee staff has set aside time in October to score the proposals so they can have a recommendation for the Trustees in December. Jennifer Talbert explained the NRD guidance document that establishes criteria for reviewing and scoring proposals. Susan Newton reminded the Trustees that Summitville is a joint state-federal settlement, so staff will work with their federal partners and to bring a recommendation to the Trustees.

California Gulch

Susan Newton reported that a restoration plan was published in 2010 that identified several projects for the upper Arkansas River, many of which have been implemented. She stated that CDPHE has an ongoing contract with CPW to continue work on the upper Arkansas River basin and it would be useful to solicit new projects. Staff is drafting a Solicitation for Project Proposals (SPP) to gather information in an effort to update the restoration plan. While staff is in the early stages of writing the SPP, Ms. Newton plans to provide a timeline soon. Dave Kreutzer reminded the Trustees that staff will consider future project proposals pursuant to a new Memorandum of Understanding with the federal government. Rob Harris added that CPW is very interested in continuing work on fish habitat monitoring. David Banas noted that another issue involving California Gulch will be discussed in Executive Session.

NRD Funds Discussion

Jennifer Talbert reported that she has been working with Jeff Statler, Administrative Program Manager for the Hazardous Materials and Waste Management Division, to report balances for all NRD accounts and settlements. Recent information indicated there might have been discrepancies, so Ms. Talbert and Mr. Statler recreated accounts from their inception using various financial systems so each account now reflects correct information. Ms. Talbert presented an all-encompassing spreadsheet that reflects the fund balances in the system of record, including funds received, funds approved by the Trustees, funds spent, and funds remaining. The spreadsheet will be maintained monthly and provided at every Trustee meeting going forward. She noted that the spreadsheet only includes funds held by CDPHE and does not include funds from settlements held jointly with the federal government.

Director Putnam thanked Ms. Talbert and Mr. Statler for their hard work to update this information in a useful format so that it can become part of the Trustees' management system and assist them in discharging their duties.

Small Spills Program

David Banas stated that this agenda item concerns potential NRD claims and will be discussed in Executive Session.

Bonita Peak Mining District

David Banas noted that this agenda items concerns potential NRD claims and will be discussed in Executive Session.

Executive Session

Deputy AG Beatie recommended the Trustees make a motion to go into executive session to consider Agenda Items #9, #10, and #11 as identified on the Trustee Meeting agenda. She stated the executive session is authorized pursuant to section 24-6-402(3)(a)(II) and (III), C.R.S. and other laws that allow the Trustees to enter executive session for specific purposes. At approximately 10:35 a.m., Director Putnam moved to begin an executive session to discuss Agenda Items #9, #10, and #11. Director Brannon seconded the motion, and the motion was unanimously approved. David Banas noted that all attendees were State employees and directly involved in the NRD program and could therefore remain in the Executive Session. The executive session was digitally recorded.

At approximately, 11:30 a.m., Director Putnam moved to end the executive session. Chief Deputy AG Hanlon Leh seconded the motion, and the motion was unanimously approved, whereupon executive session was ended.

Open Session

Deputy AG Beatie noted that Director Brannon, who attended the meeting on behalf of Trustee Gibbs was called away for an emergency and departed during the Executive Session. Deputy AG Beatie stated that pursuant to statute, the Trustees went into Executive Session to consider Agenda Items #9, #10, and #11. The discussion during Executive Session was limited to those items, no formal action was taken, and no minutes were taken. She further stated that because no decisions were made, Items #12, #13, and #14 could be removed from the Agenda.

David Banas stated that the next Trustee Meeting had already been set for December 10, 2020 at 10:00 a.m. and recommended that meetings for 2021 be set during the December meeting. At approximately 11:30 a.m., Director Putnam moved to adjourn the meeting. Chief Deputy AG Hanlon Leh seconded the motion, and the motion was unanimously approved.

Colorado Natural Resource Damages Trustees
Meeting Minutes
October 12, 2020
(Approved _____, 2020)

In Attendance:

TRUSTEES
Phil Weiser, Attorney General
Ginny Brannon, Director, Division of Reclamation, Mining & Safety, Colorado Department of Natural Resources (DNR)
John Putnam, Director of Environmental Programs, Colorado Department of Public Health and Environment (CDPHE)

TRUSTEE STAFF
Amy Beatie, Deputy Attorney General, Natural Resources and Environment Section (NRE)
David Kreutzer, First Assistant Attorney General, NRE
David Banas, Senior Assistant Attorney General, NRE
Jason King, Senior Assistant Attorney General, NRE
Emily Splitek, Assistant Attorney General, NRE
Doug Jamison, CDPHE
Susan Newton, CDPHE
Ed Perkins, Colorado Parks and Wildlife, DNR (CPW)
Robert Harris, CPW
Mindi May, CPW

OTHER STATE STAFF
Jennifer Opila, CDPHE
Melody Mascarenaz, CDPHE
Jessica Ogle, Intern, NRE
Dan Graeve, Administrative Assistant, NRE

Open Session

AG Weiser called the meeting (held via Zoom) to order at approximately 12:30 p.m. on October 12, 2020. The meeting's purpose was to brief the Trustees in executive session on the status of an issue relating to Natural Resource Damages (NRD). David Banas noted that all attendees were State employees and directly involved in the NRD program and could therefore remain in the executive session.

Executive Session

Deputy AG Beatie recommended the Trustees make a motion to go into executive session to consider the only item as identified on the agenda. She stated the executive session is authorized pursuant to section 24-6-402(3)(a)(II) and (III), C.R.S. and other laws that allow the Trustees to

enter executive session for specific purposes. At approximately 12:32 p.m., Director Putnam moved to begin an executive session to discuss the one item on the agenda. Director Brannon seconded the motion, and the motion was unanimously approved. The executive session was digitally recorded.

At approximately, 12:53 p.m., Director Putnam moved to end the executive session. AG Weiser seconded the motion, and the motion was unanimously approved, whereupon executive session was ended.

Open Session

Deputy AG Beatie confirmed the Trustees went into executive session to discuss the only item on the agenda, discussion was limited to that item, no formal action was taken, and no minutes were taken.

At approximately 12:55 p.m., Director Putnam moved to adjourn the meeting. Director Brannon seconded the motion, and the motion was unanimously approved.

ITEM #2

Last modified: November 25, 2020

Natural Resource Damages Accounts*

NRD Matter	Cal Gulch	Fountain Creek	IDARADO	Lowry	Rocky Flats
Total Settlement amount	$10,250,000.00	$345,000.00	$1,000,000.00	$1,606,930.00	$10,000,000.00
Total NRD dollars spent	$7,063,438.24	$0.00	$1,444,106.00	$1,257,894.52	$10,000,000.00
Account Balance as of 10/1/20	**$7,161,877.56**	**$352,389.75**	**$314,106.00**	**$404,254.74**	**$3,773.47**
Most recent Trustee Resolution Date	2/23/2010	4/23/2019	6/24/2019	7/11/2013	10/9/2018
Current Trustee awarded amount	$2,348,575.24	$352,389.75	$287,000.00	$1,606,930.00	$10,000.00
Pending Contracts	$0.00	$0.00	$0.00	$0.00	$10,000.00
Current Contract Encumbrances	$2,247,567.95	$0.00	$287,000.00	$116,013.44	$0.00
Remaining available funds	**$4,914,309.61**	**$352,389.75**	**$27,106.00**	**$288,241.30**	**$3,773.47**
Settlement Restrictions	YES	NO	NO	YES	NO
Type of Restriction	Funds must be used in accordance with Restoration Plans developed by the State and USFWS	None	None	Lowry has 2 settlements - (1)revolving loan fund with 200K remaining and (2) groundwater nexus.	National Defense Authorization Act
Interest bearing restrictions	NO	YES	NO	NO	NO
Explanation; Other notes	Funds must be segregated. Interest is not earmarked for site.	Interest goes to CPW to include in Chilcott Diversion Project	None	None	$7,500 being returned from City of Boulder.

*** NOTE: This spreadsheet does not account for NRD funds held by other agencies (e.g. DNR, USFWS)**

Natural Resource Damages Accounts*

NRD Matter	RMA	SHATTUCK	Standard Metals	SUMMITVILLE	Suncor	URAVAN
Total Settlement amount	$17,400,000.00	$1,250,000.00	$415,368.00	$5,000,000.00	$1,230,000.00	$1,000,000.00
Total NRD dollars spent	$10,030,159.40	$1,250,000.00	$0.00	$4,292,602.50	$21,525.04	$1,000,000.00
Account Balance as of 10/1/20	**$8,721,511.67**	**$80,142.22**	**$456,112.79**	**$1,063,173.81**	**$1,227,141.83**	**$364,285.12**
Most recent Trustee Resolution Date	10/10/2019	10/10/2019	NONE	12/18/2017	10/9/2018	4/2/2015
Current Remaining Trustee awarded amount	$5,707,087.93	$80,000.00	$0.00	$1,171,620.00	$1,230,000.00	$270,000.00
Pending Contracts	$0.00	$0.00	$0.00	0.00	0.00	0.00
Current Contract Encumbrances	$1,299,204.85	**$57,400.00**	$0.00	$513,535.45	$1,208,474.96	$223,477.28
Remaining available funds	**$7,422,306.82**	**$22,742.22**	**$456,112.79**	**$549,638.36**	**$18,666.87**	**$140,807.84**
Settlement Restrictions	NO	NO	NO	YES	NO	NO
Type of Restriction	Foundation Fund can only be used with NGC	None	Money received through settlement with insurance company - no NRD requirements	All money must be spent in the Alamosa River Watershed	None	None
Interest bearing restrictions	NO	NO	NO	YES	NO	NO
Explanation	Recovery Fund-Trustees agreed to work with NGC for restoration projects	None	None	Interest must be used in the Alamosa River Watershed	None	None

*** NOTE: This spreadsheet does not account for NRD funds held by other agencies (e.g. DNR, USFWS)**

ITEM #4

Society Turn – Idarado NRD Site

Name, Ross Davis
Title, EPS II

COLORADO
Hazardous Materials
& Waste Management Division
Department of Public Health & Environment

Overview

23 Acres of Tailings Remediation

4,600 ft of River Rehabilitation

Society Turn – Project Partners

- Colorado Department of Public Health and Environment
  Plan development and review, construction oversight, financial contribution.

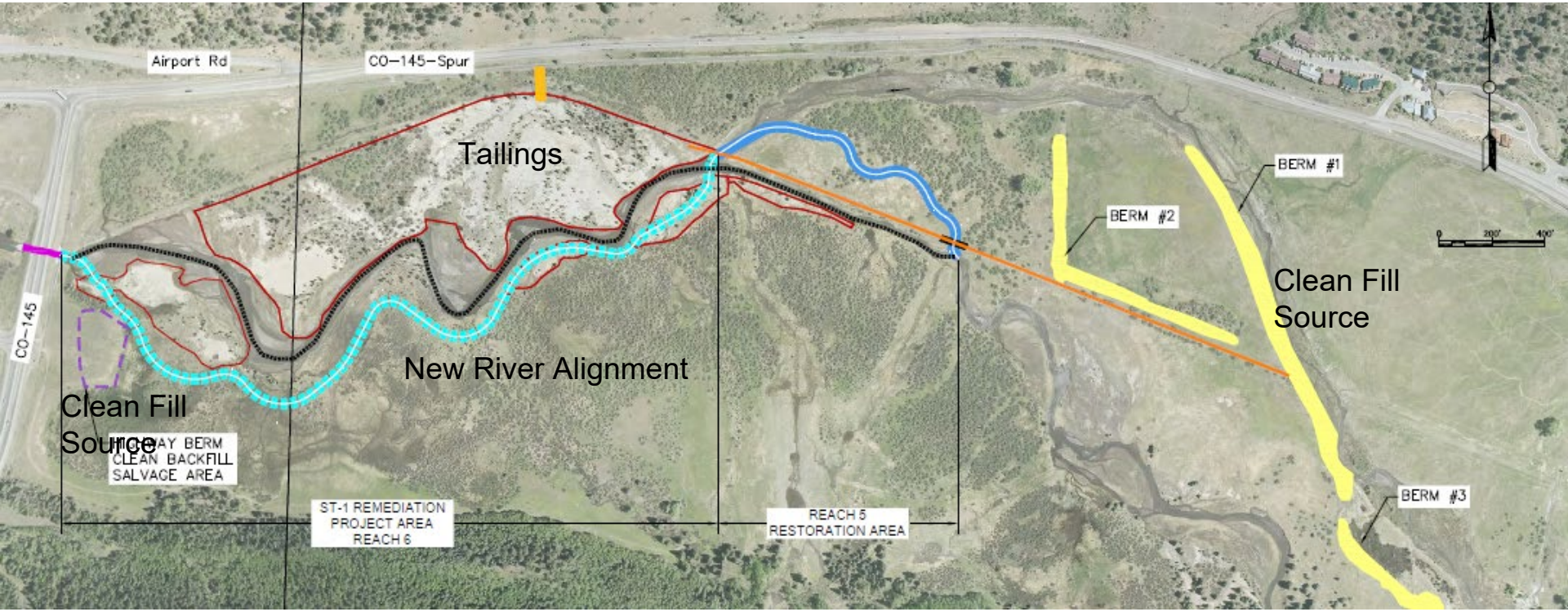
- Town of Telluride
  Plan development, construction contracting, financial contribution.

- Colorado Water Conservation Board
  Financial contribution.

- Valley Floor Preservation Partners
  Financial contribution.

- Trout Unlimited
  Financial contribution.

Society Turn – Project Plan

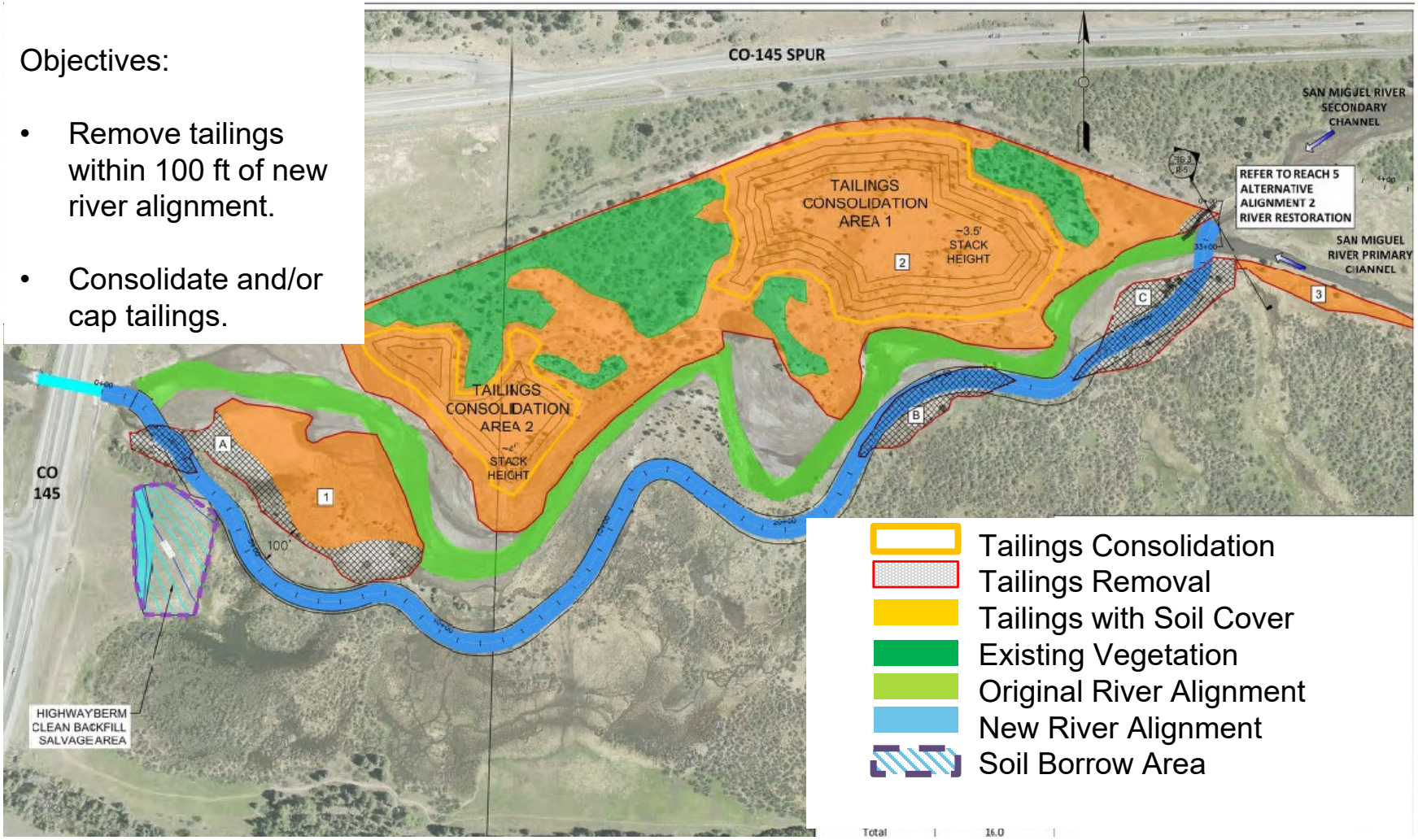


COLORADO
Hazardous Materials & Waste Management Division
Department of Public Health & Environment

Society Turn – Project Plan

Objectives:

- Remove tailings within 100 ft of new river alignment.
- Consolidate and/or cap tailings.



Society Turn – Construction

Society Turn – Soil Profile

Organic Horizon

Fluvial Tailings

Clay Subsoil (Contaminated from tailings leaching)

Fluvial Gravel Deposit – Clean – Target Horizon

Similar Soil Profile Throughout Area – Consistent tailings excavation depth of 5 ft.

COLORADO
Hazardous Materials & Waste Management Division
Department of Public Health & Environment

Society Turn Tailings Removal

Haul Road graded with 12 inch clean fill cap.

Different equipment used for tailings and clean fill handling.

Culverts temporarily placed to cross river.

Tailings removal completed before diverting to new river alignment.

Society Turn – Construction

Society Turn Tailings Capping

12 inch clean fill cap in unconsolidated tailings areas

Original River Alignment

Preserve Existing Vegetation

COLORADO
Hazardous Materials & Waste Management Division
Department of Public Health & Environment

Society Turn Tailings and Cap

12 inch clean cap area

Tailings Consolidation

Preserve existing vegetation in cap areas.

Vegetation was removed from consolidation areas

Society Turn – Ready for River

Society Turn - New River

Same area as previous photograph

Tailings Excavation Area

New River Alignment

Roughed and seeded

Society Turn – Final Touches

Clean fill source area graded and seeded.

Society Turn – Final Touches

Tailings consolidation area capped and seeded

Society Turn – Contacts

Questions?

Send to:
CDPHE Project Manager Ross Davis

ross.davis@state.co.us

ITEM #5

PHIL WEISER
Attorney General

NATALIE HANLON LEH
Chief Deputy Attorney General

ERIC R. OLSON
Solicitor General

ERIC T. MEYER
Chief Operating Officer

STATE OF COLORADO
DEPARTMENT OF LAW

RALPH L. CARR
COLORADO JUDICIAL CENTER
1300 Broadway, 10th Floor
Denver, Colorado 80203
Phone (720) 508-6000

Office of the Attorney General

November 24, 2020

M E M O R A N D U M

TO: Colorado Natural Resources Trustees

FROM: Emily Splitek
Assistant Attorney General

RE: Summitville Natural Resource Damages Funds

BACKGROUND

In 2000, the State of Colorado and the United States Natural Resource Trustees recovered $5,000,000 in settlement funds to be used to restore, replace, or acquire the equivalent of natural resources in the Alamosa River watershed which were damaged by a release of hazardous substances from the Summitville Mine. Approximately $545,000 remains. The Trustee Council released a Solicitation for Project Proposals (SPP) for these remaining funds in May 2020. The SPP requested that project proposals be submitted by the end of July 2020.

The Trustee Council received three project proposals from the following proponents:

- Wenck, Inc. (Wenck) for bank stabilization and riparian habitat restoration of approximately 4,000 feet of channel ($545,000 request). This project would build on past work Wenck has done with previous Natural Resource Damages (NRD) awards. The focus of this project is the Ortega Reach, where approximately 20,000 square feet of bank area has been lost to erosion since 2011. This has resulted in increased sediment load in the river and damage to riparian vegetation. The project would stabilize the banks, add overflow channels, and revegetate native plants along the reach, which is upstream from the areas where Wenck has completed similar restoration work.

- Rio Grande Headwaters Land Trust (RiGHT) for improving fencing and reestablishing woody riparian vegetation through planting along 2.5 miles of stream ($44,120 request). RiGHT would partner with local youth corps organizations to complete the work. The proposal would improve surface water quality, reduce sediment, improve riparian habitat and biological resources. The fencing would ensure that livestock do not damage newly-planted cottonwoods and willows.

- Trout Unlimited for the acquisition of water rights to restore stream flows in the Alamosa River ($450,000 request). Trout Unlimited would use the funding to acquire up to 7.5 c.f.s. of water rights, by lease or purchase, on the Alamosa River. The water rights would be dedicated to the Colorado Water Conservation Board's instream flow program. Water would be stored in dedicated storage space (2,000 acre feet) in Terrace Reservoir and released in the winter. This project builds on previous efforts to acquire water rights with NRD funds. Previous efforts resulted in the acquisition of 2.5 c.f.s. of water rights.

UPDATE

The Trustee Council, which includes representatives from the Attorney General's Office, Colorado Department of Natural Resources, Colorado Department of Public Health and Environment, and the United States Department of the Interior, reviewed all projects under the screening criteria outlined in the Trustee Council's guidance document on reviewing NRD project preproposals. These criteria require that a restoration project be consistent with all applicable laws and regulations, address natural resources damaged by releases from the Summitville Mine Superfund Site, and be technically feasible. The Trustee Council determined that all three projects met the screening criteria.

The Trustee Council then reviewed the projects under the ranking criteria outlined in the SPP:

- Consistency with the Alamosa River Watershed Restoration Master Plan, a document developed by the Trustee Council in 2005 to guide restoration activities;

- Public acceptance of the proposed project, as evidenced by written comments from the public;

- Likelihood of adverse impacts;

- Likelihood of success;
- Technical feasibility;
- The extent to which a proposed project benefits more than one natural resource;
- The time it would take for each project to provide benefits;
- The expected sustainability and duration of benefits from the proposed project;
- The availability of matching funds, in-kind services, or volunteer assistance in the amount of at least 50% of the requested NRD funds and opportunities for collaboration and coordination with other ongoing or proposed projects;
- The need of the proposed project to be protected;
- The project's cost (and cost effectiveness);
- Consistency with regional planning;
- Public benefit and access; and
- Collaboration techniques and methods used to communicate with the public.

After applying the ranking criteria to each of the three projects, the Trustee Council ranked the projects as follows:

1) Wenck, Inc.
2) RiGHT
3) Trout Unlimited

The Trustee Council believes all three projects are meritorious and would be a good use of NRD funds. Project proponents will be invited to present at the December Trustee meeting. For your reference, all three project proposals are attached to this memo.

Attachment: **2020 Project Proposals for Summitville NRD Funds**

COLORADO NATURAL RESOURCE TRUSTEES
RESOLUTION DECEMBER 10, 2020
CONCERNING SUMMITVILLE MINE RESTORATION PROJECTS

WHEREAS, the Colorado Natural Resource Trustees ("Trustees") are responsible for the management and direction of Colorado's natural resource damages program;

WHEREAS, the Trustees are responsible for administering State funds to restore, replace or acquire the equivalent of injured natural resources;

WHEREAS, the Summitville Mine Superfund Site natural resource damages ("NRDs") settlement established a fund of $5,000,000.00 ("Summitville Fund") jointly with the U.S. Department of Interior to be used to restore fish and wildlife habitats and for recreational purposes;

WHEREAS, approximately $545,000 remains in the fund;

WHEREAS, pursuant to a Memorandum of Understanding between the state and federal representatives formed a Trustee Council to review potential projects that fulfill the NRD settlement purpose;

WHEREAS, the Alamosa River Watershed Master Restoration Plan ("Master Plan") identified three tiers of restoration projects;

WHEREAS, the Trustee Council, comprised of representatives of both the State Trustees and the United States Fish and Wildlife Service, developed the Solicitation of Project Proposals to identify additional restoration projects for the Alamosa River Watershed.

WHEREAS, the Trustee Council received and evaluated three proposals: (1) Alamosa River Watershed Restoration (Wenck, Inc.); (2) Lower Alamosa River Riparian Restoration Project (Rio Grande Headwaters Land Trust); (3) Alamosa River Instream Flow Project, Phase II (Trout Unlimited), included in Appendix A.

WHEREAS, each of the three projects identified above meet the criteria for the three tiers established in the Master Plan;

[intentionally left blank]

NOW THEREFORE, the Trustees resolve as follows:

The Trustees do hereby:

1. Approve the Alamosa River Watershed Restoration project for the amount of $XXX. Wenck, Inc. must enter into a contract to perform the work identified in its proposal within two (2) years of the date of this resolution and complete the work identified in its proposal within five (5) years of the date of entering in the contract to perform the work.
2. Approve the Lower Alamosa River Riparian Restoration Project in the amount of $XXX. Rio Grande Headwaters Land Trust must enter into a contract to perform the work identified in its proposal within two (2) years of the date of this resolution and the work must be completed within five (5) years of entering in the contract to perform the work.
3. Approve the Alamosa River Instream Flow Project, Phase II project in the amount of $XXX and any remaining interest in the account. Trout Unlimited must enter into a contract to perform the work identified in its proposal within two (2) years of the date of this resolution and complete the work identified in its proposal within five (5) years of the date of entering in the contract to perform the work.

_____ _____

Philip J. Weiser Date
Colorado Attorney General

_____ _____

Jill Hunsaker Ryan,
Executive Director, CDPHE Date

_____ _____

Dan Gibbs, Executive Director, DNR Date

WENCK

Responsive partner.
Exceptional outcomes.

July 31, 2020

Ms. Susan Newton
Alamosa River Watershed NRDA Project Manager
Colorado Department of Public Health and Environment
Hazardous Materials and Waste Management Division
4300 Cherry Creek Drive South
Denver, CO 80246-1530

RE: Proposal - Alamosa River Watershed, Natural Resource Damages

Dear Susan:

Thank you for providing us the opportunity to submit this proposal regarding the Alamosa River Watershed Natural Resource Damages. The project presents unique challenges that we are excited to overcome and provide further restoration of Target Natural Damages on a Master Plan Tier 1 project. This proposal has been put together as a design/build project comprised of the Engineer, Wenck Associates, Inc. dba Lidstone and Associates, a Wenck Company (Wenck), and Contractor, Robins Construction (Robins). Continuing our success on previous and existing Colorado Department of Public Health and Environment (CDPHE) Alamosa River Watershed restoration projects, the Project Team will again benefit from the coordination efforts of the Alamosa River Watershed Restoration Foundation (ARWRF). Working together, the Project Team have successfully completed multiple complex and similar projects (Phases IV and V of the Alamosa River Watershed Restoration Project) on the Alamosa River and have been working with the local farmers in an effort to achieve a collaborative team. This proposal includes our understanding of the project, our proposed scope of services, our project team roles, abbreviated resumes, an estimated schedule, and costs to complete the project.

The Alamosa River in the vicinity of the proposed project reach has been heavily impacted by sediment loading and deteriorating irrigation diversions as a result of the adverse effects from the Summitville Mine catastrophe. Although much of the initial slug of toxic water was contained within Terrace Reservoir, subsequent releases of water and sediment resulted in deterioration of headgates, irrigation pipe, loss of riparian vegetation and an influx of sediment. To date, 6 miles of the Alamosa River below Terrace Reservoir have been restored to their pre-Summitville Mine condition by stopping bank erosion, improving irrigation structures, and reconnecting the channel to the surrounding riparian area and floodplain. Wenck is on schedule to complete another 3,000 feet of channel restoration this year for a total of 7 miles of restored Alamosa River. The proposed project reach is upstream of this restored 7 miles of Alamosa River below Terrace Reservoir, where the river transitions from the confinement of the canyon to the broad floodplain where it feeds ancestral cottonwood groves and farmland. Similar to the destruction caused downstream by the Summitville Mine operations, this reach has seen significant bank erosion and loss of riparian vegetation. The continual transport and deposition of this coarse sediment will drive adverse channel changes within the downstream reaches and as such will jeopardize the NRD (and other source) funded restoration work efforts. Upon restoration of the proposed reach, the advancement of bank erosion and mass wasting of the banks, which are as high as 10 feet will be remediated. The proposed project will include in-

Ms. Susan Newton
Alamosa River Watershed
NRDA Project Manager
CDPHE
July 31, 2020

WENCK
Responsive partner.
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channel rock structures, bank reshaping and revegetation, as well as the construction of alluvial groundwater-recharging overflow channels. All of this work will require landowner approval and as before, the Project Team is familiar with the challenges of ensuring landowner approval throughout the design-build process. Similar to the past, we have identified alternative sites for Alamosa River restoration on previously completed Alamosa River Watershed Restoration projects (within Phases II and III). These locations are characterized by advancing bank erosion and current and potential rock structure failures. Should such failures occur, downstream and upstream historical restoration work will be compromised. These alternatives are further detailed in the proposal/work plan and would be addressed if Ortega final consent cannot be achieved or if there is remaining funding at the end of the Ortega project.

To accomplish this goal, Wenck estimates the Total Project Cost of $819,556. To assist in the restoration effort, a total of $273,600 of in-kind contributions has been offered from adjacent landowners, ARWRF, and Wenck in the form of materials and services. Wenck requests the remaining $545,956 from the Colorado NRD Trust Fund for Engineering, Construction, and Construction Administration Fees. The breakdown of these costs is included in **Appendix D**.

Should you have any questions or need clarification of anything presented in the attached proposal, please do not hesitate to contact Chris Lidstone. Chris will be the Technical Project Manager and the main point of contact for the CDPHE. He will work closely with Adam Robins of Robins and Justin Rogers of ARWRF on all aspects of the project.

Sincerely,
Wenck Associates dba Lidstone and Associates, a Wenck Company

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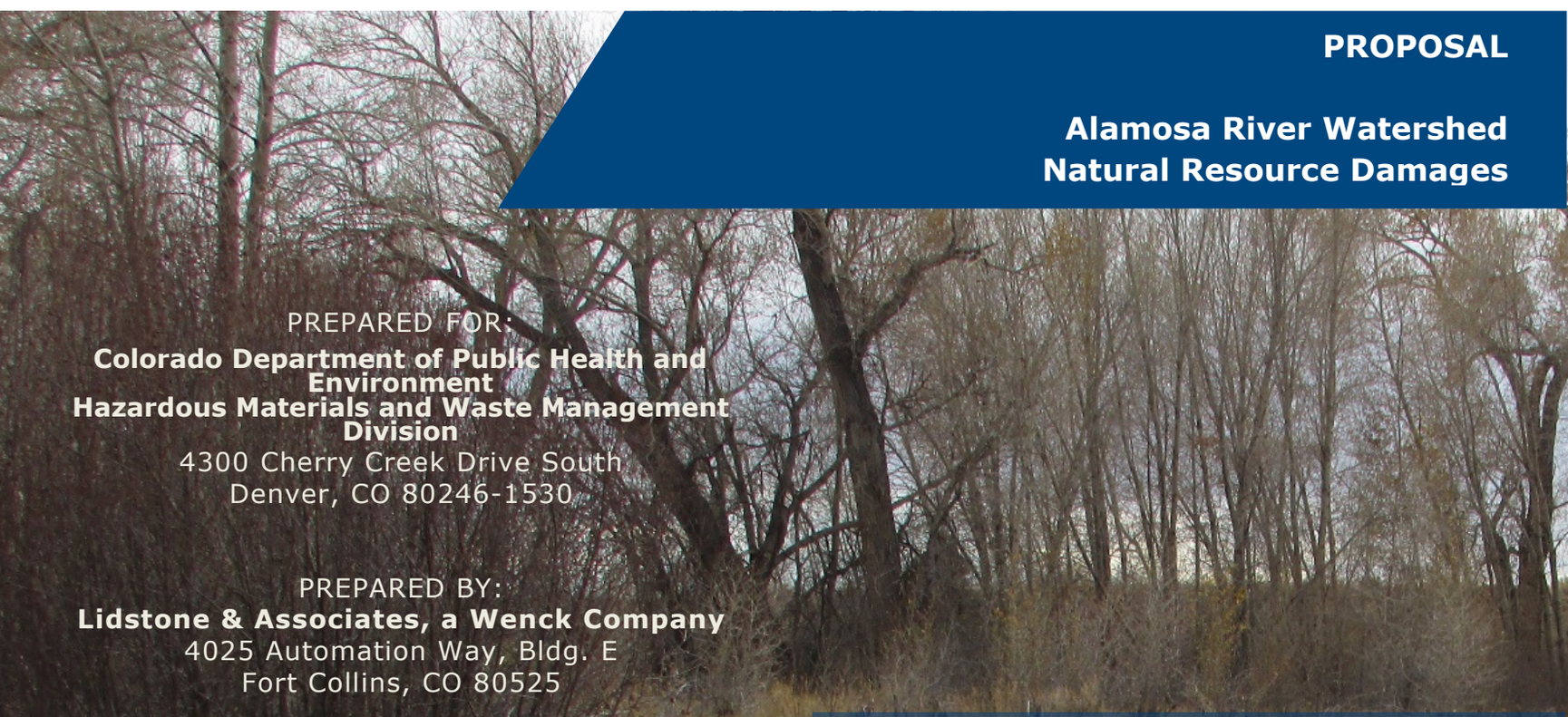
CDL:rce

PROPOSAL

Alamosa River Watershed Natural Resource Damages



PREPARED FOR:
Colorado Department of Public Health and Environment
Hazardous Materials and Waste Management Division
4300 Cherry Creek Drive South
Denver, CO 80246-1530

PREPARED BY:
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IN ASSOCIATION WITH:
Alamosa River Watershed Restoration Foundation, Inc.
P.O. Box 502
La Jara, CO 81140

July 31, 2020

CONTENTS

WENCK ASSOCIATES
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Introduction

The following provides a brief description of the Alamosa River restoration experience of the Project Team (Team) comprised of Wenck Associates, Inc. dba Lidstone and Associates, a Wenck Company (Wenck), the Alamosa River Watershed Restoration Foundation (ARWRF), and Robins Construction (Robins). More detailed information about each organization and complete Project Descriptions are provided in **Appendix A**. **Figure 1, Appendix B** presents the Alamosa River project area and identifies past project work completed within the watershed, most by the Wenck Team.

Wenck Associates Inc. dba Lidstone and Associates, a Wenck Company

Since November of 2012, Wenck has teamed with the ARWRF and CDPHE on river restoration along the Alamosa River. In July of 2015, Lidstone and Associates, Inc. based out of Fort Collins, Colorado merged with Wenck Associates, headquartered in Maple Plain, Minnesota. Wenck is intimately familiar with the watershed needs of the Alamosa River and is highly qualified to design/build the Alamosa River Watershed Restoration Project along the Ortega Reach. Wenck provided fluvial geomorphology, engineering and hydrology expertise that has successfully addressed each component of the recommendations described in the Alamosa River Watershed Restoration Master Plan and Environmental Assessment. They were the selected design firm, responsible for the Phase IV and V Alamosa River Watershed Restoration Project. In those efforts, Wenck negotiated with landowners and ditch companies to improve irrigation structures and restore the Alamosa River to an aesthetically pleasing and naturally functioning stream. The Phase IV and V projects, which include over 10,000 feet of Alamosa River restoration from Gomez to County Road 10 bridges has and will continue to benefit the surrounding river community near the town of Capulin. Further description of both the Phase IV and Phase V Alamosa River Watershed Restoration Projects are detailed in **Appendix A**.

Over the last 35 years, Wenck has provided water resources expertise to public and private clients throughout the United States and internationally. Wenck has completed innovative riverine projects throughout 21 states as well as in Indonesia and Papua New Guinea. Select river restoration projects and river master plans are presented in **Table 1**. Several of these projects have won federal and state awards for their innovation, design, and construction success. Wenck's staff includes professional engineers and geologists licensed in Colorado. These individuals provide expertise in geomorphology, hydrology, and environmental science.

Wenck's stream restoration and channel stability assessment work has included ecologically impaired streams across a host of riverine environments. Such streams have been impacted by mining, agricultural practices, urban encroachment, and/or physical changes in the watershed. Wenck incorporates a multi-level approach to projects, which includes geomorphic assessment and engineering design- leading to channel stability and riparian enhancement. The firm's design and construction work has addressed water quality impairment (copper, sediment, acid runoff, and fecal coliforms), excessive aggradation and degradation and bank instability. Wenck uses a multitude of methodologies to address channel form and habitat impairment from bank stabilization, channel reconstruction, bioengineering, revegetation, to the introduction of large woody debris. Several projects have included stream barbs (j-hooks), cross vanes (rock riffle structures), bendway weirs and engineered log jams. Typical project details for cross vanes and stream barbs (vanes) can be found as **Detail 1** and **Detail 2** at the end of **Appendix B.** Engineered wetlands, anoxic limestone drains, grade controls, bioaccumulation, riparian buffers, and fencing have also been incorporated into water quality improvement projects.

Table 1
Relevant River Restoration Projects

Project Name	Location	Project Manager	Key Personnel	Project Owner	Subcontracted By	Size/Length	Completion Date	Construction Type	Completion Amount
Alamosa River Watershed Restoration Project – Phase V	Conejos County Colorado	Chris Lidstone Principal Geomorphologist	Marty Jones Principal Engineer Chris Jaros Project Engineer	Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management Division 4300 Cherry Creek Drive South Denver, CO 80246-1530 (303) 692-3321		0.8 River Miles	Ongoing	Channel shaping, bank stabilization, realignment, rock structures, biotechnical protection, irrigation headgates, minimum stream flows, aquatic habitat, and riparian health	$1,103,400 Design and Construction
Alamosa River Watershed Restoration Project – Phase IV	Conejos County Colorado	Chris Lidstone Principal Geomorphologist	Marty Jones Principal Engineer Zach Billingsly Project Engineer	Colorado Department of Public Health and Environment, Hazardous Materials and Waste Management Division 4300 Cherry Creek Drive South Denver, CO 80246-1530 (303) 692-3321	Alamosa River Watershed Restoration Foundation, Inc. P. 0 . BOX 502 La Jara, Colorado 81140	1.0 River Miles	2017	Channel shaping and lengthening, realignment, rock structures, biotechnical protection, irrigation headgates and flow splitter, minimum stream flows, aquatic habitat, and riparian health	$940,117 Design and Construction
Alamosa River Watershed Restoration Master Plan	Alamosa County Colorado	Chris Lidstone Principal Geomorphologist	Erin Reed Principal Engineer	Colorado Water Conservation Board 1313 Sherman Street, Room 721 Denver, CO 80203 Contact: Brian Hyde (303) 866-4803	MWH, Global Headquarters 380 Interlocken Crescent, Suite 200 Broomfield, CO 80021 Contact: Chip Paulson (202) 533- 1900	Alamosa Watershed (148 mi^2)	2005	Channel shaping, realignment opportunities, rock structures, biotechnical protection, rootwads, headgates, minimum stream flows, aquatic habitat, and riparian health	$280,000 Master Plan Only
Little Medicine Bow River Restoration	Carbon County Wyoming	Chris Lidstone Principal Geomorphologist	Marty Jones Principal Engineer	Wyoming Department of Environmental Quality, Abandoned Mine Land Division 122 West 25th Street, Herschler Bldg. Cheyenne, WY 82002 Contact: Alan Edwards (307) 777-6145	AVI 1103 Old Town Lane, Suite 101 Cheyenne, WY 82009 Contact: Jim Murphy, PE (307) 637-6017	3.5 River Miles Watershed (188 mi^2)	1993	Channel shaping, floodplain development, realignment, rock structures, biotechnical protection, rootwads, revegetation	$5,000,000 Design and Construction
Rogue River Stabilization Plan	Jackson County Oregon	Chris Lidstone Principal Geomorphologist	Marty Jones Principal Engineer Erin Reed Principal Engineer	Knife River Materials, Inc. 3770 Kirtland Road Central Point, OR 97502 Contact: Bill Gibson (541) 664-4155		10 River Miles Watershed (2050 mi^2)	2003	Bank shaping, realignment, rock structures, biotechnical protection, rootwads, revegetation, bendway weirs, j-hooks, ESA fish	$1,200,000 Design and Construction
Steamboat South Pit Reclamation and Yampa River Stabilization	Routt County Colorado	Chris Lidstone Principal Geomorphologist	Marty Jones Principal Engineer Erin Reed Principal Engineer	Lafarge West, Inc. P.O. Box 773004 Steamboat Springs, CO 80477 Contact: Bruce Daniels (970) 879-0500		<1.0 River Miles Watershed (550 mi^2)	2006	Bank shaping, realignment, rock structures, cross vanes, j-hooks, biotechnical protection, rootwads, revegetation, irrigation headgates, grazing management, fishery	$450,000 Design and Construction
Bear Creek Bank Stabilization	Jackson County Oregon	Chris Lidstone Principal Geomorphologist	Erin Reed Principal Engineer	Rogue Aggregates, Inc. 3770 Kirtland Road Central Point, OR 97502 Contact: Bill Gibson (541) 664-4155		1.2 River Miles Watershed (350 mi^2)	2007	Bank shaping, realignment, rock structures, cross vanes, j-hooks, biotechnical protection, rootwads, revegetation, ESA fish	$250,000 Design and Construction
Beaver Creek Restoration Plan	Crook County Oregon	Chris Lidstone Principal Geomorphologist	Marty Jones Principal Engineer	Crooked River Watershed Council 498 SE Lynn Blvd Prineville, OR 97754 Contact: Greg Bedortha (541) 447-8567		2.2 River Miles Watershed (160 mi^2)	2004	Bank shaping, realignment, rock structures, cross vanes, j-hooks, biotechnical protection, rootwads, revegetation, irrigation headgates, water quality	$70,000 Design Only
Big Goose Creek Drop Structure	Sheridan Wyoming	Chris Lidstone Principal Geomorphologist	Marty Jones Principal Engineer	Wyoming Department of Environmental Quality, Abandoned Mine Land Division 122 West 25th Street, Herschler Bldg. Cheyenne, WY 82002 Contact: Alan Edwards (307) 777-6145		< 1.0 River Miles	1996	Bank shaping, drop structures, safety hazard mitigation	$850,000 Design and Construction

Table 1
Relevant River Restoration Projects

Project Name	Location	Project Manager	Key Personnel	Project Owner	Subcontracted By	Size/Length	Completion Date	Construction Type	Completion Amount
Lower Boulder Creek Feasibility Study	Boulder County Colorado	Chris Lidstone Principal Geomorphologist	Marty Jones Principal Engineer Erin Reed Principal Engineer	Boulder County Parks and Open Space 5201 St. Vrain Road Longmont, CO 80503 (303) 678-6200 US Army Corps of Engineers 1616 Capitol Avenue, Suite 9000 Omaha, NE 68128 (719) 570-7797)	ESA Adolfson, Inc. 522 SW 5th Ave., #820 Portland, OR 97204 Contact: Dave Carlton (503) 226-8018	4.0 River Miles	2007	Bank shaping, realignment, rock structures, cross vanes, j-hooks, biotechnical protection, rootwads, revegetation, water quality	$140,000 Design Only
Provo River Restoration Project	Wasatch County Utah	Chris Lidstone Principal Geomorphologist	Marty Jones Principal Engineer	Central Utah Water Conservancy District 355 West University Parkway Orem, UT 84058 (801) 226-7100	MWH, Global Headquarters 380 Interlocken Crescent, Suite 200 Broomfield, CO 80021 Contact: Chip Paulson (202) 533- 1900	10 River Miles	1996	Bank shaping, realignment, rock structures, cross vanes, j-hooks, biotechnical protection, rootwads, revegetation, irrigation headgates, ESA species	$120,000 Design Only
Rio Grande Restoration	San Luis Valley Colorado	Chris Lidstone Principal Geomorphologist	Marty Jones Principal Engineer	San Luis Valley Water Conservancy District 415 San Juan Avenue Alamosa, CO 81101 Contact: Dennis Felmlee (719) 589-2230	MWH, Global Headquarters 380 Interlocken Crescent, Suite 200 Broomfield, CO 80021 Contact: Chip Paulson (202) 533- 1900	96 River Miles	2002	Bank shaping, realignment, rock structures, cross vanes, j-hooks, biotechnical protection, rootwads, revegetation, irrigation headgates, aquatic species, riparian health	$220,000 Design Only
James River Degradation Study	Yankton South Dakota	Chris Lidstone Principal Geomorphologist	Marty Jones, Principal Engineer	South Dakota Department of Transportation 1306 W 31st Street Yankton, SD 57078 Contact: Kevin Goeden (605) 773-3285		9.5 River Miles	1999	Bank shaping, bridge protection, safety hazard mitigation, revegetation, realignment option	$55,000 Design Only
Little Thumb Creek	Yellowstone National Park	Chris Lidstone Principal Geomorphologist	Marty Jones Principal Engineer	Wyoming Department of Environmental Quality, Abandoned Mine Land Division 122 West 25th Street, Herschler Bldg. Cheyenne, WY 82002 Contact: Alan Edwards (307) 777-7062	Nelson Engineering P.O. Box 1599 Jackson, WY 83001 Contact: Bob Norton (307) 733-2087	2.0 River Miles Watershed (40 mi^2)	1996	Bank shaping, realignment, rock structures, cross vanes, j-hooks, biotechnical protection, rootwads, revegetation, fish passage, ESA species	$450,000 Design and Construction
Deep Creek	Baker County Oregon	Chris Lidstone Principal Geomorphologist	Marty Jones Principal Engineer	Bonnanza Mining		<1.0 River Mile	1990	Bank shaping, realignment, biotechnical protection, rootwads, revegetation	$75,000 Design and Construction
Little Snake River Infiltration Gallery	Carbon County Wyoming	Chris Lidstone Principal Geomorphologist	Erin Reed Principal Engineer	Town of Baggs P.O. Box 300 Baggs, WY 82321 Contact: Mayor Kathy Staman (307) 383-7335		<1.0 River Mile	2012	Channel shaping, realignment opportunities, rock structures, cross vanes biotechnical protection, rootwads, water quality	$615,000 Design and Construction
Chrissy Park Channel Stabilization Master Plan	Jackson County Oregon	Chris Lidstone Principal Geomorphologist	Erin Reed Principal Engineer	City of Medford Parks and Recreation Department 701 North Columbus Avenue Medford, OR 97501 Contact: Peter Young (541) 774-2413		1.2 River Mile	2011	Channel shaping, bank regrading, log erosion barriers, rock structures, biotechnical protection, rootwads, weed control, grazing management	$30,000 Mater Plan Only
Haggarty Creek Water Impairment Rehabilitation	Carbon County Wyoming	Chris Lidstone Principal Geomorphologist	Erin Reed Principal Engineer	Wyoming Water Development Commission 6920 Yellowtail Road Cheyenne, WY 82002 Contact: Mike Besen (307) 777-7626	States West Water Resources Corp. P.O. Box 292 Cheyenne, WY 82001 Contact: Victor Anderson (307) 634-7848	8.5 River Miles	2011	Channel shaping, floodplain reconnection, rock structures, engineered log jams, rootwads, wetland construction, passive water quality treatment	$125,000 First Phase Data Collection and Conceptual Planning
Double R Ranch Upper Rogue Rehabilitation	Jackson County Oregon	Chris Lidstone Principal Geomorphologist	Erin Reed Principal Engineer	Double R Ranch P.O. Box 1336 Shady Cove, OR 97539 Contact: Bryan Mattson (541) 878-3895		<1.0 River Mile	2008	Bank reshaping, rootwads, toe slope protection, rock structures, planting, revegetation	$450,000 Design and Construction

In 2002, as a key sub-consultant to Montgomery-Watson-Harza (MWH), Wenck (as Lidstone and Associates, Inc.) assisted San Luis Valley stakeholders in the development of the Rio Grande Master Plan. Wenck addressed geomorphology and restoration opportunities from South Fork to Alamosa Wildlife Refuge. Included within this study was an extensive toolbox of restoration techniques, recommendations on irrigation diversion improvements and headgate consolidation opportunities, fencing guidance, flood control and habitat improvement, as well as a multi-variable restoration prioritization schedule.

In 2004, Wenck, again as a key sub-consultant to MWH, completed a watershed assessment (Alamosa River Watershed Restoration Master Plan and Environmental Assessment) evaluating changes in river geomorphology, groundwater levels and sediment in the Alamosa River Basin in Colorado. This was a large-scale project that evaluated changes in land use, including wetland drainage for agricultural production on the Alamosa River system. The Master Plan summarized the 2004 environmental condition and provided recommendations for solutions to the identified problems. A three-tiered solution system was proposed to prioritize the restoration alternatives, with Tier 1 consisting of the alternatives with the highest priority. This proposal includes restoration alternatives included in the Tier 1 criteria. Wenck's involvement with the Master Plans, their 35 years of national and international experience with river systems combined with their recent experience along the Alamosa River makes Wenck a highly-qualified partner to the CDPHE and will be assisted by ARWRF and Robins Construction for the completion of this work in accordance with this proposal on the Alamosa River.

Alamosa River Watershed Restoration Foundation

The Alamosa River Watershed Restoration Foundation is a 501 (c) (3) Public Non-Profit Organization in the State of Colorado that was established in 2001 by members of the Alamosa-La Jara Water Conservancy District. The purpose of the ARWRF is to seek funding to encourage and to manage river restoration efforts on the Alamosa River. The original goal of the Alamosa River Watershed Restoration Project was to stabilize the river to reduce sediment loading, limit bank erosion, restore riparian habitat, stabilize the water table along the riparian corridor and reduce continued down cutting and instability of the river channel. The replacement of damaged headgates and improved irrigation efficiency was a secondary goal, which allowed more water to remain in the river. The ARWRF has also promoted the development of Best Management Practices to improve the stream and the surrounding riparian area.

Significant progress to restore the banks has been made by the Alamosa-La Jara Water Conservancy District and the ARWRF through the Colorado Nonpoint Source program funding, Colorado Water Conservation Board funding, and local in-kind and cash match totaling over $1,000,000. Historically, the Alamosa River was straightened by the U.S. Army Corps of Engineers to assist in flood control. This straightening had adverse effects and caused a sediment imbalance, downcutting, loss (lowering) of alluvial groundwater and lack of floodplain connectivity.

ARWRF completed extensive work (Phase I) on 6,000 feet of channel below Gunbarrel Road between 2002 and 2005 (**Figure 1, Appendix B**). An additional 7,600 feet of channel was treated in 2005 to County Road 8 (Phase II) and an additional 9,000 feet immediately above and below County Road 9 and 3,000 feet below County Road 10 was completed in 2013 (Phase III). The current team, Wenck, Robins, and ARWRF to date have completed 5,500 feet between County Road 8 and County Road 10 in 2017 (Phase IV), 1,500 feet below County Road 9 in 2019, and expect to complete an additional 3,000 feet between Gomez Bridge and Gunbarrel Road in 2020 (Phase V). The work, similar to the ongoing work, involves the removal of excess sediment, reestablishment of natural meander patterns, installation of rock vanes, combining or otherwise improving irrigation headgates and measuring devices, replacement and propagation of riparian vegetation, and grazing

management. These measures have had demonstrable success, have benefitted the ecosystem and the landowners, and should be protected.

Robins Construction

Robins has recently teamed with Wenck, the ARWRF, and CDPHE on the above-described Phase IV and V of the Alamosa River Watershed Restoration Project. They are an important partner in the proposed Design/Build Team and will provide construction services and if necessary, bonding capacity. Robins based out of Antonito, Colorado has been in business since 1976 providing quality construction services to the local community. Robins is a small locally owned construction company employing anywhere from 16 to 20 employees. Robins not only provides materials for their river restoration work from their owned rock quarry but also is skilled with river design and construction techniques. In their most recent work effort on the Alamosa River, Robins' skilled professionals have not only assisted in design modification to the riverine structures but have been integral in the success of the extensive irrigation improvements. They have completed river restoration and conservation district projects on the Rio Grande, Alamosa, and Conejos Rivers. Such work has included the construction of riverine structures, earthwork, and material movement, headgates and diversions as well as seeding, riparian plantings, and fencing. They have worked with many of the local landowners and have a well-established level of trust.

Other Partners

The Wenck Team includes Real West Natural Resources Consulting (Real West). Real West is a Woman-Owned Business and is based out of Laramie, Wyoming. The Principal, Amber Travsky, specializes in river and riparian enhancements, endangered species surveys as well as vegetation and wetland analysis. Real West was established in 1993 to assist government agencies and industry in compliance with the national regulations. Wenck has worked with Real West, specifically the owner Amber Travsky, for over 20 years on many projects throughout the west, including the Alamosa River Watershed Restoration Project (Phase IV and V), Yampa River Restoration Project, as well as wetland and riparian surveys and channel restoration opportunities throughout Colorado and Wyoming.

Summary

This proposal (Ortega Reach of the Alamosa River, Phase VI), which is presented herein will ensure the success of all past projects (Phases I-V) by reducing a significant source of upstream sediment; reconnecting the floodplain to the river channel; restoring the local groundwater levels, and, reshaping and replanting stream banks and creating wetlands. The Phase VI proposal will not only serve as a local enhancement but will promote the long-term stability of those previously completed projects. The Team will utilize a fluvial geomorphic approach to river improvements using natural materials and post-Terrace Dam hydrology. Restoration is achieved by creating correct width to depth ratios, reestablishing the meander bends, and reconnecting the floodplain to the river channel.

The Team has a history of maintaining good relationships with the public, adjacent landowners, as well as the irrigation districts. The Team understands that working with local landowners helps ensure that project goals are met and provides an important non-technical perspective that can assist in accomplishing our project needs. To do this, the Team and their lead landpersons, ARWRF consistently communicate with the adjacent landowners and provides each landowner a set of engineering plans. Signed landowner agreements are then secured, which allows a smooth transition to the construction phase of any project.

Proposed Project Description

Phase VI Alamosa River Restoration

Following the extensive and successful restoration efforts of Phases I-V of Alamosa River Watershed Restoration Project (Tier 1 Projects #1 and #2 of the Master Plan), an additional reach has been identified and is in need of restoration work. If approved by the Trustee Council, this new restoration project will comprise Phase VI of the Alamosa River Watershed Restoration Project. The proposed area, called the Ortega Reach, is approximately 4,000 feet of channel with extensive bank erosion just upstream of Phase V restoration work, between Gomez Bridge and Gunbarrel Road and can be categorized as Tier 1 Project #2 of the Master Plan (**Figure 1, Appendix B**).

The Ortega Reach lies upstream of the Phases I-V work and is a considerable source of sediment from bank erosion, directly impacting the following Target Natural Resources (Table 2). Without restoration work, the Ortega Reach will continue to yield large annual volumes of sediment, which will trigger downstream instability.

Table 2: Target Natural Resources

Target Natural Resource	Impact
• Surface water quantity and quality – impairment. • Sediments – contamination, erosion, and undesirable deposition. • Agricultural use – limitations. • Ground water and surface water or sediment, (including the bed, banks, or shoreline sediments) – contamination, erosion, and undesirable deposition.	• Sediment released from stream bank failure within the Ortega Reach leads to water quality impairment through suspended sediment loading which can clog irrigation structures and add to the sediment imbalance that exists throughout the Alamosa River below Terrace Reservoir. • This additional sediment jeopardizes the work performed in Phases I-V.
• Riparian habitat (vegetative communities – injure and functional loss. • Wetlands – loss of ecological function. • Vegetation – injury and loss. • Land – contamination and erosional loss.	• Sediment released from stream bank failure can decrease the available habitat for aquatic insects as pore spaces are filled in. • Willow and cottonwood trees lining the banks are lost to ongoing bank failure. • The downcutting that is occurring in this reach further reduces the groundwater table, with impacts to wetland function and riparian habitat through loss of forest.

The funding of this proposal is critical to ensure not only the stability of this reach, but also to provide geomorphic continuity across the Alamosa River from Gomez Bridge to County Road 10. The goal of this proposal continues the Vision of the Alamosa River Watershed Restoration Foundation: to create a naturally functioning stream, while creating environmental, economic, and cultural benefits to the community. The project will use natural materials and work with natural stream dynamics to stabilize the river damaged by past human activities.

It is important to note that Wenck visited the site with Byron Quintana in October 2019 and all contacts with the Ortega family have been via Byron Quintana. Prior to data collection, design and construction, written consent from the landowners will be required. Based on our field visit and analysis of aerial photography, the Team has completed a conceptual design that allows a probable opinion of construction costs. Additional design work, which will be

funded by this project will include additional surveying, hydraulic modeling, final geomorphic and sediment transport analysis, and preparation of final plans. The proposed project will be a Design Build and will be constructed as a team effort involving Wenck, ARWRF and Robins. In our efforts to develop this grant request, the Team has composited technical and construction matches- both in-kind and supplied materials with the need for grant money to support final design and construction. The generous offer of local material sources, which otherwise would be imported from Robins Quarry in Antonito significantly saves construction costs and the need for additional grant money to complete the project.

As part of this proposal effort, Wenck consulted the US Fish and Wildlife Service's (USFWS) National Wetlands Inventory Maps to establish the likelihood of this project's (a) adverse impact to any existing wetlands and (b) if this project may have the opportunity to create additional wetlands. **Appendix C** presents the USFWS maps for the Ortega Reach. The Team concludes that there are no USFWS-mapped wetlands within the project boundaries and based on the goal of the project to reconnect the river to its floodplain and stabilize and revegetate multiple failed stream banks, it is this Team's opinion and professional experience that additional wetlands (freshwater emergent wetlands) can be created within this riverine environment. A summary description of the Ortega Reach and the necessary work to be done is provided below. Cost estimates are included in **Appendix D**.

Ortega Reach

Located just upstream of the Quintana #1 Reach of Phase V of the Alamosa River Watershed Restoration Project, the Alamosa River extends approximately 4,000 feet into property owned by the Ortega Family. Within this Reach, the Alamosa River is a single thread channel with "tight meanders"- decreased radius of curvature and increased meander amplitude. As such these meanders have and continue to generate sediment from the eroded stream banks. Once this sediment is entrained it is transported downstream to a place of deposition. This section of the Alamosa River receives year-round stream flow that supports a sustainable fishery. The 2004 Master Plan describes this reach as "steep eroded banks with the potential to introduce significant sediment load to the channel" and is associated with "reduced groundwater levels and a dropping channel bed that has damaged the existing riparian vegetation, including cottonwoods."

Comparisons of past aerial imagery have shown a recent loss of approximately 20,000 square feet of bank area since 2011 (**Figure 2, Appendix B**) with a conservative estimate of 3,000 cubic yards of bank material deposited and transported downstream. Aerial imagery of the pre-2011 channel exists and shows additional bank loss, but image quality makes quantification difficult. The downstream property owner, Byron Quintana, approached Wenck and explained what his family had observed across this property. He provided supporting anecdotal evidence of the stream's migration and bank erosion as well as the existence of former high-flow secondary channels that watered the extensive riparian cottonwood stands during high flows, now abandoned by the lowered channel. This channel lowering has resulted in a sediment imbalance in the river, whereby the additional sediment from bank erosion builds up on the inside curves of the meanders, further forcing erosive flows into the erodible outer banks, adding more sediment to the system. Left unaddressed, this erosional feedback mechanism will eventually result in an over-widened, braided stream with

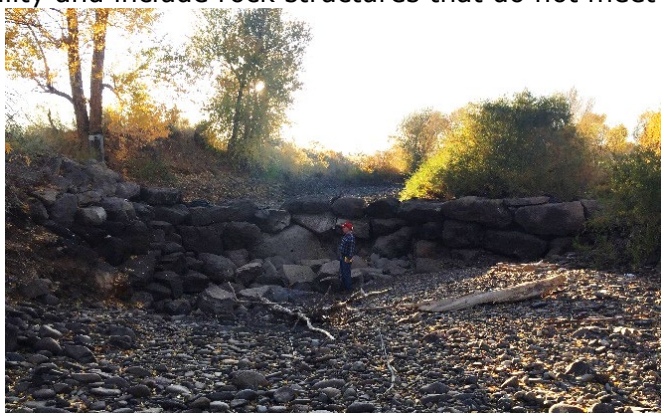
continued bank migration and erosion. The Phase V work underway currently, just downstream of the Ortega Reach is addressing similar bank stability problems.

The proposed project will arrest the current bank failure through reshaping with fill and adding stream barbs along the outside of curves to help preserve the banks and promote sediment storage. Replanting the rehabilitated banks with native vegetation will further increase their resilience to further erosion. The existing channel location will be preserved to reduce further loss of the existing willow and cottonwood overstory. Two high-flow pilot channels will return flood flows to abandoned channel beds, adding subirrigation to mature forest and allowing groundwater recharge as well as provide sediment storage locations during high flows. The downstream landowner, Byron Quintana has offered several thousand yards of fill from an upland source. Our contractor partner, Robins has offered to load and haul this material to the area of placement.

Wenck has prepared a conceptual plan, which will enhance channel stability and create a primary channel for normal water and sediment conveyance and allows the two overflow channels to persist and address seasonal flood flows (**Figure 2, Appendix B**). The conceptual plan would allow stabilization of approximately 1,700 feet of eroded stream banks, add 1,500 feet of overflow channel, and enhance approximately 3 acres of riparian enhancement. The bank stabilization will protect the downstream channel stabilization efforts that have occurred over the last 20 years at the cost of millions of dollars. The addition of overflow channels will ensure the health of the mature riparian forest and provide excellent opportunities for revegetation of native plants, forbs, willows, and grasses. In general, the goal for this proposed project is to promote riverbank stability, eliminate excess sedimentation and improve the existing stream and riparian habitat.

Alternative Project Descriptions

Wenck and ARWRF have been working together in Conejos County on the Alamosa River since 2012. Both parties recognize that landowner consent is a complicated and often lengthy process. We are comfortable with the likelihood of success in achieving final consent from the Ortega family but have several other channel reaches that require restoration work and rehabilitation of unstable features. These two reaches (see **Figure 1, Appendix B**) include a 1,000 linear foot reach immediately above the County Road 9 Bridge on lands owned by Adalberto Herrera (originally restored in 2005 as part of Phase II work) and a 1,200 linear foot reach above County Road 8 Bridge on lands owned by Peter Quintana (originally restored in 2013 as part of Phase III work). These reaches are in a similar state of geomorphic concern for long term stability and include rock structures that do not meet the long-term objectives of the Team- "geomorphically sustainable with minimum maintenance required". Shown in the image to the right is a cross-vane with clear signs of collapse that serves as the diversion structure for the Ramona D Ditch. This and other rock stabilizing structures within these reaches have done well to provide a stable Alamosa River channel for the past 15 years, but time has shown they are in need of re-design to reduce erosive under-cutting that threatens to dismantle them.



Additionally, riverbank erosion is taking place within both reaches and such erosion and transport is further contributing to the sediment imbalance within the completed projects. The Project Team has worked to accommodate this imbalance in recent projects

downstream of County Road 9 by designing a channel that can efficiently convey this excess sediment. This and other completed work will only benefit from the reduction of excess sediment within the Alamosa River. Although neither reach is as high a priority as the Ortega Reach, these areas will likely need work soon. If NRD funding is available after completion of the Ortega Reach or if landowner consent cannot be achieved on the Ortega Reach, the Project Team proposes to utilize NRD funding for this work.

Objectives

The proposed work has the overall objectives:

- Reduce the sediment loading to the Alamosa River through bank stabilization and revegetation to improve water quality and protect downstream irrigation structures and channel restoration work.
- Reconnect the Alamosa River to the floodplain by directing high flows into abandoned overflow channels to enhance riparian habitat, recharge groundwater, and store excess sediment outside of the channel.

Operational Plan

The proposed project shall be completed in a similar fashion as the Phase IV and V Restoration Projects. **Table 3** presents the implementation steps for the project as listed for Project 2, Table 5-6 of the Master Plan. To accommodate the schedule, Wenck will complete the initial topographic survey in Fall of 2020 and will include that work effort as part of their in-kind match. The Team anticipates that two permits will be required: U.S. Army Corps of Engineers Permit and a National Pollutant Discharge Elimination System Stormwater Discharge Permit. These permits will be obtained before construction begins. No Conejos County permits will be required and the similar NEPA exclusions for Phase IV and V are expected.

Table 3: Implementation Steps

Project	Implementation Steps
Stream restoration from Gomez Bridge to Gunbarrel Road: Ortega Reach	• Perform Detailed Streambank Assessment (**Task 2**) • Complete Survey of Existing Conditions (**Task 2**) • Coordinate with Landowner to Determine Restoration Alternatives (**Task 3**) • Complete Engineering Design (**Task 4**) • Obtain Required Permits (**Task 4**) • Complete Construction (**Task 5**) • Complete As-Builts and Warranty Inspections (**Task 6**)

The following Scope of Services for the Alamosa River Watershed Restoration Project will be completed by the Team. The following tasks will address the respective Implementation Steps as shown in **Table 3**.

Task 1 – Landowner Consent and Kick-Off Meeting

Landowner consent for investigation, design and ultimately construction will be achieved prior to any work conducted on the Ortega property. This work to date has been a portion of the Team match and has included efforts by Wenck and ARWRF. Once all consents are in place our Team proposes to conduct a kick-off meeting with key project stakeholders, including representatives from CDPHE, landowners, and members of the Team to further refine project scope and understanding. Wenck will prepare an agenda for the meeting and distribute minutes after its completion. The kick-off meeting will take place in either Alamosa or Capulin.

We will use this opportunity to clearly define project objectives and requirements, which will ensure that those objectives are realized. We believe that a proactive approach with CDPHE will provide great benefits to the project, minimizing comments on the final deliverable, thereby expediting final schedule and reducing total project costs.

Task 2 – Pre-Design Work, Assessments, and Analysis

The Team will begin work by collecting and rigorously reviewing existing data with respect to the previous phases of work (see adjacent photo). Existing data will be used to the extent possible and/or supplemented by additional data collection. Prior to commencement of field work, the Team Project Manager will coordinate with all landowners. Survey data will be collected in advance of the field effort to ensure that an adequate base map is available to all parties. Borrow sites will be identified and project mapping will be developed. The Team Project Manager will be responsible for landowner consents to allow field work or site investigation to occur.

All Team members will participate in the initial walk through to ensure continuity of the Design/Build process. Wenck shall complete field investigations and data collection to support the hydraulic models, geomorphic studies, and channel design efforts. Their field effort will include collection of channel geometry data, bed and bank conditions and bed and bank samples in each reach. Surveying, in addition to any aerial photography will occur to support accurate channel geometry measurements. Hydrological and hydraulic investigations will occur on top of the previously completed analyses that occurred during the previous phases of Work.

Task 3 – Alternatives Analysis (30% Design Phase)

Wenck will develop an Alternatives Analysis that summarizes costs and feasibility of rock structures, channel realignment alternatives, and erosion controls. This analysis will include, at a minimum, construction cost estimates, operation, and maintenance (O&M) cost estimates, and other alternatives as developed by the Team. The following items will occur as part of Task 3:

- Analysis of streambed shaping needs and volume of material to be moved, need for gravel removal, material volume and grade for any backfill, and any channel or streambed symmetry modifications.
- Assessment of design, construction, and maintenance of rock structures, including:
  - vanes, cross vanes, along with required rock volume, desired rock size and chinking rock requirements.
- Analysis of installation of root wads, willows, or alternative bioengineering erosion control measures.
- Assessment of improvements to, or assurance that proposed actions will not interfere with:
  - existing water uses along the stream reach, including watering access for livestock,
  - irrigation diversions and recreation.
- Evaluation of improvements to biological and aquatic habitat including fish and macro-invertebrate habitat and riparian corridor health.

- Assessment of the design, construction and maintenance of sediment control or sediment capture methods or structures.
- Evaluation of how any of the above design elements might affect normal uses of riparian lands or stream channel by landowners, ditch companies or other stakeholders including:
    - assessment of the safety of any modifications to recreational users, landowners,
    - livestock and wildlife.
- Completion of a hydraulic model using HEC-RAS to assess the design alternatives and analyze channel hydraulics.

Deliverables of this task will include an Alternatives Analysis Technical Memorandum with conceptual designs, a draft table of contents for the contract documents, and a list of specifications. A 30% Design Opinion of Probable Construction Costs will be assembled with Robins and will be submitted to CDPHE for review and comments. Once Team review comments are received and addressed, the Team will schedule a 30% review public meeting to present the design alternatives to project stakeholders and the public. This meeting will take place in Alamosa or Capulin and will not only provide education but will help develop consensus for the initial acceptance of the Final Plan Document.

Task 4 – Design and Specification Development (60% Design Phase)

The Design Development task will focus on preparation of a 60% Design, and Design Report. This task will include the detailed engineering analysis necessary to produce construction documents for project elements defined in Task 3. Documentation produced for this task will include drawings developed in further detail from the schematic phase (developed to approximately 60% level). In addition, the 60% Design package will include corresponding plans, profiles, and typical sections that are annotated for clarification. The package will also include the near final drawings and construction specifications for review by CDPHE.

The Design Development will cover all the elements outlined in Task 3, and will include appropriate analysis and development of the following:

Design Development Report

Wenck will prepare a Design Development Report summarizing the Design Development phase of the project. The report narrative will include the design basis, analyses and conclusions, and drawings. Draft specifications will consist of notes on the drawings and detail sheets. Complete data, calculations and supporting data interpretations will be included with the report. The Design Development Report will include an update to the probable construction cost. Copies of the draft Design Development Report will be circulated among the Team including CDPHE for review and comment. Once Team review comments are received and addressed, the Team will host a public meeting to encourage public review and understanding of the project. Public comments, including those of landowners and irrigators will be received and addressed.

Task 5 – Design-Build

Wenck and Robins, assisted by ARWRF shall provide Design-Build Services during the construction phase of this project. In addition, the scope of the services shall include the following:

1. Pre-Construction Conference – All parties, including CDPHE shall attend a pre-construction conference at a location designated by the Team. Each landowner will be invited to the pre-construction conference.

2. Progress Meetings – The Team shall conduct progress meetings with landowner(s) at appropriate or critical times during the various stages of construction. CDPHE shall also be notified of the project meetings and encouraged to attend.

3. Payment Certificates – Wenck will prepare one invoice to incorporate work completed by the Team. Individual invoices from the other team members will be included as support. As addressed under the previous phase, Wenck anticipates a Lump Sum payment schedule as individual tasks are completed.

4. Design Modifications – Wenck and Robins may make design modifications during the various stages of construction. In the event large modifications occur, Wenck will notify CDPHE to inform of the changes.

Once construction begins, a Wenck representative will be on site performing construction administration. Construction is proposed to begin in October 2021 as shown in the **Project Schedule** section of this proposal. Wenck and Robins propose a 1-Year Warranty Period following Substantial Completion.

Task 6 – As-Builts/Operation, Maintenance, and Monitoring

Wenck shall provide As-Built Documentation of the Project to CDPHE after Construction is completed. Additionally, Wenck and Robins shall conduct warranty inspections at 6 and 12-months following Substantial Completion. Landowners, per the landowner agreements, will remove snags from the diversion structures, headgates and ditches but will otherwise not affect the geomorphic development of the project reach. All stability issues will be reported to the Team personnel during the warranty period and this information will be transferred to Wenck and CDPHE.

Project Schedule

Task	Task Description	Task Duration (Weeks)	Estimated Completion Date
1	Kick-Off Meeting	0	January 2021
2	Pre-Design Site Assessment	4	February 2021
3	30% Design Phase	8	May 2021
4	60% Design Phase	8	July 2021
5	Design-Build	14	March 31, 2022
6	Post-Construction Monitoring/As-Builts	6 months and 1 Year	March 31, 2023

Project Documentation and Deliverables

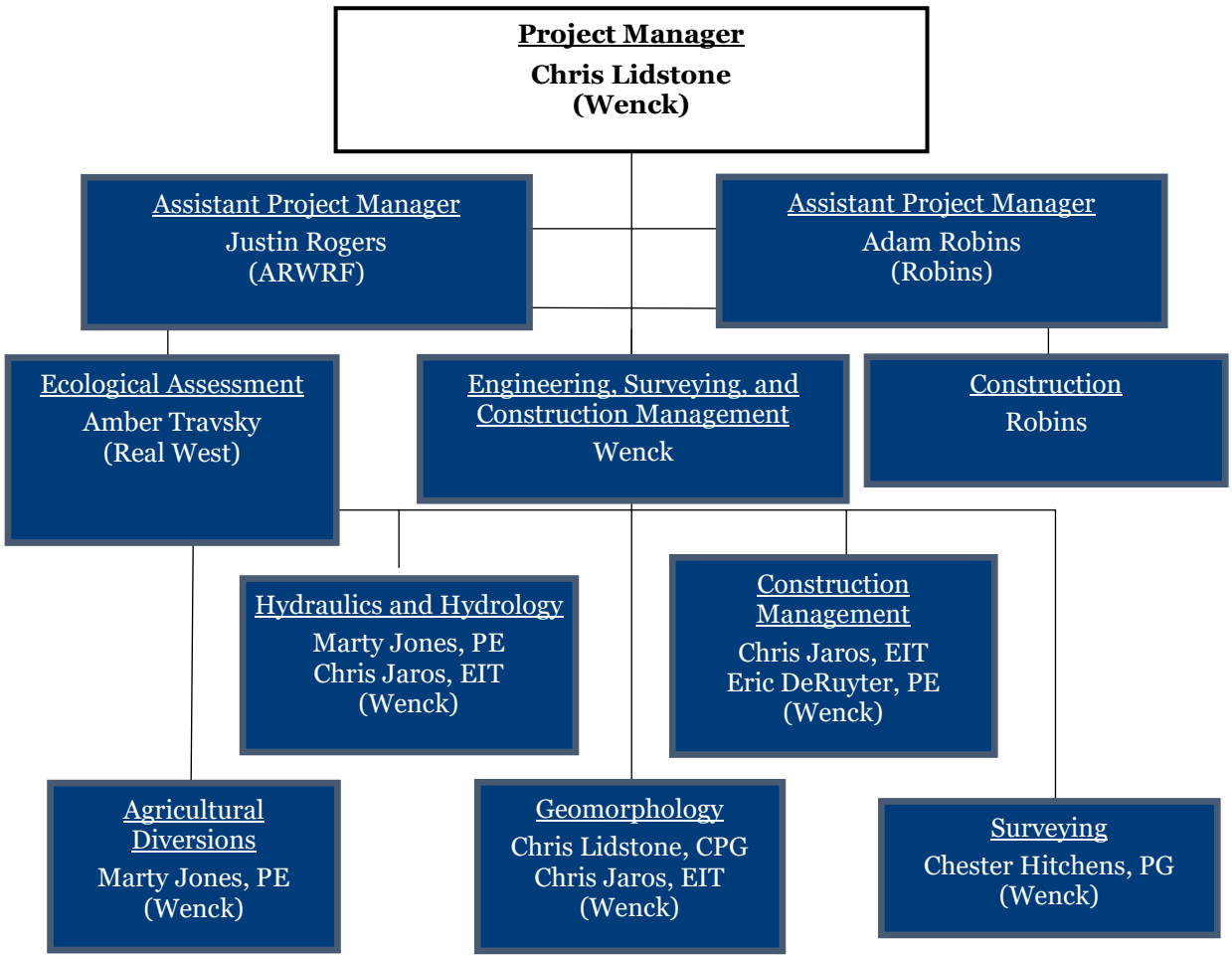
As part of the above Scope of Services, the following project documentation and deliverables.

Task	Document	Estimated Completion Date
1	Kick-Off Meeting Minutes	February 2021
3	Alternatives Analysis Technical Memorandum	June 2021
3	30% Design Opinion of Probable Construction Costs	June 2021
3	30% Design Meeting Minutes	June 2021
4	Design Development Report	August 2021
5	Construction Completion Report	May 2022
6	Visual Inspection Summary	May 31, 2023

Project Team

Wenck' s proposed Team has been selected based on their expertise in hydraulics, fluvial geomorphology, plant and wetland ecology and irrigation. The proposed Team members and

their respective roles are highlighted below. Resumes for Project Team members are provided in **Appendix E**.



Proposed Project Costs

The proposed Ortega Reach stream restoration project matches the goal of NRD fund expenditure. It is a Tier 1 Project between Gomez Bridge and Gunbarrel Road and was previously identified in the 2004 Master Plan. Wenck is presenting an anticipated project cost of $819,556, of which $273,600 is Team match and the remaining $545,956 would be Colorado NRD Trust Fund. The total project cost includes conceptual design and construction management cost of $297,746 and a conceptual construction cost of $521,810 to implement the Alamosa River Watershed Restoration Project – Phase VI – Ortega Reach. A breakdown of these cost estimates is presented in **Appendix D**.

The Trustees are requested to approve (1) anticipated construction costs of $521,810 plus (2) $297,746 of engineering, project management, construction administration and related services. The selection and approval of the $545,956 of Colorado NRD Trust Funds will allow this project to advance from the conceptual level to final design documents, fund construction, construction management, monitoring, and reporting.

To accomplish this work, the Team proposes an in-kind match of $273,600 will be provided by numerous parties within the local area including the Landowners, the Engineer, ARWRF, and Robins. This match includes the landowners contribution of approximately 5,500 cubic

yards of construction fill valued at $9 per cubic yard for a total of $49,500, 4,700 cubic yards of gravel valued at $20 per cubic yard ($94,000), 25 onsite rootwads valued at $27,500 and onsite cuttings of 300 willows valued at $4,200. The total landowner contribution is $175,200. The Engineer, Wenck, will and has provided professional services (in-kind) to the total value of $61,000, including surveying and mapping, consents and clearances, pre-project development and design. ARWRF will provide $2,175 of local access and consent services. Robins will provide $14,425 in material discounts for off-site sourced fill and chinking rock. In addition Wenck and Robins have provided $20,800 of in-kind services to address sediment deposition problems along the Sammy Marquez reach that likely resulted from sediment sourced from not only the Ortega Reach, but additional reaches from Gunbarrel Road to the Muniz Reach prior to Phase V construction. The total in-kind match is $273,600 or approximately 50% of the requested NRD Grant. Wenck and ARWRF will complete the landowner consent and topographic mapping portion of the in-kind grant in the Fall of 2020 to allow the project to advance to the design phase by January of 2021.

All project donations of in-kind and material supplies will be tracked as the project proceeds. Each entity (Robins and ARWRF) will invoice as work is completed and Wenck will compile these invoices and present them to CDPHE in accordance with our Master Services Agreement. The Team will proceed with work immediately after receiving a Notice to Proceed. Detailed cost tables are provided in **Appendix D.**

Public Communication Strategy

The Team will take all necessary steps to ensure the public and especially landowners adjacent to the river are informed of all engineering and construction activities. The following processes will be used to maintain community involvement:

- Landowner Meetings
- County Meetings
- ARWRF Board Meetings
- Meetings with Irrigation Districts
- Coordination with Alamosa River Foundation, Alamosa Riverkeepers, and other Alamosa River Non-Profits

Landowner and irrigator meetings will be scheduled and all landowners adjacent to the river will be invited to attend. The landowner will be given a set of plans to review and will be educated on the geomorphology and long-term behavior of the river and the importance of its riparian system. As part of this educational effort, the landowner will be taught the importance of natural channel design and the need to keep equipment out of the river. He/she will be asked to accept the plan and maintenance/monitoring conditions and sign a landowner agreement form. All work will occur with landowner consent and the Team will work with each landowner to ensure that they understand and support the project vision. The ARWRF Board meets as necessary to conduct business. These meetings are open to the public and everyone is encouraged to attend and comment. During construction, these meetings are on a semi-regular basis and the public will be made aware of meeting date, time, and location at least 72 hours in advance. The County Commissioners are asked to participate at these meetings as necessary.

The Team seeks to keep communication open with the public and maintain the spirit of the river restoration effort. The goals of the several non-profits associated with the clean-up of the Summitville Disaster are aligned and ARWRF's interests are those of the Alamosa River and its community.

Relationship of this Proposed Project to the Ranking Criteria

Alamosa River Watershed Restoration Master Plan Projects **Likelihood of Adverse Impacts** **Technical Feasibility** **Project Consistency with Regional Planning**
The proposed project reach was selected because of the feasibility and likelihood of long-term benefits to the Alamosa River and its riparian habitat. The use of natural materials and geomorphic considerations allows for the continuation of a self-sustaining system. The Ortega Reach is included in the Master Plan as Tier I, Project 2. The goal of the Master Plan was to prioritize the areas which will provide the most benefit to the watershed. If the bank erosion within the Ortega Reach is not addressed, then adverse impacts are unavoidable in future years. The continued input of sediment at this upstream location could greatly diminish the design life of the downstream Alamosa River Watershed Restoration Project (Phases I-V) as areas of sediment storage are consumed, resulting in increased bank failure and blockage of irrigation structures as far away as County Road 10. The Team has been involved in similar projects along the Alamosa River (**Figure 1, Appendix B**) since 2000 and has a deep understanding of the role of excess sediment in this heavily impacted river environment. The Team will use this deep project understanding of what has and has not worked on the Alamosa River to implement a technically sound design with the greatest possible benefit to the natural resources impacted. This project is consistent with the Alamosa River Master Plan, which was completed in 2004 and has been endorsed by the Conejos County Commissioners.
Likelihood of Success **Multiple Natural Resource Benefits** **Time to Provide Benefits** **Duration of Benefits** **Protection of Implemented Project**
With the ARWRF previous work in the Alamosa River, the Team already has a professional understanding on the unique hydraulic and sediment transport conditions of the Alamosa River. The complexity of this river system in particular, with its variable flows that sustain fragile agricultural and riparian habitats, requires extremely in-depth analyses of the system as a whole as well as the individual reaches in order to adequately address the problems on a reach-by-reach basis. The team's watershed approach and use of natural, sustainable materials will not only increase the likelihood of project success but will also improve the river environment for the long term. The education component will serve generations of Conejos County farmers. During plan review any landowner will be asked to commit to protect the project, i.e. no bulldozers in the stream and protection of revegetation efforts until well established. The local project support, in-kind contributions of materials, surveying, and mapping, and the design-build nature of this proposal accelerates the construction schedule and will save the project overall costs. Our Team intends to commence construction in the Fall of 2021, decreasing the impact to the downstream restoration projects. It is important to begin work on this reach when water levels and water flow is at its lowest. Assuming the proposed schedule is implemented, the Team would have a Warranty Period extending to May 31, 2023, allowing any changes or fixes to be made after a runoff season. The education component of this and past projects, which provides each landowner and irrigator the geomorphic (natural channel design) basis for the design will ensure the long-term protection of the implemented project. The successful history of the Team has created a trust with the community, a trust that is reflected in landowners approaching ARWRF with their

concerns and by not taking matters into their own hands. In this manner, the channel can adapt to its environment as a naturally functioning stream.
Opportunities for Collaboration/Matching Funds **Public Acceptance**
Landowner communication is absolutely critical, and we recognize that landowner input is vital to ensure project success. River restoration is a dynamic process that merges technical, cultural, and economic components. Our recognition of the importance of landowner involvement stems from our team's (including the Engineer) agricultural background, the local nature of the ARWRF Board and our collaboration with a local contractor (Robins). Our Team realizes that not only is the Alamosa River a discrete organic unit, but more importantly it is and must coexist as part of a multiple use strategy. Our team recognizes that science and engineering are critical, but also that the landowners, who have lived on the river for generations and have seen the Summitville Mine come and go, know the behavior of the system better than anyone else.
Public Benefit and Access **Public Communication Strategy**
Public communication throughout the design and construction process will be ongoing as the success of a project cannot be measured by engineering alone. The Phase IV and V projects each included four formal public meetings, and numerous one-on-one meetings with each landowner and irrigation company. True success is measured not only in the technical results, but also in the public's satisfaction. After all, the general public and adjacent landowners will be the individuals immediately impacted by the river, meaning their involvement and satisfaction is of the utmost importance. The goal of the ARWRF is to improve the Alamosa River and the surrounding riparian area so that it can once again be healthy enough to be enjoyed by all. This project will be designed to work with the natural system as well as the community. This means it will be designed to require minimal maintenance and to be resilient to changes in the environment to ensure it lasts for years to come.
Project Cost
▲ Total proposed budget : $819,556 ▲ Total requested grant: $545,956 ▲ Landowner and Team Contribution: $273,600 ▲ **Total Requested Grant is $545,956**

Project Fact Sheet

The one-page Project Fact Sheet is presented on the following page for ease of reproducibility.

ALAMOSA RIVER RESTORATION
CONEJOS COUNTY, COLORADO

Wenck Associates, Inc. dba Lidstone and Associates, a Wenck Company (Wenck) was previously contracted by the Colorado Department of Public Health and Environment to provide design and engineering services to restore portions of the Alamosa River to a functioning natural stream and improve irrigation withdrawals. These projects (Phases IV and V of the Alamosa River Restoration Project) have and will restore over 10,000 feet of Alamosa River. To put the remaining Summitville funding to best use, Wenck and local landowners are proposing restoration work on one additional reach on the Alamosa River. This reach, just below the Terrace Main Canal, is a large source of sediment at the upstream end of over 6 miles of Alamosa River restoration above County Road 10. The proposed work (Phase VI of the

Alamosa River Restoration Project) is critical to reduce sediment loading to the downstream restored reaches, reduce bank erosion, improve riparian vegetation and floodplain connectivity, and protect irrigation withdrawals. This reach is categorized as a Tier 1 Project according to the Alamosa River Restoration Master Plan.

The project site lies above Gunbarrel Road Bridge on private land owned by the Ortega Family. This site will likely maintain flow over the course of the year which provides the opportunity to improve aquatic habitat and create new wetlands.

The proposed restoration project will address or create:

- Over 3,000 Cubic Yards of Sediment Lost From Eroded Banks
- 4,000 Linear Feet of Stream Restoration
- 700 Willow Plantings
- 3 Acres of New Wetland Creation
- 2 Cross Vanes
- 23 Vanes
- 20,500 Cubic Yards of Earthwork

The major project goals and project vision are:

- Reduction of Sediment Loading
- Channel Stabilization
- Reconnection to Floodplain
- Elevation and Recovery of the Alluvial Groundwater Table
- Aquatic and Riparian Improvements
- Irrigation Structure Protection
- Cultural and Economic Benefits
- Geomorphic Fluency
- Public Education and Landowner Involvement

The proposed project costs are:

- $297,746 Engineering, Surveying, Construction Management and Monitoring
- $521,810 Construction
- Total Proposed Budget is: **$819,556**

The Landowners and Wenck have provided a 50% Match including in-kind services, materials, equipment hours, rock and plantings. In summary:

- Landowners Match (Materials) $175,200
- ARWRF Match (Materials and In-Kind) $2,175
- Engineers Match (In-Kind and Mapping) $61,000
- Construction Match (Material and Equipment) $35,225
- Total proposed match is: **$273,600**

The requested NRD Trust Fund Grant is: **$545,956**

FOR MORE INFORMATION CONTACT:

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(970) 223-4705

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Appendix A

Project Experience

Project Example

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ALAMOSA RIVER RESTORATION – PHASE V
CONEJOS COUNTY, COLORADO

The Alamosa River Watershed Foundation, in cooperation with the Colorado Department of Public Health and Environment (CDPHE), contracted Wenck Associates, Inc. dba Lidstone and Associates-a Wenck Company (Wenck), to further restore the Alamosa River to an aesthetically pleasing and functioning natural stream. Identified as a Master Plan Tier 1 Project, Phase V of the Alamosa River Restoration will restore over 4,500 feet of Alamosa River channel within three distinct reaches. Each reach involves channel bank stabilization to reduce erosion and sediment loading to completed Tier 1 Projects. Wenck was responsible for the analysis of historic, current, and projected hydraulic conditions, as well as the design of modifications and improvements to irrigation water delivery structures and the Alamosa River. Wenck has continued to work closely with the Alamosa River Watershed Restoration Foundation for community organization and Robins Construction for materials and expert in-stream construction.

Major Project Features:

- Channel and Bank Stabilization
- Reconnection to Floodplain
- Reduction of Sediment Loading
- Irrigation Structure Rehabilitation
- Existing Structure Redesign
- Perennial Flow
- Public and Landowner Involvement

The Alamosa River in the vicinity of the project has been heavily impacted by sediment loading and riparian habitat loss resulting in significant bank erosion and disconnection from the surrounding riparian area.

Wenck built on the engineering analyses of the past projects on the Alamosa River to ensure a design that addressed the unique flow characteristics at each reach. The decrease in flows in the downstream Alamosa River are also associated with the greatest sediment deposition problems. This project holistically addressed the different sediment transport efficiencies of each reach by properly designing the final, long-term channel capacity while reducing the risk of bank erosion and increasing floodplain connectivity.

Work began on the Muñiz Reach in Summer of 2019 and was completed in Fall of 2019. Within this reach, existing and improperly designed rock vanes were re-constructed to improve sediment transport, bank stabilization, and floodplain connection. Two previously excavated oxbows were filled in at the landowner's request to prevent the dewatering of adjacent agricultural fields.

Two additional reaches are scheduled for completion in the Fall of 2020. These two reaches, upstream of Gunbarrel Bridge are within the perennially flowing section of the Alamosa River and have significant bank erosion from riparian vegetation loss and excess sediment deposition. One reach involves the reconnection to historic overflow channels that have been obstructed by the landowner to ensure delivery of his adjudicated water right. Wenck will improve this headgate and diversion structure and provide a controlled entrance to these overflow channels to route high waters across the historic floodplain.

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ALAMOSA RIVER RESTORATION – PHASE IV
CONEJOS COUNTY, COLORADO
2015-2016

The Alamosa River Watershed Foundation, in cooperation with the Colorado Department of Public Health and Environment (CDPHE), contracted Wenck Associates, Inc. dba Lidstone and Associates-a Wenck Company (LA), to improve irrigation structures and restore the Alamosa River to an aesthetically pleasing and functioning natural stream to benefit the surrounding river community. LA was responsible for the analysis of historic, current, and projected hydraulic conditions, as well as the design of modifications and improvements to irrigation water delivery structures and the Alamosa River.

Major Project Features:

- Channel Stabilization
- Reconnection to Floodplain
- Reduction of Sediment Loading
- Irrigation Structure Rehabilitation
- Canal Lining
- Geomorphic Analysis
- Public and Landowner Involvement

The Alamosa River in the vicinity of the project has been heavily impacted by sediment loading and deteriorating irrigation diversions, resulting in significant bank erosion and disconnection from the surrounding riparian area. Instability along the entire river channel has been a historic problem which initiated the watershed restoration effort in 2000. This project is the fourth phase of this effort.

LA completed a detailed review of available material including the FEMA Flood Insurance Study, bridge inspection reports, aerial photographs, soil survey reports, gage data and past engineering reports. An analysis of historic and existing conditions was then completed. The historic sediment analysis, in addition to extensive field work, confirmed the significant sediment problem of the river. Additionally, a detailed GPS survey, survey of channel cross sections, collecting bed and bank material samples, and characterizing geomorphic conditions through the reach were completed.

Based on existing conditions, the project reach was determined to be a problem area because of its disconnection to the floodplain. It appears that the development of significant bed armor and high velocities caused aggradation/degradation issues throughout the entire river. Following completion of the analysis, LA designed approximately 5500 L.F. of a new river channel and riparian area to improve the natural functionality of the Alamosa River.

To improve the water delivery efficiency LA designed new head gates for irrigation diversions that included improved headwall structures to reduce erosion. The project also included a 900-foot concrete-lined ditch and division box to improve the water delivery efficiency.

Construction of the project began in August 2015 and was completed in March 2016.

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LITTLE MEDICINE BOW RIVER RESTORATION
WYOMING

U.S. Department of the Interior
National Abandoned Mine Land Reclamation Award

Wenck Associates, Inc. dba Lidstone and Associates-a Wenck Company (LA), served as a subconsultant to AVI Engineers of Cheyenne, Wyoming to perform the hydrologic and hydraulic design for the Shirley Basin Mine Land Reclamation Project (Wyoming AML 13). This project was the largest single Abandoned Mine Land (AML) construction project in Wyoming with estimated construction costs of $75M.

Major Project Features:

- Hydrologic Monitoring and Analysis
- Monitoring Well Installation
- Channel Stability Assessment
- Hydrologic Data Collection
- Geomorphic Analysis
- Revegetation
- Wetlands Development
- River Reclamation Plan

The LA responsibilities included the evaluation of 1.5 miles of unstable channel diversion and the design of over 3.5 miles of reclaimed channel and floodplain for the Little Medicine Bow River and its associated tributaries in central Wyoming. The Little Medicine Bow is a perennial river with a contributing watershed in excess of 180 square miles. Portions of the project included reclamation of the channel over an abandoned uranium mine pit, design of a backfill sequence, reconstruction of wetlands and stable channel design. The river and its associated wetlands were designed and permitted under the US Army Corps of Engineers 404 program.

The design approach incorporated a qualitative geomorphic evaluation of the river and its watershed, HEC-1 computer modeling to determine basin hydrology, HEC-2 computer modeling to establish channel hydraulics and sediment continuity, and equilibrium slope analysis to determine sediment transport capabilities of the designed stream. LA was also responsible for the hydraulic design of a compound channel/floodplain for the reconstructed Little Medicine Bow River. Hydraulic drop structures were designed to ensure long-term horizontal and vertical control of the reclaimed channel. Final plans and specifications were prepared. The project was completed in 1992. Since that date, the river has been functioning in a naturally stable, geomorphically sound manner.

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Project Example

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PROVO RIVER RESTORATION
UTAH

Montgomery Watson Harza, Inc. (MWH) and Wenck Associates, Inc. dba Lidstone and Associates-a Wenck Company (LA), were contracted to perform a design study for the Central Utah Water Conservancy District to restore the Provo River to a more natural, stable and self-sustaining condition. Additional considerations in the design included: (1) wetland mitigation from the construction of Jordanelle Reservoir; (2) enhanced fishery habitat for the Bonneville cutthroat trout; and, (3) maintenance and habitat improvement for the threatened and endangered listed spotted frog and Ute's lady tress.

Major Project Features:

- Public Involvement
- Wetland Mitigation
- River Restoration
- Geomorphic Analyses
- Detailed Field Investigation
- Habitat Improvement for Threatened and Endangered Species
- Hydraulic Analysis
- Sediment Transport

In an effort to focus the project, LA facilitated the formation of a Technical Advisory Board, which consisted of members of the Conservancy District, US Bureau of Reclamation, Utah Fish and Wildlife, Utah State Engineer, Utah Forestry Department, Trout Unlimited, and the Nature Conservancy. This 15-person group continued to work with LA throughout the course of the planning phases. At the end of the project a two-day public meeting was held to present the proposed channel alignment and its effect on adjacent landowners. LA presented: (1) a proposed realignment and restoration enhancement of the Provo River; (2) a geomorphic analysis of the system; (3) location and characterization of riparian improvements; (4) relocation and consolidation of over 20 diversion structures along the 10 mile reach from Jordanelle to Deer Creek Reservoir. The Project Team met with agricultural users and adjacent landowners individually to address land purchase, easements and fencing options.

LA was responsible for the geomorphic and sediment transport portions of the river evaluation and restoration study. The existing Provo River had been highly disturbed and was unstable. Numerous diversion structures had been constructed in the river channel with abrupt drops ranging up to 10 feet. In addition, the river discharge had been augmented by transmission diversions, which nearly doubled natural flows. In most areas, the channel had been confined by levees. As a result of these disturbances, the bed was highly mobile and had some areas of severe degradation. In other channel segments there were deposition problems.

Hydraulic analyses were conducted to support geomorphic analyses, sediment transport analyses, and restoration design. Existing and proposed floodplain configurations were modeled using the US Army Corps of Engineers' HEC-2 Water Surface Profile program. A geomorphic investigation of the Provo River and related river systems was conducted to provide an understanding of the pre-disturbance morphology and to develop stable channel design parameters for restoration of the river fish habitat and riparian system. Finally, sediment transport analyses were conducted to determine the quantity and sizes of bed material transported by the post-Jordanelle hydrologic regime.

Construction of the upper 3 miles was initiated in 1999.

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RIO GRANDE RIVER RESTORATION
SAN LUIS VALLEY, COLORADO

The San Luis Valley Water Conservancy District contracted Montgomery Watson and Wenck Associates, Inc. dba Lidstone and Associates-a Wenck Company (LA), to perform a basin study of the Rio Grande River between South Fork and Alamosa, Colorado. The following five study objectives were outlined: (1) stabilize the river channel; (2) improve flood conveyance and water quality; (3) improve irrigation efficiency; (4) improve riparian habitat; and, (5) improve Colorado's ability to meet the requirements of the Rio Grande River Compact.

Major Project Features:

- Public Involvement
- Inventory of Existing Facilities
- Geomorphic and Hydraulic Analyses
- Conceptual Design
- Sediment Transport Analysis

The Conservation District formed an Advisory Board of Potentially Affected Interests which included representatives from agriculture, conservation groups, state and federal agencies. This 18-person group continued to work with LA throughout the course of the planning project. Four public meetings were held during the course of the work. LA presented: (1) a geomorphic analysis of the system; (2) a qualitative sediment transport analysis; and, (3) an evaluation of over 50 diversion structures along the 38-mile reach from Alamosa to South Fork.

LA performed historical bankline and aggradation/ degradation analysis of the system to determine how the river has evolved with time. Geomorphic changes in the system are explained using historical flow records as well as man's influence on the system (e.g., construction of levees, mining, timber harvesting, irrigation withdrawal, and channel realignment). LA completed detailed research of numerous records of channel modification including flood control, agriculture development, timber harvest and gravel mining. Stage-discharge rating curves from the various gaging stations, flow duration curves, sediment samples, and bridge data collected during the field investigation were utilized to evaluate sediment transport through the system. Aerial photos and field surveys were used to evaluate the numerous diversion structures. Surveys examined the condition of the headgates, type of diversion structure, existing problems such as sedimentation and potential river capture and structure location with respect to river planform.

Several problems were discovered in the analysis of the river system. These ranged from those relatively simple to remediate, such as the river migrating away from a diversion point or toward a series of sewage lagoons, to the more complicated, such as the loss of flood capacity. Evaluations by LA were used to prioritize the problems observed, and to develop a Master Plan for the rehabilitation of the Rio Grande River. Conceptual reclamation alternatives were developed to mitigate the problems noted during field investigation. Remediation measures include channel stabilization through traditional engineering and biotechnical methods, consolidation of diversion structures, schedule periods of flushing flows, and reconnecting the river with the historical floodplain. The Master Plan will be utilized in assisting the Conservation District in developing plans to apply for funding from various sources.

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Main (970) 223-4705 Web wenck.com

Project Example

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ROGUE AGGREGATES RIVER STABILIZATION
JACKSON COUNTY, OREGON

Oregon Watershed Project of the Year

Wenck Associates, Inc. dba Lidstone and Associates-a Wenck Company (LA), were retained by Rogue Aggregates, Inc. (Rogue) to develop a stabilization plan for a series of gravel pits adjacent to the Rogue River. During a flood event in 1997, a gravel pit once isolated from the river was captured. The initial geomorphic evaluation conducted by LA indicated that additional pit captures were likely in the future. Rogue was directed by the Oregon Department of Geology and Mineral Industries (DOGAMI) to develop a plan to stabilize approximately 10 river miles.

Major Project Features:

- Hydrologic, Hydraulic, and Geomorphic Analyses
- Two-dimensional Hydraulic Modeling
- Survey Data Collection
- Hydraulic Design
- Scour Analysis
- Transient Hydraulic Studies
- Creation and Protection of Fisheries
- Restoration Design
- Construction
- Significant Public and Stakeholder Involvement

LA performed historical bankline and aggradation/degradation analyses of the reach to determine trends in the migration pattern. Hydraulic analyses were conducted to determine the most effective stabilization plan. The hydraulic model, FLO-2D, was used to evaluate conditions including flow splits, flood storage, and backwater conditions during various flood events in this hydraulically complex reach of the river. The model was modified to simulate anticipated future conditions given the current geomorphic trends. The modeling results were then used to create a stable design. To satisfy the Jackson County Planning Commission and the US Army Corps of Engineers, investigations were conducted to ensure that the proposed stabilization plan would not affect the floodplain area. The plan was a cooperative effort with many stakeholders providing input, including DOGAMI, Oregon Department of Fish and Wildlife, Rogue Fly Fishers, Bear Creek Watershed Council, Oregon Watershed Enhancement Board (OWEB), and landowners. Phase I work reduced the risk of channel avulsion by creating a larger outlet channel for flows exiting the captured gravel pit.

Phase II work included construction of rock stream barbs and use of bioengineering methods to stabilize eroding banks and direct the river away from a gravel pit. The stream barbs resulted in the creation of new fish habitat. Scour analysis and transient hydraulic models accompanied the design work for each barb and bendway weir.

Phase III work included construction of bendway weirs, a rock spill structure, bank reshaping, removal of invasive vegetation, and improvement to the stability of overflows in the floodplain area. The bendway weirs realigned the channel within the captured pit allowing the natural development of a river system within the flooded pit.

The system has been tested by two significant high flows (10-year and 25-year events) and monitoring data indicate that it has behaved as designed. Final construction costs were $1.2M and the project has received several environmental awards.

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P.O. Box 212, Antonito CO 81120 / 719-376-2351

Experience

We, Robins Construction LLLP, have been in business since 1976 providing quality work for the local community. We are a medium size construction company employing anywhere from 30 to 45 employees. We specialize in heavy equipment construction which includes water and septic tank treatment systems, agriculture conservation projects IE: irrigation reservoirs, land leveling, pump and pipeline conveyance systems, pond liners, water control structures, and bank stabilization. Demolition, concrete work, sewer and water pipe installation and all phases of sub division infrastructure construction.

WORK EXPERIENCE:

During the past few years we have performed several projects. Below is a list of the last few projects in which the following work has been accomplished.

- **Farmington Wastewater treatment plant Outfall Stabilization Project**
- **Cory Marcum- Town of Farmington 1-505-599-1372**

  This project included: furnishing all labor, material & equipment to perform modifications to the existing Wastewater Treatment Plant Outfall structure on the San Juan River. It included removal and replacement of the existing concrete outfall structure along with existing piping, excavation, embankment, dewatering and construction of river structures with boulders and grouting of boulders.

- **ALAMOSA RIVER WATERSHED FOUNDATION**
- **Joe Mestas - (719) 843-5183**

This project consisted of the construction of approximately 2 miles of river, involving the restoration of a straighten stream channel by adding meanders and sinuosity. Also, this project included placing rock structures such as vanes and cross vanes, using rocks

supplied from our own quarry. It also consisted of the replacement and reconstruction of six irrigation structures, and twenty acres of reshaping and revegetation.

- **Alamosa River Muniz Reaches 1 and 2**
- **Chris Lidstone 970-223-4705**

  This project consisted of rerouting the river, bank reshaping, removal of trees, hauling building several rock vanes, cross vanes and J-hooks in the river, chinking of rock and riprap placement. Removal of 500LF of fence and installing new fence and revegetation.

- **Town of Antonito Water System Improvements Antonito, CO 81120**
- **Atencio Engineering – Amanda Atencio (719) 676-2551**

  Project consists of demolition of existing well house and treatment building, new concrete masonry unit well house building, new steel filtration building, new Tonka Water conventional water filtration unit, well house & treatment plant piping/fittings, sodium hypochlorite system, gas chlorination system, new storage tank, modifications to the existing storage tank, natural gas back-up power generator, yard piping/fittings, replacement of overhead electric line with underground electric lines, new pumps, electrical improvements, instrumentation, controls, programming, fence, gates, and sanitary sewer line extension.

- **Del Norte River front Project**
- **Emma Reesor 719-589-2230**

  The construction of a new grouted rock playwave feature on the Rio Grande in Del Norte, CO. We hauled in construction material, built a series of coffer dam structures, built new rock/concrete wave feature, rock deflector and new rock habitat structures. Shaped the river channel above and below new wave feature, completed revegetation and riparian restoration and enacted stormwater discharge best management practices.

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- **COLORADO RIO GRANDE RESTORATION FOUNDATION**
- **Consolidated Ditch Emma Reesor 719-589-2230**

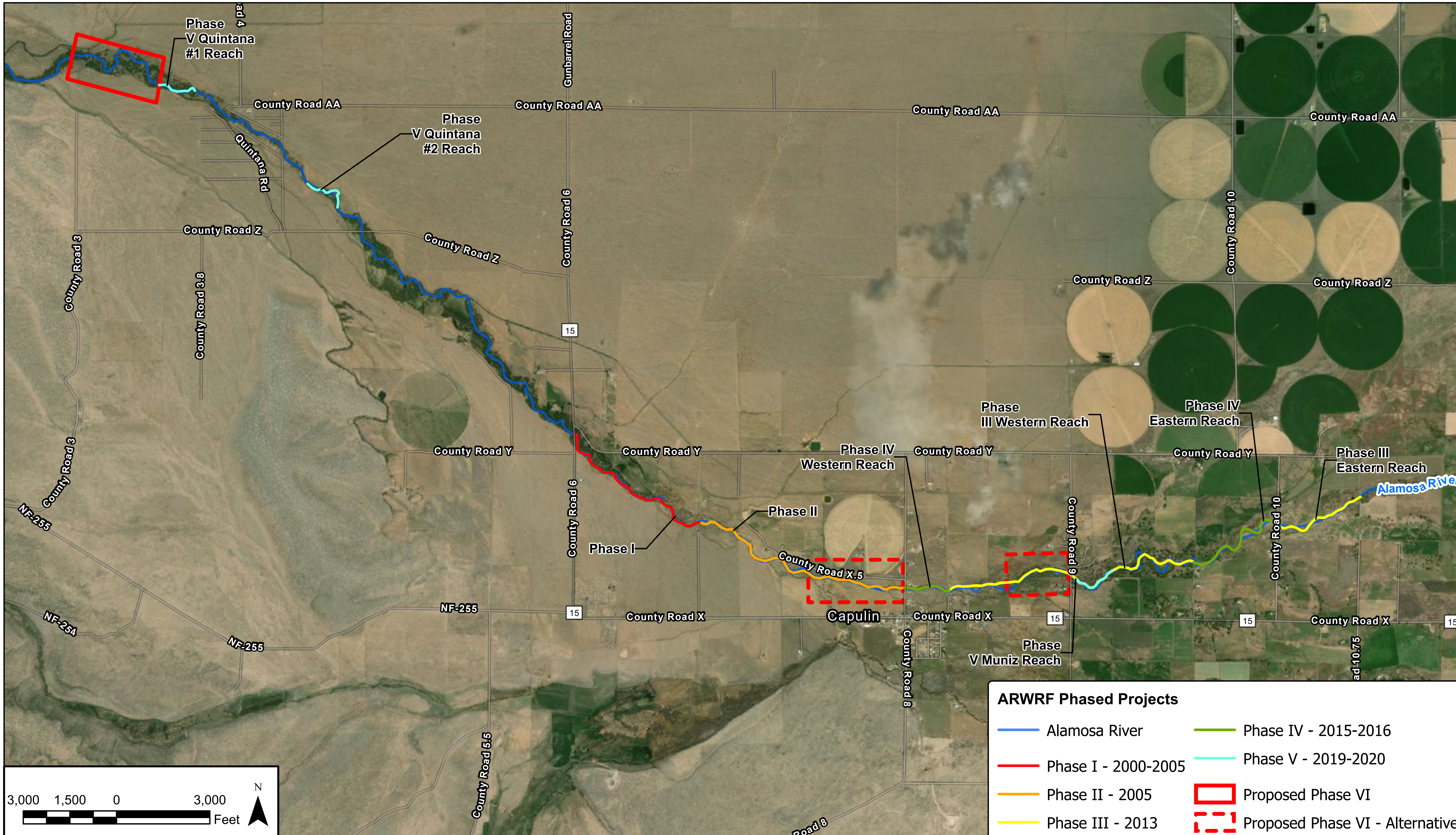
The Consolidated Ditch project included hauling in construction material, remove current diversion and headgate structures, build a new coffer dam structure and overflow channel to divert low river flows, clean and grade the site, build new concrete headgate structures, install new trash rack, new water control gates and new sluice pipe. Riprap the toe of the slope above and below the diversion dam and complete riparian and wetland revegetation. All work was completed in the allotted time frame and according to specifications.

- **Conejos Conservancy Water District**
- **Nathan Coombs -1-719-843-5261**

We have done multiple projects for the Conejos Conservancy Water District which included the following: Demolition of large water diversion structures, pipelines, new water diversion structures, measuring weirs, and a Fishery Enhancement Project.

Appendix B

Figures



Phase V Quintana #1 Reach
Phase V Quintana #2 Reach
County Road AA
County Road AA
County Road AA
County Road AA
Gunbarrel Road
Quintana Rd
County Road Z
County Road Z
County Road Z
County Road Z
County Road 3
County Road 3.8
County Road 6
County Road 10
15
County Road Y
County Road Y
County Road Y
County Road Y
County Road 3
NF-255
NF-255
NF-254
NF-255
Phase I
Phase II
Phase IV Western Reach
Phase III Western Reach
Phase IV Eastern Reach
Phase III Eastern Reach
Alamosa River
County Road X.5
County Road 9
County Road 10
Capulin
County Road X
County Road X
County Road X
County Road 8
County Road 5.5
Phase V Muniz Reach
ARWRF Phased Projects
Alamosa River
Phase I - 2000-2005
Phase II - 2005
Phase III - 2013
Phase IV - 2015-2016
Phase V - 2019-2020
Proposed Phase VI
Proposed Phase VI - Alternative
3,000 1,500 0 3,000
Feet
N

ALAMOSA RIVER WATERSHED NATURAL RESOURCE DAMAGES

Location Map and Past Projects

WENCK

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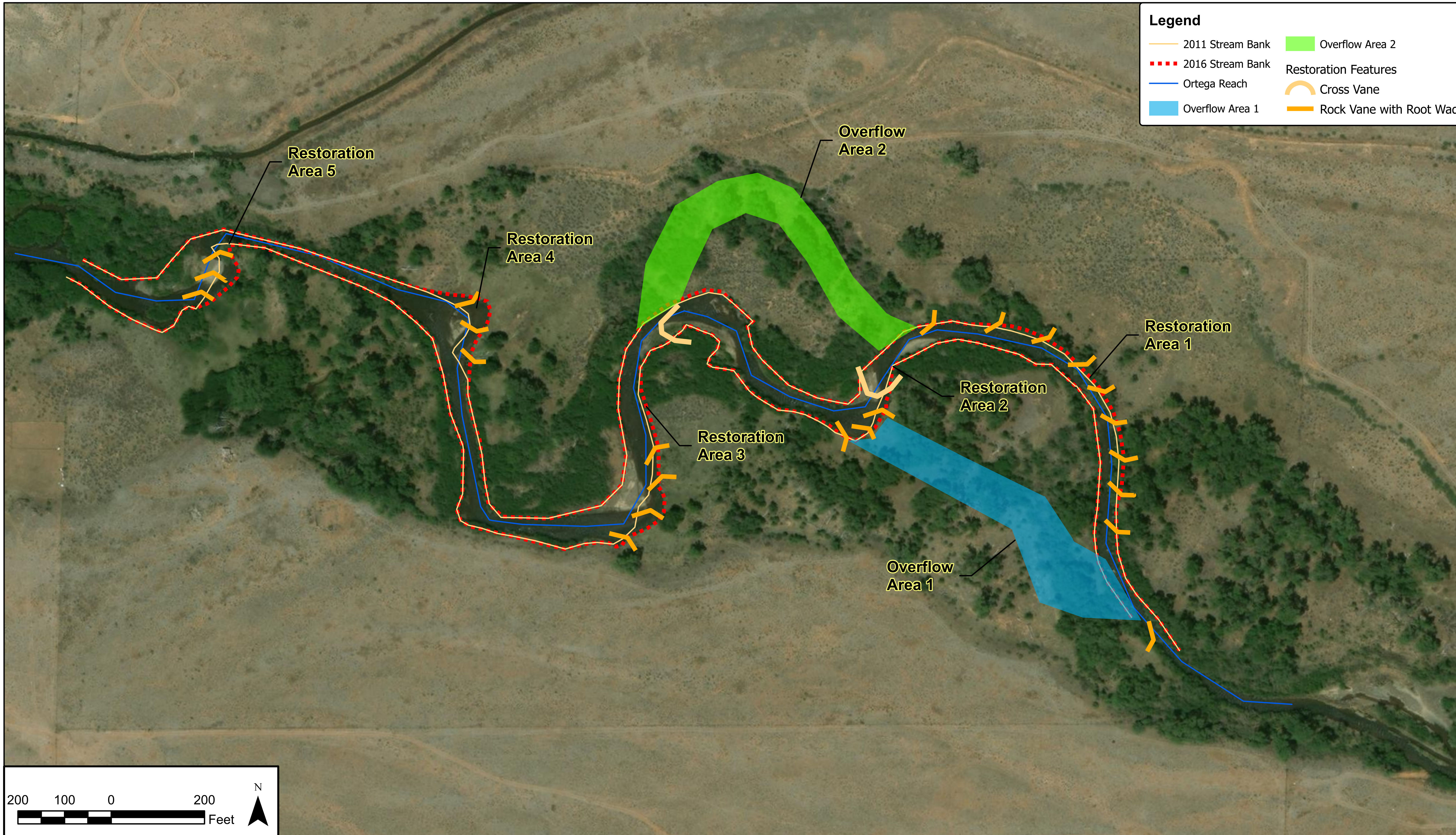
JUL 2020

Figure 1



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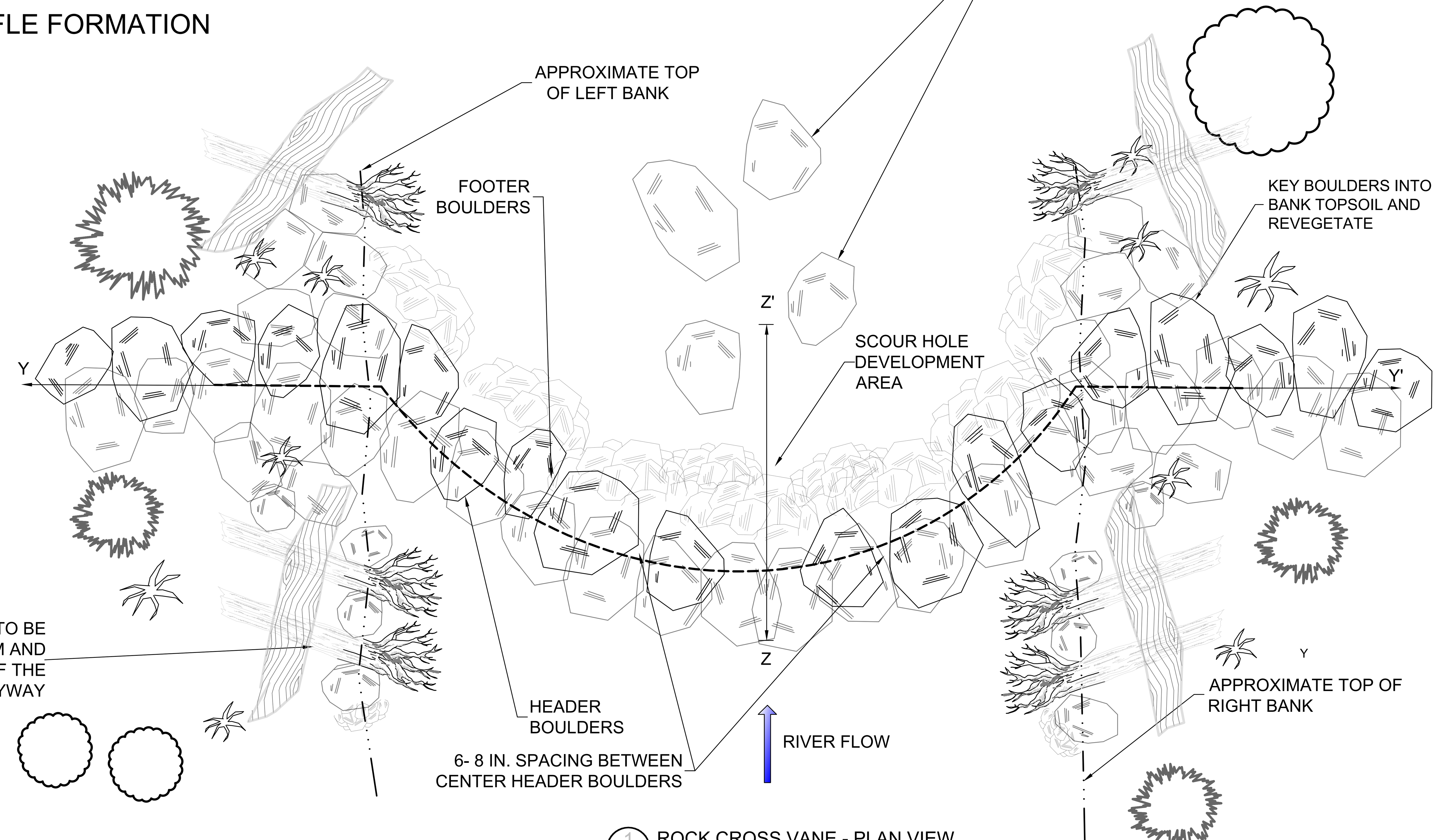
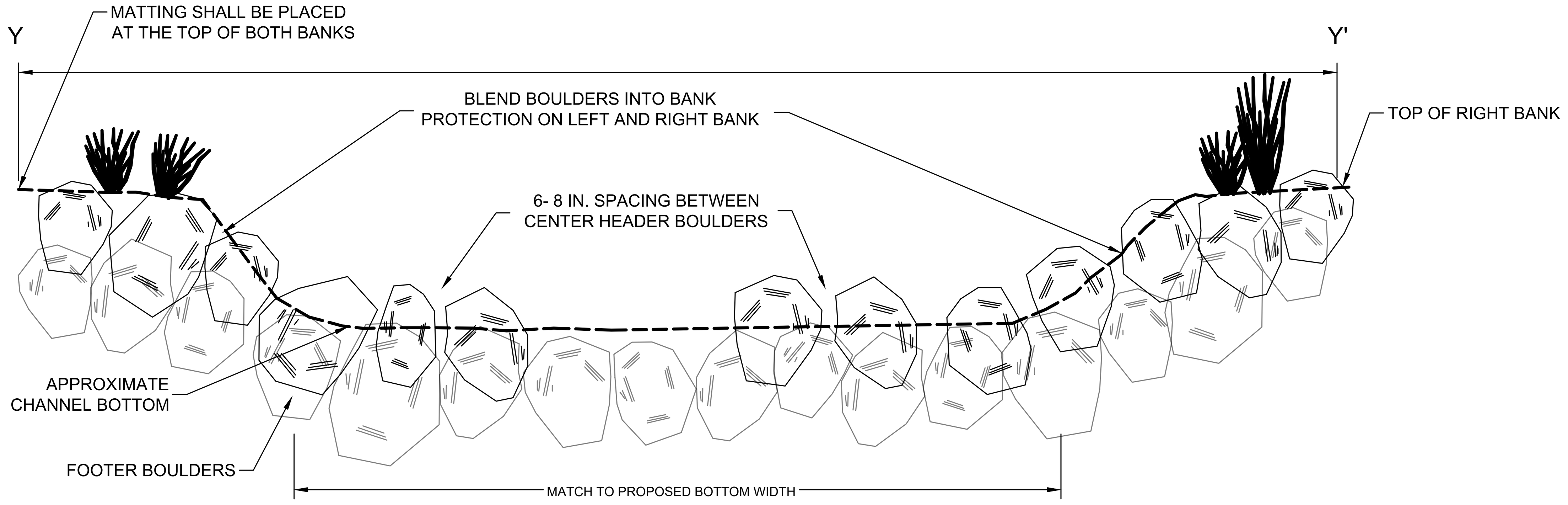
ALAMOSA RIVER WATERSHED NATURAL RESOURCE DAMAGES	WENCK Responsive partner. Exceptional outcomes.	JUL 2020
Ortega Reach		Figure 2

CROSS VANE PURPOSE:

- GRADE CONTROL
- CENTRALIZING FLOW
- ENERGY DISSIPATION
- ENCOURAGE POOL AND RIFFLE FORMATION



1
1
ROCK CROSS VANE - PLAN VIEW
NOT TO SCALE



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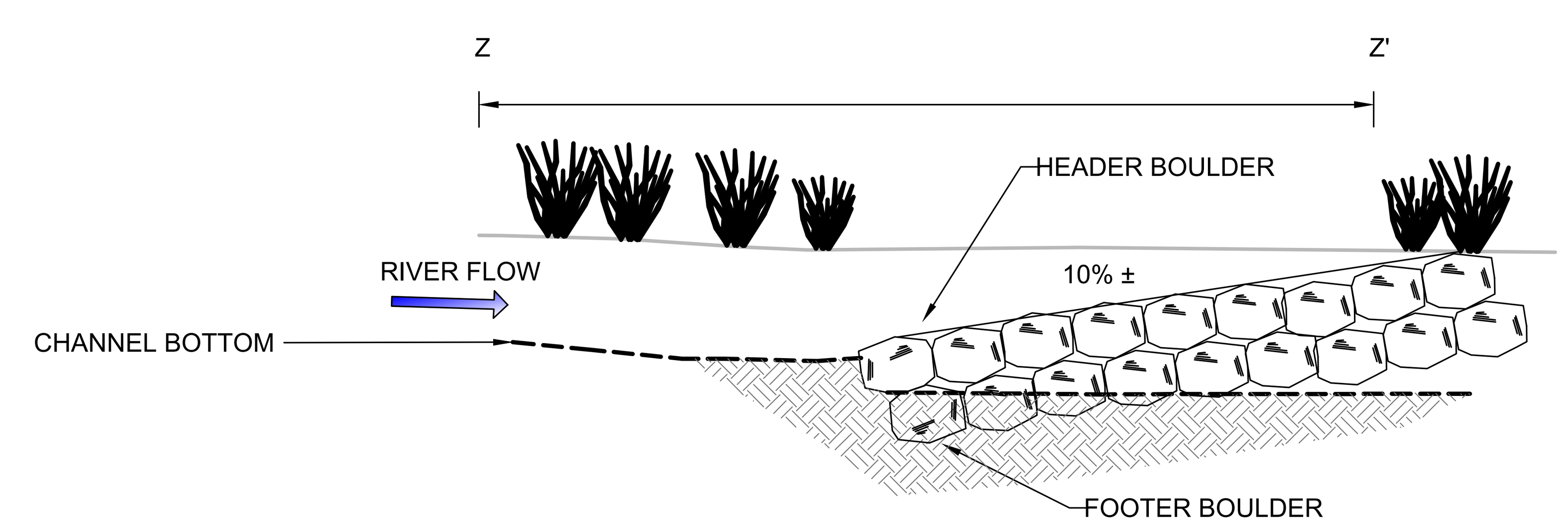
1
ROCK CROSS VANE - SECTION VIEW Y-Y'
NOT TO SCALE



3
1
ROCK CROSS VANE - SECTION VIEW Z-Z'
NOT TO SCALE

GENERAL NOTES

PRELIMINARY DRAWINGS TO SHOW CONCEPT ONLY. NOT FOR CONSTRUCTION

NOTES

1. ROCK CROSS VANE BOULDERS SHALL BE GENTLY AND UNIFORMLY SLOPED FROM CENTER OF CHANNEL TO TOP OF BANK. ENGINEER MAY MODIFY PLACEMENT OF BOULDERS BASED ON SITE CONDITIONS AT TIME OF CONSTRUCTION.
2. ALL BOULDERS SHALL BE TIGHTLY SPACED EXCEPT FOR CENTER HEADER BOULDERS WHICH SHALL HAVE 6 TO 8 IN. GAPS. ALL FOUNDATION BOULDERS SHALL BE TIGHTLY SPACED.
3. CENTER HEADER BOULDERS TO STICK UP 1.5 FT. ABOVE CHANNEL BED. REMAINDER OF HEADER BOULDERS TO STICK UP 2 FT. MAXIMUM ABOVE CHANNEL BED.
4. ROCK VANES AND ROCK CROSS VANES SHOULD BE KEYED INTO THE LEFT AND RIGHT BANKS.
5. EACH ROCK LAYER SHALL BE KEYED OR LOCKED INTO UNDERLYING LAYER.
6. IN AREAS WHERE CHANNEL BANKS ARE DEVELOPED FROM FILL, BANKS SHALL BE COMPACTED TO 95% STANDARD PROCTOR PRIOR TO ROCK INSTALLATION.

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ALAMOSA RIVER WATERSHED
NATURAL RESOURCES DAMAGES

PROJECT NUMBER: P002019-01-721	DESIGN/DRAWN: NRA
	CHECKED: CLJ
DRAWN/DATE: 7/21/20	APPROVED: CDL

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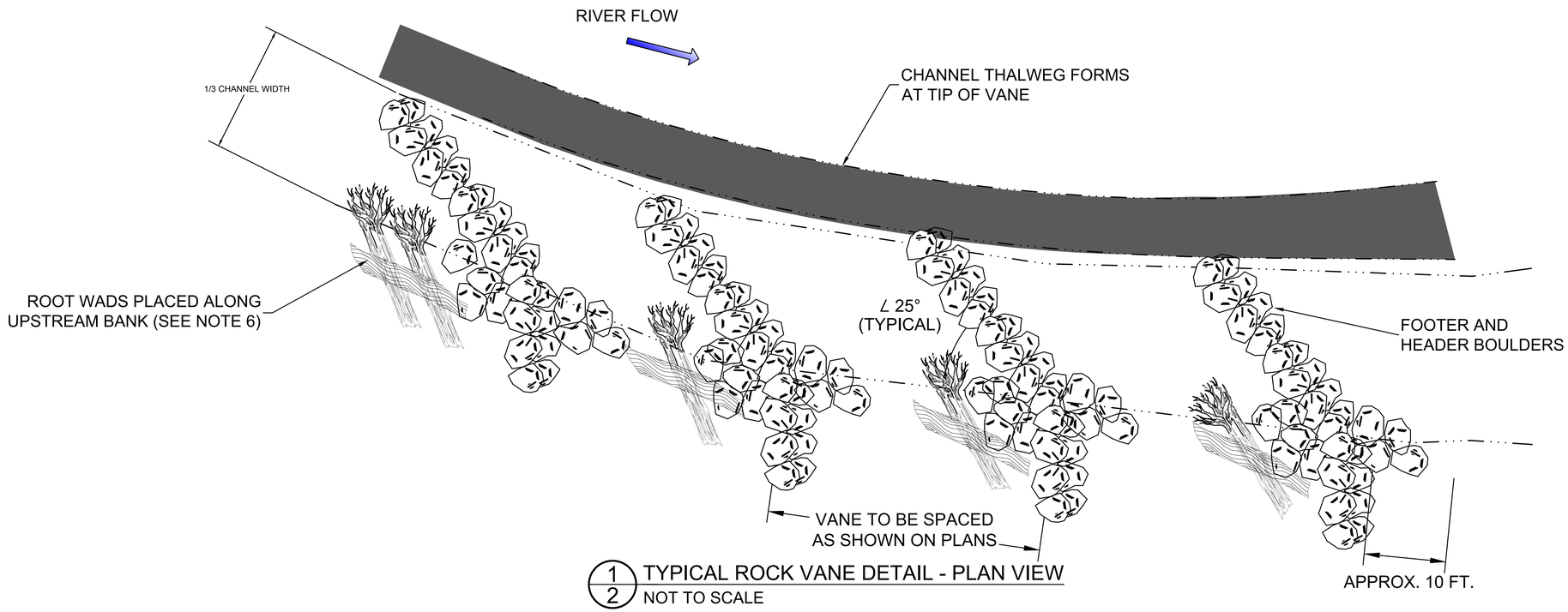
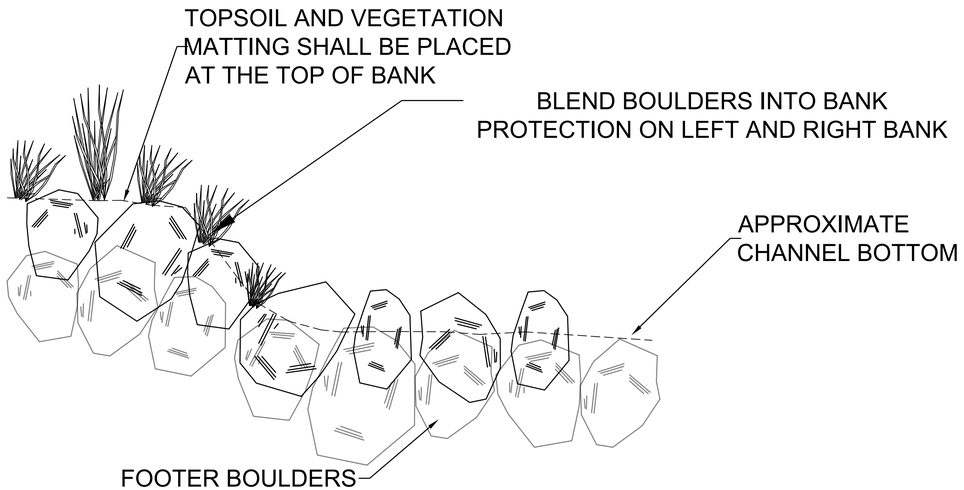
ROCK CROSS VANE
DETAIL

REVISIONS:

DETAIL
1



1/2 TYPICAL ROCK VANE DETAIL - PLAN VIEW
NOT TO SCALE



2/2 TYPICAL ROCK VANE DETAIL - PROFILE VIEW
NOT TO SCALE

ROCK VANE PURPOSE:

- BANK PROTECTION
- FORMATION OF THALWEG
- REDIRECT NEAR BANK VELOCITIES
- SEDIMENT STORAGE

GENERAL NOTES

PRELIMINARY DRAWINGS TO SHOW CONCEPT ONLY. NOT FOR CONSTRUCTION

NOTES

1. ROCK VANE BOULDERS SHALL BE GENTLY AND UNIFORMLY SLOPED FROM CENTER OF CHANNEL TO TOP OF BANK. ENGINEER MAY MODIFY PLACEMENT OF BOULDERS BASED ON SITE CONDITIONS AT TIME OF CONSTRUCTION.
2. ALL BOULDERS SHALL BE TIGHTLY SPACED.
3. ROCK VANES AND ROCK CROSS VANES SHOULD BE KEYED INTO THE LEFT AND RIGHT BANKS.
4. EACH ROCK LAYER SHALL BE KEYED OR LOCKED INTO UNDERLYING LAYER.
5. IN AREAS WHERE CHANNEL BANKS ARE DEVELOPED FROM FILL, BANKS SHALL BE COMPACTED TO 95% STANDARD PROCTOR PRIOR TO ROCK INSTALLATION.
6. AT A MINIMUM, THE FIRST VANE IN A SERIES AROUND A BEND SHALL HAVE 2 ROOT WADS ANCHORED UPSTREAM OF THE VANE. THE REMAINING VANES SHALL HAVE A MINIMUM OF 1 ROOT WAD.

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ALAMOSA RIVER WATERSHED
NATURAL RESOURCES DAMAGES

PROJECT NUMBER: P002019-01-721	DESIGN/DRAWN: NRA
DRAWN/DATE: 7/21/20	CHECKED: CLJ
	APPROVED: CDL
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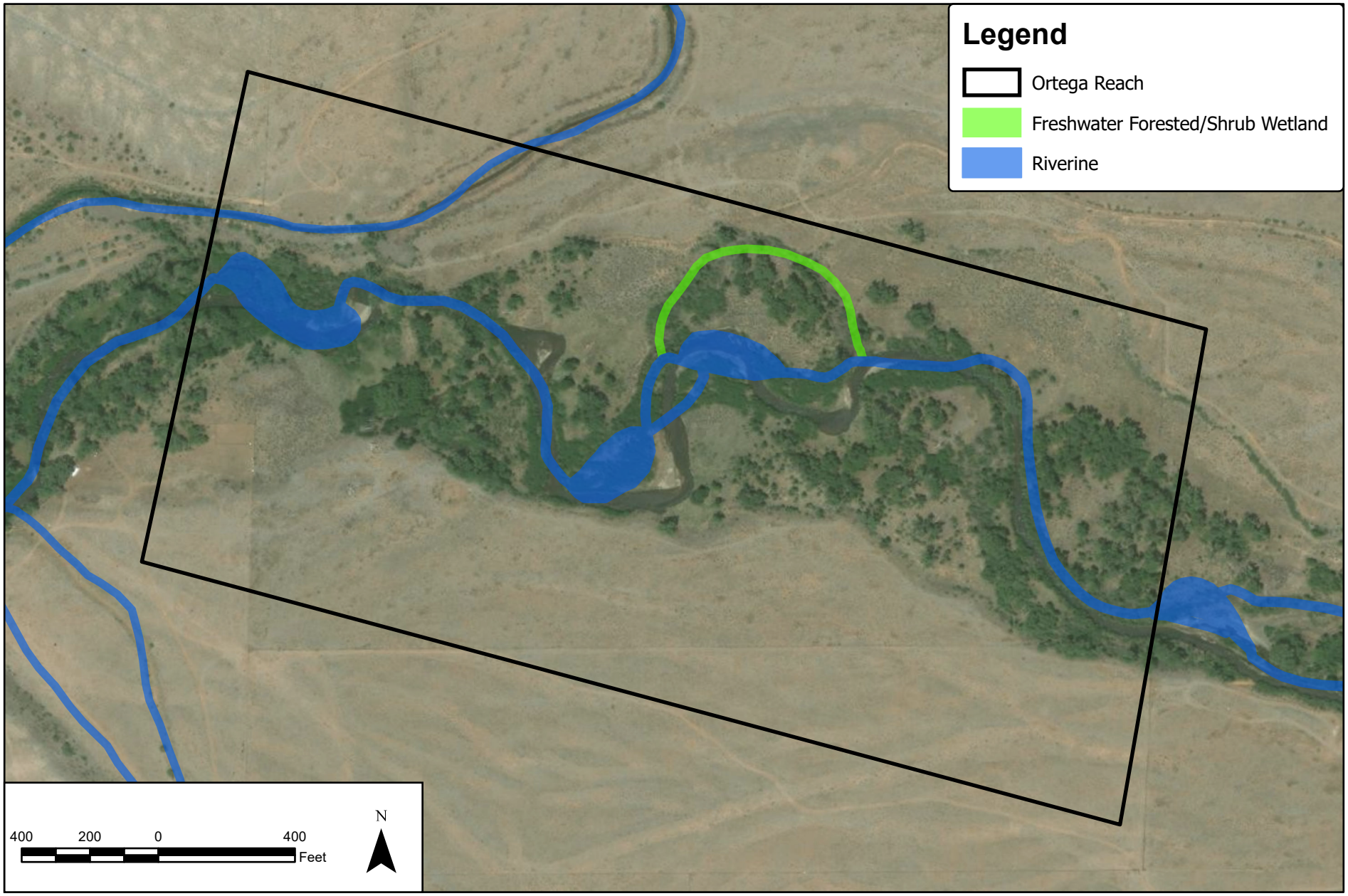
ROCK VANE DETAIL

REVISIONS:	DETAIL
	2

Appendix C

USFWS Maps



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ALAMOSA RIVER WATERSHED NATURAL RESOURCE DAMAGES

National Wetlands Inventory - Ortega Reach

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Figure 3

Appendix D

Cost Estimates
Fee Schedule

	Alamosa River Watershed Natural Resource Damages	Quantity	Unit	Unit Price	Current Scheduled Value	NRD Funds	Matching Funds
Task	Ortega Reach of the Alamosa River Watershed Restoration Project - Phase VI						
1	**Kick-Off Meeting**						
Wenck	Pre-Project Development	120	HRS	$ 175	$ 21,000		$ 21,000
Wenck	Preparation and Travel to Meeting	1	LS	$ 8,000	$ 8,000	$ 8,000	
ARWRF	Preparation and Travel to Meeting	1	LS	$ 2,500	$ 2,500	$ 2,500	
Robins	Preparation and Travel to Meeting	1	LS	$ 1,000	$ 1,000	$ 1,000	
1	**Kick-Off Meeting SUBTOTAL**				**$ 32,500**	**$ 11,500**	**$ 21,000**
2	**Pre-Design Work, Assessments, and Analysis**						
Wenck	Site Surveying and Mapping	1	LS	$ 30,000	$ 30,000		$ 30,000
Wenck	Landowner Consent	1	LS	$ 2,175	$ 2,175		$ 2,175
ARWRF/Wenck	Landowner Consent/Coordination	1	LS	$ 10,000	$ 10,000		$ 10,000
Wenck	Site Assessment Field Work	1	LS	$ 24,820	$ 24,820	$ 24,820	
TBD	Field Sample Geotechnical Analysis	1	LS	$ 5,200	$ 5,200	$ 5,200	
Real West	Ecological Habitat Survey	1	LS	$ 5,000	$ 5,000	$ 5,000	
2	**Pre-Design Work, Assessments, and Analysis SUBTOTAL**				**$ 77,195**	**$ 35,020**	**$ 42,175**
3	**Alternatives Analysis (30% Design Phase)**						
Wenck	30% Design/Meetings	1	LS	$ 39,756	$ 39,756	$ 39,756	
ARWRF	30% Design/Meetings	1	LS	$ 3,000	$ 3,000	$ 3,000	
3	**Alternatives Analysis (30% Design Phase) SUBTOTAL**				**$ 42,756**	**$ 42,756**	**$ -**
4	**Design and Specification Development (60% Design Phase)**						
Wenck	60% Design/Meetings	1	LS	$ 32,935	$ 32,935	$ 32,935	
ARWRF	60% Design/Meetings	1	LS	$ 2,200	$ 2,200	$ 2,200	
4	**Design and Specification Development (60% Design Phase) SUBTOTAL**				**$ 35,135**	**$ 35,135**	**$ -**
5	**Design Build**						
Wenck	Construction Management	1	LS	$ 48,880	$ 48,880	$ 48,880	
Robins	Mobilization/Demobilization	1	LS	$ 15,000	$ 15,000	$ 15,000	
Robins	Sediment, Erosion Control, and Storm Water Management	1	LS	$ 3,000	$ 3,000	$ 3,000	
Robins	Removal and Disposal of Structures and Obstructions	1	LS	$ 4,000	$ 4,000	$ 4,000	
Robins	Clearing and Grubbing	5	AC	$ 1,500	$ 7,500	$ 7,500	
Robins	Removal of Trees (18 inch)	5	EA	$ 200	$ 1,000	$ 1,000	
Robins	Revegetation	10	AC	$ 300	$ 3,000	$ 3,000	
Robins	Overflow Channel Excavation	15,000	CY	$ 4	$ 60,000	$ 60,000	
Landowner	Bank Excavation/Fill	5,500	CY	$ 9	$ 49,500		$ 49,500
Robins	3 Foot Rock (Import from Antonito Quarry to Stockpile)	679	CY	$ 150	$ 101,850	$ 101,850	
Robins	Chinking Rock Rock (Import from Antonito Quarry to Stockpile)	207.5	CY	$ 80	$ 16,600	$ 11,475	$ 5,125
Landowner	Gravel Equivalent	4700	CY	$ 20	$ 94,000		$ 94,000
Robins	Class IV Riprap(Import from Antonito Quarry to Stockpile)	68	CY	$ 100	$ 6,800	$ 6,800	
Robins	Rock Vane Construction (Material Not Included)	23	EA	$ 2,500	$ 57,500	$ 57,500	
Robins	Cross Vane Construction (Material Not Included)	2	EA	$ 7,500	$ 15,000	$ 15,000	
Robins	Willow Cuttings	700	EA	$ 12	$ 8,400	$ 4,200	$ 4,200
Robins	Fill Material (Import to Placement)	620	CY	$ 18	$ 11,160	$ 1,860	$ 9,300
Robins	Root Wads (Import to Placement)	50	EA	$ 1,100	$ 55,000	$ 27,500	$ 27,500
Robins	Force Account	1	LS	$ 12,500	$ 12,500	$ 12,500	
5	**Design Build SUBTOTAL**				**$ 570,690**	**$ 381,065**	**$ 189,625**
6	**As-Builts/Operation, Maintenance, and Monitoring**						
Wenck	Post Construction As-Builts/Monitoring	1	LS	$ 18,480	$ 18,480	$ 18,480	
Robins	Monitoring	1	LS	$ 22,000	$ 22,000	$ 22,000	
6	**As-Builts/Operation, Maintenance, and Monitoring SUBTOTAL**				**$ 40,480**	**$ 40,480**	**$ -**
Misc.	**Miscellaneous Items**						
Wenck	Sammy Marquez (Phase IV - Western Reach) incidental channel work	1	LS	$ 8,800	$ 8,800		$ 8,800
Robins	Sammy Marquez (Phase IV - Western Reach) incidental channel work	1	LS	$ 12,000	$ 12,000		$ 12,000
Misc.	**Miscellaneous Items SUBTOTAL**				**$ 20,800**	**$ -**	**$ 20,800**
	TOTAL				**$ 819,556**	**$ 545,956**	**$ 273,600**

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WENCK WEST
2020 FEE SCHEDULE

Labor Category	Hourly Rate
Principal Scientist	$190.00
Project Manager/Principal Engineer	$180.00
Senior Scientist	$155.00
Senior Engineer	$155.00
Project Engineer/Scientist	$135.00
Senior Designer	$110.00
Construction Manager	$110.00
Administration	$95.00
Clerical	$90.00
CADD/Technician I	$80.00

Other Direct Costs	**Rate**
Mileage	$0.65/mile or IRS rate as approved
Airfare	@ Cost
Per Diem ($14-Breakfast, $16-Lunch, $26-Dinner)	$56/day
Lodging (hotel)	@ Cost
Lodging (rental house)	$75/day
Computer/Plotter	$75/day*
Black and White Copies	$0.15/ea or @ Cost*
Color Copies	$0.90/ea or @ Cost*
Transparent and Color Bond, Blue Lines	$3.00/ea or @ Cost*
Waterproof Plots	$3.00/ea or @ Cost*
Mylar's	$15.00/ea or @ Cost*
Total Station and Data Recorder	$100/day
ATV (4-wheeler)	$125/day
Water Quality Meters (pH/S.C./Temp, Turbidity, TDS)	$50/day
Water Level Meter	$35/day
1000 Foot Depth Sounder	$35/day
Scintillometer	$125/day
Flow/Discharge Meter	$50/day
DH-48 Sediment Sampler	$25/day
Sampling Pumps (peristaltic, submersible)	$75/day
Field Laptop/Computer	$75/day
Micro R Meter	$25/day
RTK Differential GPS Surveying Unit	$500/day
Nuclear Density Testing	$150/test
Acoustic Doppler Current Profiler	$75/day
Consumables (lath, stakes, bailers, ice, baggies, etc.)	@ Cost
Contract Services/Subcontractors	@ Cost
Outside Sourced Testing, Monitoring, and Rental Equipment	@ Cost
Outside Services**	@ Cost

Invoices are due upon presentation. Invoice balances not paid within thirty (30) days of invoice date are subject to 1-1/2% (18% annual) interest or finance charge.
Rates to be adjusted annually. Subcontracted services will be billed at cost.

* When a specific project allows, a Technology/Communication fee of 5% of total Wenck labor costs will be added to each invoice and these items will not be billed individually.

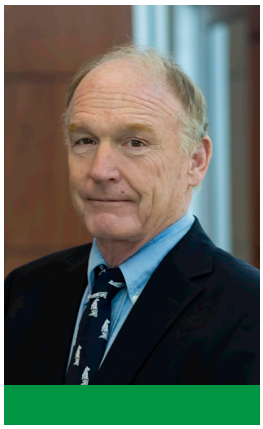
** Copies, transparencies, waterproof plots, mylars: Where a determination is made that it is cost effective to send work to outside services receipts will be provided.

Appendix E

Resumes

CHRISTOPHER LIDSTONE, PG, CPG

Principal/Geologist



Mr. Lidstone is the founder and president of the engineering, geology, and water resource consulting firm Lidstone and Associates, Inc. (LA), now a Wenck company. His 35 years of professional experience covers a wide range of specialized, yet interrelated fields of study which include fluvial geomorphology; surface and ground water hydrology; river mechanics; water supply and irrigation system analysis; geology; geochemistry; sedimentology; erosion and sedimentation; mined-land reclamation; environmental studies and wetland assessments; agriculture and land use assessments; and environmental regulation. His specialty experience has included hydraulic studies and river stabilization; river restoration; bioengineering; preparation of wetland designs; reclamation of disturbed lands; evaluation and mitigation of geochemical problems associated with surface and ground water contamination; the analysis of geomorphic stability of land forms and rivers; and the hydrologic and hydraulic analysis of natural rivers and control structures to determine short-term and long-term stability. Over the last 25 years, Mr. Lidstone has been responsible for environmental and water resources projects on large and small rivers, watershed planning studies, reclamation of disturbed lands and land development projects.

Mr. Lidstone's experience in surface and ground water hydrology has made him familiar with federal, state, and county permitting procedures and regulations. He has completed projects for municipal, federal, and state agencies as well as private clients including the mining industry. He has provided expert witness testimony in civil court, federal district court, and at the county and state level in Colorado, Nebraska, Oregon, Utah, and Wyoming. He has completed water resource and geologic projects in 25 states and several foreign countries.

AREAS OF EXPERTISE

Fluvial Geomorphology
Hydrology, Hydraulics, Sediment Transport
Hydrogeology
Geology
Geochemistry
Construction-related Services
Erosion and Sedimentation
Mined-Land Reclamation
Agriculture and Irrigation
Environmental Regulation
River Restoration
Bioengineering
Reclamation of Disturbed Lands
Evaluation and Mitigation of Geochemical Problems Associated with Surface and Ground Water Contamination
Analysis of Geomorphic Stability of Landforms and Rivers
Hydrologic and Hydraulic Analysis of Natural Rivers and Control Structures

EDUCATION

Colorado State University
MS

Cornell University
BA

REGISTRATION

Professional Geologist: WY
Certified Professional Geological Scientist

SELECTED EXPERIENCE

Hydrology and Fluvial Geomorphology

Mr. Lidstone has been actively involved in projects related to river restoration, stream bank erosion, sedimentation, agricultural irrigation and geomorphic stability of fluvial systems. While completing these projects, he was responsible for the field data collection, analysis of hydrologic and geomorphic parameters, development of hydrologic storm events, evaluation and design of drainage and irrigation structures, and development of geomorphic guidelines for drainage networks. He is familiar with the erosion and sedimentation problems of the Rocky Mountains, Southwest, and has performed hydrologic and environmental studies in Wyoming, Oregon, Colorado, southern California, northern Nevada, southwestern Utah, and north central New Mexico. Agricultural Master Plan studies have been completed for the Hill Irrigation District, Etna Irrigation District, Alamosa River Irrigation Users, Goshen Irrigation District, Tri-State Canal among numerous others. His river restoration projects

have balanced the agricultural needs of the users, recreational interests and ecological requirements of fish passage and habitat restoration. Some example projects follow:

Alamosa River Restoration Project – CO. Project Manager and Principal Geomorphologist on the Alamosa River Restoration project. The project involved a watershed-wide analysis of current trends of system instability and a detailed study of a 1.5-mile reach (Phase IV) of the Alamosa River on private lands within Conejos County, Colorado. The project team developed several channel restoration alternatives, which met the objectives of plan form and profile stability, riparian improvements, habitat enhancement, water quality and water quantity objectives. The Alamosa River includes several irrigation diversions, headgates, wasteways, road crossings and specific livestock related watering and stream crossing issues. LA prepared final plans and specifications and administered a $750,000 river restoration and irrigation supply construction project. This work was followed by the Phase V effort, which included three additional reaches for a total stream length of 1.3 miles. This latter and successive project included wetland enhancement, stabilization of banks and stream beds, and an overall restoration plan for the Muniz and Quintana Reaches. This work will encompass approximately $800,000 of construction.

Apalachicola River Geomorphic Studies – FL. Project Manager and Principal Geomorphologist on the geomorphic, hydraulic, and sediment transport evaluation of the effects of dredging on the stability of the Apalachicola River in northwest Florida. Geomorphic studies included predictions of changes in plan form based on 50 years of geomorphic data. As part of this project, Mr. Lidstone addressed environmental issues related to the habitat of migratory sea bass, the local oyster population, alligators, and several endangered plants within the riparian zone. He served as the third party independent expert on the three-state (Alabama, Florida, Georgia, and the U.S. Army Corps of Engineers) ACF compact negotiation.

Yampa River Restoration -Routt County – CO. Principal Geomorphologist and responsible for the evaluation, design and construction of landform stability and river restoration. The river reach was adversely affected by adjacent floodplain gravel mining, pushup dams for irrigation and local landowner efforts to protect property. The Project team developed a comprehensive restoration strategy, coordinated with all stakeholders and successfully completed construction on a 1.2-mile reach of the Yampa River. This restoration project won an award from the State of Colorado DRMS.

East Fork of the Carson River – NV. Principal Geomorphologist and responsible for the development of a streambank stabilization plan for a reach of the East Fork Carson River. The geomorphic evaluation included a review of changes in historical channel profiles, banklines, soils and sediment data. Hydrologic and hydraulic analyses were conducted for the study reach and affected reaches using the U.S. Army Corps of Engineers HEC-1 and HEC-2 computer programs, respectively. Sediment transport modeling was conducted to evaluate channel degradation and aggradation effects on stream stabilization design and construction.

Rogue River Restoration Project – OR. Project Manager and responsible for the geomorphic, hydraulic and sediment transport assessment of the Rogue River near Medford, Oregon. The hydraulic evaluation included two-dimensional modeling of multiple flow splits at 56,000 cfs. Model verification included the January 1997 record peak flood event. The project was built in 2002-2004 utilizing $750,000 grant money from the Oregon Watershed Enhancement Board and match funding from Oregon DOT and private sources. The firm's design incorporated a combination of hard engineering, geomorphic trend analysis, and biotechnical slope protection. River scour and local hydraulics were critical design considerations. This restoration project won an award from the State of Oregon.

Idaho Power Snake River Water Supply Analysis – ID. As Project Manager and Principal Geomorphologist, Mr. Lidstone directed an investigation of both in-channel and shoreline alternatives to develop a cooling water supply (500 gpm to 1400 gpm) for the Idaho Power Company. The Langley Gulch project was located on a portion of Snake River, which forms the state line between Idaho and Oregon. As part of this project, LA completed a hydrologic, hydraulic and geomorphic evaluation of the Snake River through the project reach. Due to permitting constraints and timing, LA recommended and completed construction of an alluvial well field with redundancy in water supply. The channel studies were used to support the well field and define the 10-year and 100-year water surface elevations and the long term stability of the channel banks.

Willamette River Floodplain Development and Permitting Studies – OR. Project Manager and Principal Scientist for proposed floodplain sand and gravel mines along the Willamette River from Harrisburg to Salem, Oregon. Mr. Lidstone was responsible for the evaluation of historic geomorphic trends of the Willamette River, its migratory patterns and the evaluation of the short and long term stability of a proposed mine and reclamation plan.

Each study included hydrology, hydraulic and sediment transport studies, bathymetric surveys and hydraulic modeling to establish mining setbacks and to acquire floodplain development permits under the local FEMA program. The geomorphic studies allowed the design of the mine and reclamation plan to ensure that the proposed mining was concordant with the natural trends of the river system.

Monroe Creek – ID. Principal Scientist responsible for the hydraulic and geomorphic analysis of the Monroe Creek stream relocation project in Idaho. The geomorphic analysis involved a determination of potential stream migration and an assessment of channel bed and bank stability. Preliminary designs addressed the construction of a new bridge crossing, widening of a state highway, relocation of the creek and construction of a bike path.

River Mechanics

Napa River Flood Relief Design Project – CA. Responsible for the geomorphic analysis, watershed evaluation and sediment yield analysis for the hydraulic modeling and evaluation of design alternatives for the proposed stabilization and flood relief project along the Napa River near Napa, California. The design evaluation included the review of U.S. Army Corps of Engineers hydrology, hydraulics, and data collection program. LA was retained to reassess and remodel the channel hydraulics to ensure a successful final design.

Little Snake River – WY and CO. Principal Geomorphologist and Project Manager for the evaluation, design and construction of a replacement infiltration gallery for the Town of Baggs, Wyoming. Geomorphic analysis found that the river reach in the vicinity of the municipal intake was unstable and prone to both bank erosion and a channel cutoff. The extreme rate of fine sedimentation had adversely affected the previous infiltration gallery production and the potential cutoff had an opportunity to bypass any proposed intake solution. Lidstone provided the lead analysis in both siting and design solutions to complete a replacement infiltration gallery. Construction was completed in December 2011.

Coldwater River Channel Stability Evaluation – MS. Responsible for the field data collection, geomorphic studies, watershed evaluation, channel stability and sediment yield analysis for nine principal rivers within the Coldwater River Watershed. The area had been adversely impacted by a 1940-1960's U.S. Army Corps of Engineers flood relief project, which included channelization, diking, construction of levees among other items. The reconnaissance level evaluation identified problematical reaches, performed hydrologic and hydraulic modeling, and prepared design alternatives to stabilize the river system.

PT Bukit Asam – Sumatra, Indonesia. Mr. Lidstone was retained as an advisor to the Indonesian Government to achieve compliance with ISO 14000 international environmental standards for the state-owned coal industry. He was responsible for assessment of environmental impacts associated with several open cast mines and in particular addressed hydrology, sediment transport, destruction of critical rain forest habitat, topsoil and mine land reclamation issues at the mine sites. Over the course of his work, he addressed surface water contamination associated with mine wastes, unreclaimed spoils and acid drainage. He developed a reclamation program at each of the mines and worked with mine staff on an interim stabilization program and final hydrologic design.

General Watershed Planning and Analysis Studies – Nationwide. Principal Geomorphologist and responsible for watershed studies for Wind Big Horn Basin (Wyoming), Clackamas River Basin (Oregon), Gooseberry Irrigators (Wyoming), Fossil Creek (Colorado), Rio Grande (Colorado and New Mexico), Tippecanoe River/Shaffer Lake (Indiana), Rio Grande Basin (Colorado), Alamosa Creek (Colorado), Provo River (Utah), Willamette River and Rogue River (Oregon).

Rio Grande Headwaters Restoration Project – CO. Principal Geomorphologist for a planning study funded by the Colorado Water Conservation Board and local San Luis Valley stakeholders. The project addressed 96 river miles, extending from Alamosa upstream to South Fork, Colorado. The channel improvement study balanced geomorphic and environmental objectives with irrigation demands, flood control and water quality. The study included geomorphic analysis, hydrology, hydraulics and sediment transport analysis, public meetings and the compilation/weighting of a series of alternative restoration and stream improvement projects balanced against project objectives.

Provo River Restoration Project – UT. Principal Geomorphologist and responsible for the relocation and restoration of 1O miles of the Provo River and associated wetlands, immediately downstream from Jordanelle Reservoir in the Heber Valley, Utah. The critical issues associated with this project were restoration of habitat for the Bonneville cutthroat trout, Ute's lady tress and spotted frog. Mr. Lidstone was the LA Project Manager and was responsible for the geomorphic assessment, hydraulic design, public participation and impacted landowner coordination for the UWCD and

USSR. Mr. Lidstone's involvement also included the evaluation of basin hydrology, reservoir routing, sediment transport and geomorphic stability.

Publications

Lidstone, C.D., 1981. "Geomorphic and Hydraulic Controls Associated with the Development of Alluvial Placer Deposits." Technical paper presented to the USGS Branch of Exploration Research, Lakewood, Colorado.

Lidstone, C.D., 1982. "Stream Channel Reconstruction and Drainage Basin Stability." Technical paper presented at the AIME/GAGMO (Gillette Area Groundwater Monitoring Organization) Symposium, Gillette, Wyoming.

Lidstone, C.D., and P.M. Schmittdeil, 1984. "Geomorphology and Depth of Potential Downcutting, Green River Basin, Wyoming." Open-file report, Wyoming Department of Environmental Quality, Land Quality Division, Cheyenne, Wyoming.

Lidstone, C.D., 1987. "Stream Channel and Wetland Reconstruction Techniques." Paper presented at the Eighth Annual Meeting of the Society of Wetland Scientists, Seattle, Washington.

Lidstone, C.D., and B.A. Anderson, 1989. "Considerations in the Design of Erosionally Stable channels on Reclaimed Lands." Paper presented at the Evolution of Abandoned Mine Land Technologies Symposium in Riverton, Wyoming.

Lidstone, C.D., 1991. "Design Concepts in Hillslope Morphology." Paper presented at the 13th Annual Abandoned Mined Land Conference, Lake Ozark, Missouri.

Lidstone, C.D., and C.M. Jones, 1993. "Hydrologic Considerations in the Design of Wetlands." Paper presented at the 15th Annual Abandoned Mined Land Conference, Jackson, Wyoming.

Jones, C.M., and C.D. Lidstone, 1996. "Drop Structures" in Handbook of Western Reclamation Techniques, F.K. Ferris, ed., USDI Office of Surface Mining, Washington, D.C., pp. 11-21 - 32.

Lidstone, C.D., and C.M. Jones, 1996. "Hillslope Shaping and Morphology" in Handbook of Western Reclamation Techniques, F.K. Ferris, ed., USDI Office of Surface Mining, Washington, D.C., pp. 111-3 - 12.

Ferris, F.K., C.D. Lidstone, and C.M. Jones, 1996. "Small Drainage Waterway Construction" in Handbook of Western Reclamation Techniques, F.K. Ferris, ed., USDI Office of Surface Mining, Washington, D.C., pp. 11-67 - 74.

Gibbens, G.A., Hyde, B., Thompson, K., and, Lidstone, C.D., 2002. "River Restoration Planning for the Rio Grande Headwaters, Colorado." Paper presented at the Rio Grande Restoration Vision Workshop hosted by the World Wildlife Fund and Alliance for the Rio Grande Heritage, Albuquerque, New Mexico.

Lidstone, C.D., and M. Pole, 2006. "In-Stream Mining: The Trial and Tribulations of the Federal Permitting Process: A Case Study: Umpqua River Navigation." Paper presented at the 2006 SME Annual Meeting, St. Louis, Missouri.

Wampler, P., E. Schnitzer, D. Cramer, and C. Lidstone, 2006. "A Meander Cutoff into a Gravel Extraction Pond, Clackamas River, Oregon: lnstream and Floodplain Mining Implications." Paper presented at the 2006 SME Annual Meeting, St. Louis, Missouri.

Lidstone, Christopher D., 2006. "Applied Geomorphology: Hydrologic Design Considerations to the Stabilization and Reclamation of Mining Disturbed Lands." Keynote Presentation. OSM Conference, National Interactive Forum on Geomorphic Reclamation. Farmington, NM. September 12-14, 2006.

Lidstone, Christopher D. and Abby Korte, 2011. 'Water and Sediment Control Systems" (Chapter 16.4) in SME Mining Engineering Handbook, Third Edition, ed. Peter Darling, Society for Mining, Metallurgy and Exploration, Inc., Littleton CO.

C. MARTY JONES, PE

Principal Engineer and Project Manager

Mr. Jones has extensive experience conducting design investigations, along with preparing construction plans and specifications for mine reclamation projects and water resources projects. He has been the supervising engineer for several hydrologic/hydraulic design investigations and construction projects. His most extensive experience includes hydrologic/hydraulic design, geomorphic evaluation and preparing plans for mine reclamation projects. He has completed water quality sampling for mine reclamation and water resources projects. Mr. Jones, as project manager, has actively participated in the field data collection, hydrologic/hydraulic design, evaluation of drainage structures, as well as preparation of construction plans and specifications.

EDUCATION
University of Wyoming
MS

University of Wyoming
BS

AREAS OF EXPERTISE
Hydrologic and Hydraulic Design,
Erosion and Sedimentation Studies
Geomorphic Evaluation
Development of Mine Rehabilitation Plans
Evaluation of Drainage Structures, Construction Plans and Specifications Preparation

REGISTRATION
Professional Engineer: CO, ID, OR, WY

SELECTED EXPERIENCE

Hydrologic, Hydraulic and Irrigation

Mr. Jones has completed numerous irrigation district improvement projects located throughout the state of Wyoming. These projects have entailed extensive investigations to develop rehabilitation and construction plans ranging from diversion structures with capacities in excess of 1,500 cfs to small structures such as delivery headgates and flow measurement structures with a capacity of 1 cfs. He has completed projects for diversion structure rehabilitation and replacement, canal regulation structures, flow measurement structures, delivery pipelines and headgates. Mr. Jones has conducted water use studies to evaluate crop water use, depletion analyses, and water balance studies. A listing of some of these projects is detailed below.

Private Client-Wyoming. Expert witness reporting and support for a construction defect project. This project included evaluating irrigation structures and RCP pipelines that were recently completed for construction deficiencies associated with a legal action. Intrusive testing was completed to evaluate and inspect the RCP pipelines for canal lateral structures. Supervised the excavation work and data collection during the site work phase.

Alamosa River Restoration Project, Phase IIIb. Supervising engineer for the development of the restoration plans and specifications and advisory role during the construction phase.

Goshen Irrigation District. Completed site evaluation, inventory, and design concept for the tunnel and siphon rehabilitation and conveyance system improvements for the Goshen Irrigation District, Goshen County, Wyoming. A subsequent project included the evaluation and preparation of conceptual designs for the Horse Creek Reregulation Reservoir.

Wind River Irrigation Rehabilitation. Completed site evaluation, inventory, design investigations and preparation of design plans and specifications for the replacement of Johnstown, Left Hand, Coolidge, and Ray Canal diversion structures and headgates located on the Wind River Reservation.

Sidon Canal. Completed site evaluation, inventory, design, and construction for the diversion, headgate structure, and conveyance system improvements. The project included developing final design plans and specifications for the diversion structure rehabilitation located on the Shoshone River.

Gooseberry Irrigation District. Completed site evaluation, prepared design plans and specifications for diversion structure replacement and upgrades, delivery system improvements, delivery pipeline, and flow measurement structures for this 10,000-acre irrigation district in the Big Horn Basin, Wyoming.

Hill Irrigation District. Completed site evaluation, inventory, and rehabilitation of the irrigation district's delivery system, Goshen County, Wyoming.

Mr. Jones has completed hydrologic and hydraulic design studies throughout the United States. Many of these projects have included site investigations to characterize drainage basins and stream channels. He has conducted studies to evaluate runoff characteristics and design flow events for undisturbed and disturbed area drainage basins that vary in size from 10 acres to 5 square miles. These projects have included computer modeling efforts to determine project design parameters. Mr. Jones' experience in hydrologic modeling includes the use of HEC-1, HydroCAD and SCS TR-55 methods. He also conducted numerous studies where design discharge events were developed from stream gaging data for river channel hydraulic analyses. He has conducted numerous stream gaging investigations that have varied from small canal sections that are 10 feet wide to larger river sections that span up to 800 feet. Mr. Jones was a boat crew leader for two months where he directed stream gaging data and sediment sampling for a project conducted on the Rio Grande River in New Mexico for the U.S. Bureau of Reclamation.

River Mechanics Design Experience

Mr. Jones has supervised numerous hydraulic design investigation projects where the hydraulic stability of rivers was evaluated. Typically, these projects involved stream channel reconstruction and diversion designs for floodplain enhancement features. Most of these projects included geomorphic evaluations to ensure that the proposed stabilization plan would consider the river's geomorphic trends. He has also conducted numerous hydraulic analyses to ensure that development activities will not affect floodplain areas. As the project manager, he supervised analyses and investigations of the Columbia River, Willamette River, Santiam River, and Rogue River in Oregon.

Mr. Jones has extensive hydraulic modeling experience and is familiar with the U.S. Army Corps of Engineers HEC series. He has conducted HEC-2 and HEC-RAS analyses for numerous river systems in the western United States including the Shoshone River, Little Wind River, Wind River, Greybull River, Laramie River, North Platte River (in Wyoming); and, the Rogue River, Santiam River, Willamette River, Columbia River (in Oregon). Typically, these projects included development of stabilization plans to address erosion concerns present for portions of the channel. Mr. Jones supervised the development of the stabilization structures including stream barbs, riprap bank revetment structures, and soft engineering techniques including root woods and other non-traditional stabilization measures.

Rogue River. Mr. Jones was the lead engineer on the reconstruction of 3 miles of the Rogue River near Central Point, Oregon. During the 1997 flood, the Rogue River overtopped several levees and captured a floodplain gravel pit. Erosion and sedimentation was adversely affecting the listed species and the potential for additional pit capture necessitated stabilization work. Mr. Jones designed bendway weirs, stream barbs and toe slope protection along critical reaches.

Santiam River. Mr. Jones was the lead engineer on stabilization work on the Santiam River near Stayton, Oregon. This work consisted of the design and construction of an inlet structure that directed overbank flow into a reclaimed mined area and an outlet structure to return these overbank flows into the river immediately above a state highway bridge. Additional bank protection was incorporated into the mainstem of the Santiam.

Willamette River. Mr. Jones was the lead engineer on permitting projects for the sand and gravel industry within the Willamette River Valley. This effort has included floodplain modeling (Floodplain Development permits), conceptual and final design of floodplain-river connection channels to allow fish migration and the design of habitat features within the framework of the final reclamation plan.

Water Rights Investigations

Mr. Jones has performed numerous water right investigations, usually resulting in submittals to the Wyoming State Board of Control or Wyoming State Engineer's office. Mr. Jones has prepared and submitted over 50 petitions to the State Board of Control for the transfer of water rights for irrigators and other water users in southeastern Wyoming. Typically, the place of use was redescribed to facilitate improvement to the on-farm irrigation system. Mr. Jones has submitted petitions for change in points of diversion and conducted investigations for the adjudication of groundwater rights. Mr. Jones had conducted investigations for evaluating the water rights for irrigation companies, including the Goshen Irrigation District, Hill Irrigation District, Goshen Hole and Goshen Mutual Canal Companies. Records from the State Engineer's Office were reviewed to determine the priority, storage rights, and direct flow rights for each of the canal companies. Mr. Jones was the project engineer for the evaluation of instream flows on segments of the North Platte River, Douglas Creek, Horse Creek, Nugget Gulch, Beaver Creek, Camp Creek, and Lake Creek. Water rights evaluations were conducted, hydrologic databases generated for both gaged and ungagged watersheds, and a determination of the flows available to meet the instream flow requests was completed.

CHRIS JAROS, EIT

Water Resources Engineer

Mr. Jaros has 18 years of water resources investigations experience, both academic and professional. He has experience in surface water quantity and quality modeling, environmental impact assessment, and regulatory compliance in floodplain management and hazardous materials projects. At Wenck, Mr. Jaros has focused on stormwater infrastructure assessments for water quantity and quality impacts, river restoration design, as well as construction monitoring of diverse civil and natural water resources projects. As project manager, Mr. Jaros has overseen planning and field logistics for a long-term ecological research project in Antarctica including: field data collection, curation, processing, and publishing. He operated and published over 10 years of stream discharge data per USGS methodology. Mr. Jaros has coauthored over 15 peer-reviewed publications involving climate driven hydrologic variability, surface-to-water nutrient connectivity, and fish toxicology.

AREAS OF EXPERTISE
Hydrologic and Hydraulic Modeling
BMP Evaluation
Environmental Impact Assessment and Compliance
Geomorphic Evaluation
Project Management

REGISTRATION
Engineer in Training

EDUCATION
University of Colorado, Boulder, CO
M.S., Civil Engineering

Humboldt State University, Arcata, CA
BS, Environmental Resource Engineering

SELECTED EXPERIENCE

Hydrologic and Hydraulic Data Products

Mr. Jaros has completed hydrologic and hydraulic modeling studies ranging from small alpine glacial and snowmelt streams to a fourth order stream tributary to the Mississippi River. These studies used approved existing and original models using various platforms including US Army Corps of Engineers HEC series, HydroCAD, SWMM, SCS TR-55 and novel, self-written programs.

Alamosa River Restoration, Capulin, CO: Mr. Jaros is the lead design engineer on a multi-phase design and construction restoration project for 5700 feet of channelized, acid-rock drainage impacted stream channel. Investigations conducted for the project included grading plan development, hydrologic, hydraulic and sediment transport analyses. Project returns historically modified stream channel to natural configuration, dramatically reducing bank erosion, reconnecting floodplain, and improving aging ditch intakes to centuries old water rights holders.

Poudre Ponds Spillway Design, Greeley, CO: Mr. Jaros designed a high water spillway from the Cache La Poudre River into a reclaimed gravel mine/fishing pond owned by City of Greeley. Engineering services include extensive hydrologic analyses to identify spillway usage probability, impacts to river flood elevations, and hydraulics within compound grouted/graded rip rap spillway.

South Platte River No-Rise Certification: Mr. Jaros performed the hydraulic analysis of a new intake pump structure on the South Platte River above Brighton, CO. The no-rise certification was for in-stream modifications and floodplain re-grading and infrastructure installation.

Pine Creek, Oregon River Diversion and Ditch Intake Preservation: Mr. Jaros provided design support for a proposed short-reach river diversion to accommodate client's site-plan, provide crucial native fish passage across the site, and improve ditch intake infrastructure function.

McMurdo Dry Valleys Long Term Ecological Research Program. Mr. Jaros has managed the field data collection, workup, and publishing of 17 years of USGS streamflow data for an 18 streamgage network in the Trans-Antarctic Mountains in Antarctica. In addition to the design and operation of the streamgages in a harsh environment, he has designed and operated a novel, coupled satellite-radio data telemetry network as well as managed the transfer of the more than 25-year record and work history from a USGS database platform to a proprietary platform recently adopted by the entire USGS water resources division.

Federal Emergency Management Agency Flood Hazard Mapping. Mr. Jaros has performed analyses of proposed project impacts in regulated flood zones in Colorado, Minnesota, and South Dakota and obtained no-rise certifications and map revisions.

Los Alamos National Laboratory, NM. Mr. Jaros designed a monitoring program to ensure compliance for the Laboratory's NPDES permit. Project involved coupling real time on-site NOAA meteorological station event-triggered site visitation and novel monitoring hardware to document zero discharge for over 370 surface contamination sites.

Environmental Assessment and Compliance

Mr. Jaros has documented environmental impacts from proposed, existing, and historical activities in both pristine and highly contaminated environments. Example projects include:

Acid-Rock Drainage Impacted Streams. Mr. Jaros has extensive field experience in assessing ecological impacts in mineral rich alpine streams in Colorado. He has performed numerous stream water quality, benthic biota, and tracer studies to document streambed-hyporheic zone-groundwater connectivity and contaminant sources and sinks. He has performed fish habitat surveys and in-situ toxicology studies.

Los Alamos National Laboratory, NM. Mr. Jaros wrote a stormwater BMP maintenance manual and performed the initial survey of site-wide stormwater BMP infrastructure. Additionally, Mr. Jaros provided multiple historical site investigations and pre-decontamination sampling plans to ensure compliance with RCRA regulations.

Minnesota Department of Natural Resources, MN. Mr. Jaros prepared the water resources section of Draft and Final Environmental Impact Statements for a large iron mining/steel production facility in northern Minnesota. Principal duties included hydrology and hydraulics analysis of affected water resources and assessment of potential impacts from reservoir de-watering and headwaters alteration.

Select Publications

Gooseff, M. N., A. Wlostowski, D. M. McKnight & C. Jaros (2017) Hydrologic connectivity and implications for ecosystem processes - Lessons from naked watersheds. Geomorphology, 277, 63-71.

Singley, J. G., A. N. Wlostowski, A. J. Bergstrom, E. R. Sokol, C. L. Torrens, C. Jaros, C. E. Wilson, P. J. Hendrickson & M. N. Gooseff (2017) Characterizing hyporheic exchange processes using high-frequency electrical conductivity-discharge relationships on subhourly to interannual timescales. Water Resources Research, 53, 4124-4141.

Wlostowski, A. N., M. N. Gooseff, D. M. McKnight, C. Jaros & W. B. Lyons (2016) Patterns of hydrologic connectivity in the McMurdo Dry Valleys, Antarctica: a synthesis of 20years of hydrologic data. Hydrological Processes, 30, 2958-2975.

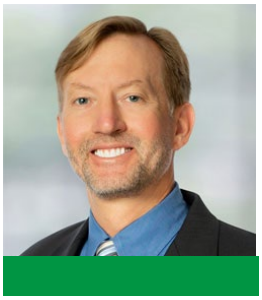
Castendyk, D., D. McKnight, K. Welch, S. Niebuhr & C. Jaros (2015) Pressure-driven, shoreline currents in a perennially ice-covered, pro-glacial lake in Antarctica, identified from a LiCl tracer injected into a pro-glacial stream. Hydrological Processes, 29, 2212-2231.

Doran, P. T., C. P. McKay, A. G. Fountain, T. Nylen, D. M. McKnight, C. Jaros & J. E. Barrett (2008) Hydrologic response to extreme warm and cold summers in the McMurdo Dry Valleys, East Antarctica. Antarctic Science, 20, 499-509.

Todd, A. S., D. M. McKnight, C. L. Jaros & T. M. Marchitto (2007) Effects of acid rock drainage on stocked rainbow trout (Oncorhynchus mykiss): An in-situ, caged fish experiment. Environmental Monitoring and Assessment, 130, 111-127.

ERIC DERUYTER, PE

Project Manager/Civil Engineer



Mr. DeRuyter is a professional civil engineer and project manager with 28 years of experience in environmental consulting, design, construction, and business development. He's a licensed engineer in Colorado, Nebraska, Oklahoma, South Dakota, Utah, and Wyoming with project experience in Hawaii, Alaska, Guam, Japan, and multiple Navy bases in California. Mr. DeRuyter specializes in construction oversight, stream restoration, landfill cover design, site characterization, remediation (soil and groundwater), stormwater, Spill Prevention Control and Countermeasure (SPCC) Plans, Storm Water Pollution Prevention Plans (SWPPP), Storm Water Management Plans (SWMP), Phase I/II Environmental Site Assessments (ESA), removal actions, site reclamation, and managing geophysical investigations and surface/subsurface clearance of munitions and explosives of concern (MEC).

EDUCATION

Colorado State University
BS, Civil Engineering

SELECTED EXPERIENCE

Construction Oversight and Surveying for River Restoration Project, Alamosa River, Colorado. Conducted oversight during a design-build river restoration project in southern Colorado. Performed surveying to maintain grade control and direct construction of control structures (rock vanes, cross vanes, and J-vanes) within the river per design drawings and specifications. Reported quantities and kept daily construction reports for quality control.

Landfill Cover Construction Oversight and Groundwater Well Development/Sampling, Naval Air Station Lemoore, California. Conducted oversight during construction of a 4-foot thick soil cover for a 39-acre landfill. Work included wetlands delineation in nearby areas and temporarily relocating burrowing owls during construction activities using artificial burrows built outside of the construction area. Also developed a surging device for 4-inch diameter wells, conducted well development of newly installed groundwater wells, and sampled groundwater using submersible pumps and bailing techniques.

Landfill Consolidation and Cover Design/Construction, Moffett Field, Mountain View, California. Managed project team to prepare designs to consolidate a 4-acre landfill into a 12-acre landfill and to construct a multilayered landfill cover. The landfill is located adjacent to a runway and required a unique grading design to maximize capacity while staying below designated airflight restriction surfaces. The multilayered landfill cover design included a low-permeability clay layer, a biotic barrier (to deter burrowing owls and squirrels), a vegetative cover, a gas venting trench, and

AREAS OF EXPERTISE

Construction Oversight
Stream Restoration
Landfills
Site Characterization
Remediation
Groundwater Treatment
Stormwater (SWPPPs/SWMPs)
SPCC Plans
Removal Actions
Site Reclamation
Military Munitions Response Program

REGISTRATION

Civil Engineer, PE
CO, #33330
NE, #E-18022
OK, #31613
SD, # 14785
UT, #10671212-2202
WY, #16466

CERTIFICATIONS

40-hr OSHA HAZWOPER
8-hr Site Manager and Supervisor Training
Adult CPR/Basic First Aid
PADI Advanced Open Water

TRAINING

8-hr Refresher HAZWOPER
24-hr Mine Safety and Health Administration (MSHA)
4-hr Confined Space Entry
CDOT SWMP Preparer
SafeLandUSA forOil and Gas Sites

PROFESSIONAL MEMBERSHIPS

American Society of Civil Engineers
Rocky Mountain Association of Environmental Professionals

a groundwater collection trench adjacent to an existing stormwater retention pond. Conducted oversight during construction.

Landfill Construction, Removal Actions, Remediation, and Shoreline Restoration, St. Paul Island, Alaska. Worked as a field project engineer for design, construction, and oversight of several projects. Developed the design for consolidating a large dump site area into a smaller 5.78-acre footprint with subgrade for a future landfill cap. Designed and constructed a dewatering system that allowed excavated soils to drain from a diesel seep removal action while containing the water and removing diesel with a floating skimmer system and oil/water separator (OWS). Conducted oversight during construction of an in-situ treatment trench for diesel-contaminated groundwater using granular activated carbon (GAC). Performed oversight during multiple removal actions of diesel-contaminated soil and treatment using landfarming techniques. Developed the design for slope/shoreline restoration adjacent to a tidal channel using anchored geotextile and rip rap. Work involved managing various subcontractor construction crews and spending extended stints of time on the remote island.

Erosion Study, Naval Air Station Point Mugu, California. Conducted an erosion study of slope embankments for a tidal channel adjacent to a reinforced concrete bridge.

Design, Construction Oversight, and Pilot Study for Contaminated Groundwater, Naval Fuel Depot Point Molate, California. Supported project team to design an extraction trench (excavated under a biopolymer slurry) for collecting petroleum-contaminated groundwater, a pump extraction system, and a bioremediation pad for treating contaminated soils. Performed oversight during construction of a 220-foot long sheet piling wall driven to a depth of 35 feet below grade designed to prevent migration of petroleum-contaminated groundwater to San Pablo Bay. Performed oversight during excavation, draining, cutting, removal, and disposal of 17 fuel distribution lines. Managed field team conducting a pilot study to evaluate the technical and economic feasibility of recovering free-phase petroleum products (bunker, diesel, and aviation fuels) from groundwater using various types of conventional oil skimming technologies and vacuum enhancement.

Construction Oversight of Leaking Underground Storage Tanks Removal Action, Mare Island Naval Shipyard, California. Conducted oversight during removal of two leaking underground storage tanks and associated petroleum-contaminated soil.

Removal Action, Naval Air Weapons Station China Lake, Ridgecrest, California. Managed field team conducting construction oversight of a removal action that included multiple sites contaminated with high-explosive residuals at Naval Air Weapons Station China Lake.

Hydrostatic Pressure Testing, Chimuwan Tank Farm No. 1, Okinawa, Japan. Supervised a Japanese subcontractor construction firm and provided on-site engineering support for a petroleum pipeline project to locate, excavate, weld new connections, and perform hydrostatic pressure tests on 12-inch diameter steel pipelines to be returned to service for fuel distribution.

Landfill Cover Design, Naval Construction Battalion Center, Port Hueneme, California. Supported project team to design a 33-acre landfill cap with a geosynthetic clay liner and geocomposite drainage system.

Landfill Cover Construction, Louviers, Colorado. Lead engineer for documenting construction of soil landfill covers during closure of two Solid Waste Management Units.

Landfill Evaluation, West Garfield County Landfill, Rifle, Colorado. Evaluated options to increase the capacity and life of the landfill. Also, assisted project team to identify the origin of gas visibly bubbling from the surface water at a single location (landfill gas versus natural gas from nearby oil and gas development activities).

Landfill Cover Design, Igiugig Village, Alaska. Managed project team to prepare a soil cover design for a 2.5-acre landfill that included a collection system to convey leachate to a wastewater treatment lagoon. The final package included design drawings, construction specifications, a final closure plan, post-closure maintenance plan, and cost opinion.

Stormwater Pollution Prevention Plan for Landfill Expansion, Laramie, Wyoming. Prepared a SWPPP for a landfill expansion project that required phasing best management practices to work with sequencing of the construction work.

Quarterly Groundwater Monitoring, Treatment Design, and Bioventing Pilot Study, Moffett Field, Mountain View, California. Conducted quarterly groundwater monitoring of hundreds of groundwater wells for a full suite of contaminants of concern. Supported project team to design a pneumatic recirculating in-situ treatment system using below-ground siphons and trenches to treat petroleum-contaminated groundwater. Also, supported project team to design an air sparging and soil vapor extraction system to remove volatile contaminants from solvent- and fuel-contaminated groundwater and soil. Supported field team for a pilot study using a blower system to determine the feasibility of bioventing fuel-contaminated soils.

Construction Oversight of Groundwater Treatment System, Crows Landing Naval Auxiliary Landing Field, California. Conducted oversight during preliminary construction of a groundwater treatment system for petroleum-contaminated groundwater.

Site Investigation and Reclamation Design, Lower Creek Canyon Restoration Project, Colorado. Conducted a site investigation to identify lead contamination in soils at an unsanctioned shooting range located within Arapahoe National Forest. Prepared a technical memorandum/work plan for site characterization, conducted soil sampling, surveyed the site using GPS to spatially identify stream channel alignment, rock outcroppings, and bank stability issues, and prepared a Design and Reclamation Report with construction drawings, specifications, and reclamation plan.

Site Inspection, Commerce City, Colorado. Managed contractor and completed site inspection reports for decommissioning of a former fuel facility for redevelopment. Administered compliance with City development requirements, SWMPs, and interactions with Mile High Flood District for floodplain permitting requirements.

Soil Gas Investigation, Honolulu, Hawaii. Developed a work plan and managed a field team conducting soil gas profile sampling to investigate biodegradation in an area contaminated with petroleum hydrocarbons and a tidally-influenced groundwater table. Due to tidal influence, the groundwater fluctuated and petroleum hydrocarbons partitioned into the vadose zone. Residents and businesses in the area were concerned that the soil gas could build up under building foundations and potentially enter buildings and become a health hazard.

Pump Test and Product Recovery Pilot Study, Honolulu, Hawaii. Managed project team to design a pump system and conduct a pilot study for removal of separate phase hydrocarbon from tidally-influenced groundwater. Due to the fluctuating level of groundwater, a variable speed pump and pressure transducer was utilized to maintain a consistent drawdown in the well so that a pneumatic skimmer pump could remove free product at a targeted static level. The system utilized an OWS, three GAC units to treat water, and weekly sampling to meet discharge permit requirements. The system operated continuously for 1.5 months and involved coordination of personnel manually collecting data on a 24/7 schedule. The study also included conducting step-drawdown aquifer tests at several locations to estimate transmissivity, storage coefficient, hydraulic conductivity, and well efficiency.

SWPPPs, SWMPs, SPCC Plans, Chemical Inventory, Removal Actions, and Site Reclamation for Oil and Gas Projects, Colorado and Wyoming. Managed multiple projects that included preparation of SWPPPs and SWMPs, construction permitting for stormwater discharge, Spill Prevention, Control, and Countermeasure Plans, Superfund Amendments and Reauthorization Act (SARA) Title III chemical inventory reporting, removal action of petroleum-contaminated soils, and site reclamation of a former flare pit.

Phase I ESAs and Drainage Reviews, Renewable Energy Projects, Colorado, and Wyoming. Managed multiple projects that involved conducting site reconnaissance and preparation of Phase I ESAs for proposed wind farms and solar farms. Performed drainage reviews for proposed expansions of several solar farms.

Military Munitions Response Program Removal Action, RCRA Corrective Action Facility Investigation of Solid Waste Management Units 2-1 and 2-3 at Auxiliary Field 6, Luke Air Force Base, Arizona. Managed a Military

Munitions Response Program (MMRP) $1.3 million contract to conduct digital geophysical mapping of MEC, reacquisition of anomalies, surface clearance, and intrusive investigation of former open burn/open detonation pits. Excavation of the pits required armored equipment, extended to 8 feet below ground surface, and included sifting material through a screening plant to remove munitions debris and MEC. A daily burn rate of $24K for field personnel and equipment achieved processing over 4,000 cubic yards of soil and removing 7,241 pounds of munitions documented as safe.

Munitions Migration Study and Feasibility Study, Comprehensive Site Evaluation Phase II for TG820 and Feasibility Study for 30 Munitions Response Sites, Vandenberg Air Force Base, California. Managed a $617K contract to prepare feasibility studies (FS) for 30 munitions response sites and conduct an investigation of non-small arms ranges that fired into the Pacific Ocean. The investigation included a munitions migration study utilizing dummy munitions deployed offshore and tracked to identify movement due to the effect of tides, currents, and littoral drift. Onshore investigation included a low-tide instrument-aided visual survey along coastline transects with all-metal detectors.

Wildlife Surveys, Lamar, Colorado. Conducted on-foot wildlife surveys for the Lesser Prairie Chicken. Surveys included identifying the presence/absence of Lesser Prairie Chicken leks, nests, and signs of activity within 1.25 miles of proposed access roads and drilling pads for oil and gas development. Also, provided design and engineering expertise for various environmental issues, including the design and construction of artificial burrows to passively relocate burrowing owls.

Site Inspection Reports, Kiska and Amchitka Islands, Alaska. Managed project team to prepare site inspection reports under a contract with the U.S. Army Corps of Engineers, Alaska District, for work conducted at two remote Aleutian Islands. The site inspections included identifying MEC and munitions debris under MMRP, as well as Hazardous, Toxic, and Radioactive Waste, and containerized Hazardous, Toxic, and Radioactive Waste. The sites were occupied by the Japanese and American forces during WWII and are now classified as Formerly Used Defense Sites.

Remedial Investigation, U.S. Army Garrison Camp Parks, Dublin, California. Managed a $1.2 million contract for U.S. Army Corps of Engineers, Sacramento District, involving the remedial investigation of metals associated with small arms ranges (SAR) and MEC associated with co-located rocket, mortar, and grenade ranges under the MMRP.

Environmental Compliance, Clear Air Force Station, Anderson, Alaska. Managed two contracts for AFCEE worth $553,600 to prepare FS, proposed plans (PPs), and records of decision (RODs) for multiple environmental sites.

OEL Surveys, Fleet Industrial Center Pearl Harbor Naval Shipyard, Hawaii and Commander, Navy Region Marianas Guam. Managed a $315,000 subcontract to conduct site surveys, prepare cost estimates, and complete summary reports for determination of other accrued (non-Defense Environmental Restoration Program) environmental liabilities (OEL) for the U.S. Navy at Fleet Industrial Supply Center Pearl Harbor, Hawaii and Commander, Navy Region Marianas on the island of Guam. The facility surveys and equipment inventories were completed in an expedited three-month period. Received a letter of commendation recognizing the exceptional dedication, flexibility, professionalism, and technical expertise of the project team. Presented the successes of the project at the Joint Services Environmental Management Conference in May 2007.

OEL Surveys, Marine Corps Base Camp Lejeune and Marine Corps Air Station New River, Jacksonville, North Carolina. Managed a field team conducting OEL surveys.

Small Arms Ranges, F.E. Warren Air Force Base, Wyoming. Managed the SAR component of the closed ranges FS to address metals contamination. Also, assisted the project team with preparing the FS, PP, and ROD to address MEC at the closed ranges.

Feasibility Study for Wastewater Treatment Pond, Cavalier Air Force Station, North Dakota. Managed project team to prepare a FS for evaluating several alternatives to bring a wastewater treatment pond (facultative lagoon) into compliance with federal, state, and local regulations.

Inflow/Infiltration Study and OWS Assessment, Misawa Air Base, Japan. Managed a $497,000 AFCEE contract to conduct an inflow and infiltration study to evaluate the condition of the sanitary sewer system utilizing flow metering techniques, manhole inspections, smoke testing, and closed-circuit TV. Managed a second AFCEE contract worth $200,000 to assess OWS, estimate repairs or improvements, and prepare a drainage management plan for facilities that have aqueous film-forming foam or high-expansion foam fire suppression systems.

Environmental Compliance, Former Naval Air Station Barbers Point, Hawaii. Managed a $2.76 million NAVFAC subcontract to evaluate and remediate the remaining environmental sites on 870 acres of non-BRAC, Navy-retained land to allow transfer of property. The project involved conducting environmental investigation work and preparing various documents: Environmental Baseline Survey, Sampling and Analysis Plan, Quality Assurance Project Plan, Site Inspection (SI), Engineering Evaluation and Cost Analysis, Action Memorandum, PP, Decision Document, and Finding of Suitability to Transfer. The project also involved developing work plans, design packages, cost proposals, attending Restoration Advisory Board/public meetings, and conducting post construction award services oversight.

Environmental Compliance and Removal Actions, Naval Security Group Activity Skaggs Island, California. Managed a $1.73 million NAVFAC contract to evaluate and remediate environmental sites at the base post-BRAC to allow transfer of property to U.S. Fish and Wildlife. Work included interaction with multiple state agencies, managing field teams conducting environmental investigations, preparing remedial investigations, performing environmental compliance actions, conducting removal actions (including a time-critical removal action [TCRA]), developing construction design drawings, specification, and planning documents for removal actions/site reclamation, and performing construction oversight. Removal actions included metals-contaminated soil at a SAR and a TCRA at a dump site located within a wetlands area contaminated with metals and pesticides. The TCRA involved excavation, hauling, and Subtitle D disposal of the entire dump site contents and contaminated soils, which was necessary to protect native sensitive species, the salt marsh harvest mouse and California clapper rail. The removal action also involved construction of a mouse-proof fence around the site, trapping and removal of all mice from the site, replacing all hydraulic fluid systems in heavy construction equipment with vegetable-based hydraulic fluid, confirmation soil sampling, and coordination with California Regional Water Quality Control Board, Department of Toxic Substances Control, and a full-time, on-site wildlife biologist. The site required restoration to a wetlands habitat using a site-specific seed mix and installation of stormwater best management practices, such as erosion control blankets and straw wattles. The site is tidally-influenced and located at the confluence of two rivers, so stream embankment stabilization was also required using rip rap and anchored geotextile fabric.

Site Investigation, Former Kahuku Sugar Mill, Kahuku, Hawaii. Managed a project team to prepare a work plan and sampling and analysis plan to conduct a detailed field investigation utilizing incremental sampling of soil at the 14.5-acre site to guide future remediation work. The work was conducted under a guaranteed fixed-price remediation contract and involved working closely with regulatory agencies.

Design-Build Construction of a Corrosion Control Hangar, Hickam Air Force Base, Hawaii. Supported engineering work during construction of a design-build corrosion control hangar and support buildings for C-17 aircraft.

PCB-Contaminated Soil Treatment, Former Naval Air Station Barbers Point, Hawaii. Conducted construction oversight and confirmation soil sampling for a project that involved excavation of PCB-contaminated soil from multiple bases on Oahu, hauling to a constructed concrete pad at Naval Air Station Barbers Point, treating the soil using thermal desorption, and backfilling the excavations with the remediated soil.

Stormwater Design Review, City of Fort Collins Stormwater Utility, Fort Collins, Colorado. Reviewed hydrology/hydraulic calculations for theory/accuracy, conducted water quality sampling, measured stream flows, and developed figures for a FEMA study involving 100-year floodplains.

CHESTER HITCHENS, PG

Water Resources

Mr. Hitchens has 32 years of professional experience. He specializes in conducting and implementing site investigations and corrective action plans involving petroleum and petrochemical products, computer modeling of ground water, aquifer testing, contaminant recovery system design, management of petroleum and hazardous waste spill cleanups, air rotary, mud rotary, reverse rotary, auger and sonic drilling, core drilling and logging, water sampling techniques for both organic and inorganic contaminants, organic and biomonitoring analyses, mine permitting, mining and land reclamation, pre-purchase environmental investigations (Phase I Assessments), water supply development, as well as water rights issues and expert witness. Mr. Hitchens is also familiar with mapping software (AutoCAD Civil 3D 2018, AutoCAD Map 2018), Leica GeoOffice, Trimble Business Center, Global Mapper 16.2, Corpscon V. 6.0 and ESRI ArcMap 10.2) and surveying techniques, including geodetic leveling, total station operations, photogrammetry, LIDAR and GPS/GIS. In addition, Mr. Hitchens has experience communicating with federal, state and other regulatory agencies.

EDUCATION

Colorado State University, Fort Collins
MS, Hydrogeology (All course work only)

University of Northern Colorado, Greeley
BA, Geology

Metropolitan State College of Denver
BS, Land Surveying and Mapping

SELECTED EXPERIENCE

Ground Water/Soil Investigation/Remediation

Conducted water rights adjudication for municipalities in Arizona. The project involved reviewing court records, establishing baseline data for ground water usage, and development of a database for the municipalities for the management of their ground water usage. Well locations were determined from historic records and the landowners were interviewed to determine the history of the water usage.

Conducted a ground water contamination investigation associated with a dynamite plant. The project involved review of the facility records to determine past operations and disposal practices, examination of fate and transport of contaminants leached from unlined disposal ponds and evaluation of stream, wetlands and ground water interaction relating to contaminant transport.

Evaluated potential for ground water recharge of Central Arizona Project (CAP) surface water in an alluvial basin in southwestern Arizona. The project involved defining the saturated and unsaturated hydraulic characteristics of the basin, conducting long-term aquifer tests on large-diameter irrigation wells, developing a ground water flow model to predict the impacts of future ground water usage, preparing environmental report for proposed facility and transmission lines and examining geochemical data for the groundwater and surface water proposed to be used for

AREAS OF EXPERTISE

Ground Water and Soil Investigations/Remediation
Mining and Reclamation
Environmental Compliance
Expert Testimony
GIS/GPS/Surveying
Public Land Law
Mining Law

REGISTRATION

Professional Geologist, WY #817
Land Surveyor in Training, WY #134
Water Well Monitoring Technician, NE #79754

CERTIFICATIONS

OSHA 40-Hour HAZWOPER Certificatic
OSHA 8-hour Annual Refresher Certification
Part 48 MSHA Surface Miner Training
CPR and First Aid Certification

TRAINING

H_2S Training
Radiation Safety Training
DOT HAZMAT Training Certification
SafeLandUSA Training

recharge. Deep monitoring wells were installed to monitor drawdown from pumpage at the existing, large-capacity, irrigation wells. Core drilling was completed at rock outcrops to collect samples to determine chromium leachability.

Served as a project manager/senior hydrogeologist for site and subsurface investigations involving soil and ground water contamination in Arizona, Colorado, Idaho, Nebraska, New Mexico, Washington and Wyoming. The projects involved initial site investigation, evaluation of hydraulic characteristics of the aquifer, contaminant transport and preparation and implementation of remedial action plans for soil, ground water and surface water cleanup. The projects were completed for governmental agencies, industry clients and private parties over a large variety of geologic/hydrologic conditions and contaminant sources.

Conducted subsurface investigations and ground water monitoring at former municipal waste landfills in Glendo, Chugwater and Town of Fort Laramie, Wyoming. Historic records were reviewed to determine the areal extent of the landfills, depth of burial of the waste and potential contaminants associated with the buried waste. Core drilling was completed to evaluate fracture zones in the Tertiary-age sediments, and the potential for contaminant transport.

Provided hydrogeologic consulting and well siting services to a resort facility in Wyoming seeking to develop the White River Formation for a water supply source. Two, large diameter water supply wells and ancillary transmission equipment were installed. An exploration program was initiated prior to the installation of the wells and the deeper borings were logged using borehole geophysical techniques. The wells were permitted though the Wyoming State Engineer's Office as replacement wells.

Served as senior hydrogeologist for research study involving burial of coal ash below the water table as fill for the reclamation of gravel pits. The project involved obtaining appropriate permits from Weld County and the Colorado Department of Public Health and the Environment and other agencies to conduct a pilot test to evaluate the potential benefits or liabilities of coal ash burial. The pilot test would consist of placing the fly ash in a trench and monitoring surface water, wetlands and ground water down-gradient of the trench. Numerous laboratory-leaching tests were conducted before the pilot test to determine heavy metal leaching regimes.

Served as senior hydrogeologist for the investigation and remediation of a refined fuel pipeline release near Franktown, Colorado. Approximately 1,500 barrels of fuel were released from the pipeline that was damaged during the installation of a telephone cable. The fuel was released into an ephemeral drainage and impacted the sole source aquifer. Approximately 40,000 cubic yards of impacted soil were removed and transported to an approved disposal facility. The ground water was not impacted because of the rapid response to remove the contaminant source material.

Served as senior hydrogeologist for the construction of a ground water recovery/containment remediation system at EPA OU2, West Bountiful, Utah. Supervised the installation of three deep recovery wells in an artesian aquifer using sonic drilling. After the wells were installed a 72-hour aquifer test was completed and the contaminated ground water was treated using granulated activated carbon and discharged to the POTW.

Conducted soil and groundwater investigations using a membrane interface probe and hydraulic profiling tool and prepared design plans for the remediation of VOC and sVOC impacted soil and groundwater. Coordinated with subcontractors for 3D modeling efforts and data analysis. Core drilling was completed in conjunction with the profiling to verify the stratigraphy and vertical distribution of the contaminants.

Mining and Reclamation

Served as project hydrogeologist for the preparation of *Technical and Environmental Reports* for a license renewal Nuclear Regulatory Commission (Source Material License SUA-1548) application for the Smith Ranch Highland In-Situ Recovery (ISR) Uranium Mine located in the southern extent of the Powder River Basin, Converse County, Wyoming. Mr. Hitchens prepared portions of the two reports including radiological impacts and MILDOS modelling, mine operations, operational water balances, deep disposal wells, surge ponds, surface water impoundments and assorted NEPA issues.

Served as project hydrogeologist for the review of a Research and Development Permit for a proposed in-situ coal gasification facility in the Powder River Basin. The permit was submitted to the Wyoming Department of Environmental Quality, Land Quality Division (LQD), but because of the complexities associated with the proposed project, the permit review was outsourced to a third-party consultant. The state of Wyoming, LQD, ranchers, and environmental groups were especially concerned about the potential for ground water contamination. Mr. Hitchens was responsible for reviewing and providing comments pertaining to ground water hydraulics, aquifer testing,

subsidence monitoring, reclamation bonding for the proposed project, and review of the EPA aquifer exemption portion of the permit.

Conducted inventories of abandoned coal, uranium and hard rock mines throughout Wyoming for the Wyoming Abandoned Mine Land Division. Coordinated with NEPA contractors to obtain cultural and threatened and endangered species clearances prior to developing plans to reclaim the abandoned mines. Developed plans and specifications for closure of pre-law mining disturbances that affected public health and the environment. Reclamation plans addressed dangerous highwalls, shafts and adits, and impacts to surface water. Landowner consents were obtained prior to completing the reclamation and mineral ownership was determined and consent was obtained from the claimants. Property owners for the disturbed land included the USFS, BLM, State of Wyoming, large corporations and private landowners.

Supervised core drilling and sonic drilling at a rock quarry and gravel pits to evaluate rock quality and gather data to provide reserve estimates for a due diligence investigation.

Environmental Compliance

Conducted environmental compliance audits including UST and AST compliance, RCRA compliance, SPCC plan preparation, refined and natural gas pipeline pre-purchase audits and SARA Title III permitting. Monitoring plans for baseline surface and ground water conditions were developed for clients after the assets were transferred to the new owners.

Expert Testimony

Provided court testimony regarding water rights issues and alleged over-irrigation damages at an organic cherry orchard in Delta County, Colorado. The client (farmer) was accused of over-irrigating his alfalfa fields which caused high ground water conditions in the orchard which killed the cherry trees. Mr. Hitchens has also served as an expert witness for various technical aspects of a gasoline loss in a residential subdivision in Fort Collins, Colorado, including date of release, volume of release and hydraulic characteristics of the aquifer. Mr. Hitchens served as expert witness for a case involving irrigation ditch seepage, hydro-compaction of soil and subsequent foundation failures at single family homes in a subdivision in western Colorado. He recently provided technical reports for litigation support involving a gasoline tanker roll over that impacted a rural residential subdivision adjacent to Flathead Lake, Montana.

GIS/GPS/Surveying

Served as regional coordinator for a water well inventory in Colorado and Wyoming. The client wanted to identify potential receptors relative to their assets including pipelines, pipeline terminals and retail service stations. Available records were obtained and the location and condition of over 3,000 wells were documented and the information was summarized in a GIS database/application.

Conducted photogrammetric survey for topographic mapping of an 8,500-acre property in the Gas Hills Mining District for an ISR uranium mine, Plan of Operations for LQD, BLM and NRC permitting. Geodetic control was established for the paneling using static surveying and OPUS post-processing. The project area was extremely remote, and the equipment was transported using all-terrain vehicles.

Surveyed channel cross sections and conducted stream flow gauging for baseline monitoring for a proposed open pit uranium mine near Jeffery City, Wyoming. Also conducted viewshed analysis for the proposed heap leach area.

Coordinated with wetlands scientists and conducted RTK surveying of the wetlands at a former gold mine near Alma, Colorado. The field information was used to prepare a *Nationwide Permit* for submittal to the U.S. Army Corps of Engineers. The permit action was required as part of the mine reclamation that was coordinated by the Colorado Division of Reclamation, Mining and Safety.

Performed construction stakeout for the layout of a new road in Ten Sleep, Wyoming. Also conducted photogrammetric survey and RTK surveying for a proposed water transmission line and water tank in Ten Sleep. Conducted land ownership research and provided the information to a Wyoming PLS for development of easements with the BLM and private landowners. Performed surveying for the preparation of a topographic map for the installation of a new water tank at Baggs, Wyoming.

Conducted photogrammetric survey for topographic mapping of a 1,200-acre property in the Pumpkin Butte Mining District, Campbell County, Wyoming to develop a topographic map for the preparation of LDQ/NRC permits associated with amending mine property into an existing permitted ISR uranium mine. Historic monitoring wells were also located based on PLSS descriptions and were surveyed using RTK and established control.

Conducted an Unmanned Aerial Vehicle photogrammetric survey for topographic mapping of a river restoration project along the Alamosa River, south of Alamosa, Colorado. Over 60 ground control points were set and surveyed using RTK and OPUS control.

Conducted topographic mapping of three feedlots in Wyoming for the development of surface drainage impoundments and confined animal feeding operations.

Publications/Presentations:

Pilot Testing Pneumatic Fracturing to Enhance Petroleum Hydrocarbon Recovery by Chester Hitchens, October 15-18, 2007, 23rd Annual International Conference on Soils, Sediments and Water, University of Massachusetts, Amherst, Massachusetts.

Full-Scale Pneumatic Fracturing to Enhance Soil Vapor and Free Product Recovery at a Large Fuel Release in Low Permeability Formation, by Chester Hitchens, May 24-27, 2010, Seventh International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California.

Company Owner
Project Investigator

Amber L. Travsky

Contact Information

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Laramie, WY 82072

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Assignment

Wildlife Biologist/Ecologist

Wetland Specialist

Education

M.S., Zoology,

University of Wyoming, Laramie, 1981

M.S. Exercise Physiology,

University of Wyoming,

Laramie 1986

Experience

30+ years

Started Firm

1993

Memberships and Certifications

Permitted/Certified to conduct surveys for the following:

- Black-footed ferret
- Preble's meadow jumping mouse
- Wyoming toad

Wildlife Society, member

Relevant Expertise

- Threatened and Endangered Species Surveys
- National Environmental Policy Act (NEPA) Experience
- Mine Permitting
- Wetland Delineations and Mitigation
- Wildlife Monitoring
- Vegetation Sampling
- Baseline vegetation and wildlife surveys
- Wetland site creation
- Preparation of Environmental Assessments and Environmental Impact Statements

Experience Summary

Ms. Travsky is the owner of Real West Natural Resource Consulting. She has over 35 years experience as a professional range and wildlife biologist, research scientist, manager, and administrator. Ms. Travsky has considerable experience assisting clients in compliance with the National Environmental Policy Act, Threatened & Endangered (T&E) Species Act, Migratory Bird Treaty Act, Bald Eagle Protection Act and Clean Water Act. Ms. Travsky has been responsible for all facets of wildlife and vegetation surveying including study design, field monitoring, data analysis, report preparation, impact analysis, mitigation, agency consultation, staff supervision, public participation, and project management. Ms. Travsky has experience in conducting baseline surveys and preparing permit applications for coal and non-coal mine permits. Ms. Travsky is certified through the Wetland Training Institute to conduct wetland delineations. In addition, Ms. Travsky has considerable experience with public meetings, having served two terms as Mayor for the City of Laramie.

Ms. Travsky has conducted surveys for the following T&E, sensitive, rare or candidate plant and wildlife species:

- Sage-grouse and sharp-tailed grouse
- Preble's meadow jumping mouse
- Black-footed ferret
- Swift fox
- Grizzly bear
- Grey wolf
- Preble's shrew
- Pygmy rabbit
- Wolverine
- Lynx
- River otter
- Townsends' long-eared bat
- Fringed myotis
- Small-footed myotis
- Harlequin duck
- Mountain plover
- Lewis' woodpecker
- Burrowing owl
- Bald eagle
- White-faced ibis
- Peregrine falcon
- Goshawk
- Trumpeter swan
- Ferruginous hawk
- Long-billed curlew
- Black tern
- Loggerhead shrike
- Spotted frog
- Wyoming toad
- Boreal toad
- Wood frog
- Northern leopard frog
- Sagebrush lizard
- Faded midget rattlesnake
- Plains topminnow
- Ute ladies'-tresses
- Blowout penstemon
- Colorado butterfly plant

Ms. Travsky is U.S. Fish and Wildlife Service certified to conduct or supervise field searches for the endangered black-footed ferret; permitted to conduct surveys for the threatened Preble's meadow jumping mouse; and approved to conduct surveys for the endangered Wyoming toad.

Representative Projects

Baseline Wildlife, Vegetation, and Wetland Surveys for a Proposed Trona Mining Project. In Progress. Conducting wildlife, vegetation, and wetland surveys on a proposed project in Sweetwater County, Wyoming. The project included wetland delineations, baseline vegetation sampling, and searches for wildlife concerns.

Snowy Range Ski Area Wetland Delineation. 2019. Conducted wetland delineations for the U.S. Forest Service at the Snowy Range Ski Area.

Real West
NATURAL RESOURCE CONSULTING

Awards and Honors

Chair, Wyoming Governor's Council for Physical Fitness and Sports (2000 to 2004); member by gubernatorial appointment (1994 to 2006).

Chair, Cycle Wyoming (volunteer position - 2004 to present)

Director, Tour de Wyoming bicycle Tour. (Volunteer position - 1997 to present).

Honorary Member, Wyoming Association of Municipalities (1997).

Elected as Mayor and President of the Laramie City Council (1990 to 1994).

Appointed by President Bill Clinton to the President's Council on Physical Fitness and Sport. (1994 to 2002).

Elected to the Laramie City Council (1988 to 1991 and 1992 to 1996).

Awarded 8th Degree Black Belt in Okinawan Kempo through Lau Hau Kenpo (2010).

Award of Excellence in Public Service. Nominee for the Jefferson Awards in Public Service. 2012

PROFESSIONAL APPOINTMENT AND AWARD

Served on the Wyoming Governor's Task Force to address concerns with the endangered Wyoming toad. Award from the EPA "for superior leadership and dedication in protecting the Wyoming toad while minimizing the impact on local communities."

Freelance Writer:
Columnist in the Wyoming Tribune-Eagle and Laramie Boomerang newspapers; Author: *Mountain Biking Wyoming* and *Mountain Biking Jackson Hole*, both published by Falcon Press.

Gateway West Transmission Line Project – Aeolus, Anticline, and Jim Bridger Substations pre-construction wildlife surveys. 2019. Conducted sage-grouse, burrowing owl, mountain plover, raptor, migratory bird and big game surveys for three proposed substation construction projects. Techniques included both ground and aerial surveys; the later used both fixed-wing and helicopter modes. Ground surveys were primarily conducted on foot as well as via a mountain bicycle due to vehicular restrictions.

Encampment River Restoration Project Phase II and Phase III. 2018. Conducted a wetland delineation and prepared an aquatic resources report for submittal to the Army Corps of Engineers on behalf of WWC Engineering for a river rehabilitation project near the town of Riverside in Carbon County, Wyoming.

Alamosa River Restoration Project, 2018 segment. Assisting Wenck and Associates, Inc. on design for wetland restoration along three river segments of the Alamosa River in southern Colorado.

Alamosa River Restoration Project, 2012 segment. Assisted Lidstone and Associates, Inc. on design for wetland restoration along a 4,100 foot section of the Alamosa river.

Mountain Meadows Laramie River Rehabilitation Project. 2018. Conducted a wetland delineation and prepared an aquatic resources report for WWC Engineering for project to rehabilitation a reach of the Laramie River in Albany County, Wyoming.

Baseline Wildlife Monitoring for the Proposed Two Rivers Wind Farm Site north of Medicine Bow in Converse County, Wyoming. 2017 - 2019. Conducted extensive wildlife surveys over two years on a proposed windfarm site. Surveys include year-round surveys for raptors and spring and fall passerine bird surveys as well as sage-grouse lek surveys, mountain plover surveys, bat monitoring site set-up, black-footed ferret spotlighting surveys, swift fox spotlighting surveys, and big game monitoring.

Baseline Wildlife Monitoring for the Proposed Boswell Springs Wind Farm Site in Northeast Albany County, Wyoming. 2014 - 2018. Conducted extensive raptor and passerine bird surveys using point-count methodology. Surveys included year-round surveys, over a three year period, for avian species as well as sage-grouse lek surveys, bat monitoring site set-up, black-footed ferret surveys, swift fox surveys, and big game monitoring.

Baseline Wildlife, Vegetation, and Wetland Surveys for a Proposed R&D Trona Mining Project. In Progress. Conducted wildlife, vegetation, and wetland surveys on a 640-acre site in Sweetwater County, Wyoming. The project included species-specific surveys for mountain plovers as well as searches for several amphibian and reptile species considered Species of Concern within the State of Wyoming. Vegeation transect sampling was also conducted.

Baseline Wildlife, Vegetation and Wetland Surveys for the proposed Lone Tree Creek Mine in Laramie County, Wyoming. In progress. Conducted wildlife and vegetation surveys for a small mine permit located 15 miles west of the city of Cheyenne.

Sage-grouse lek and raptor nest monitoring for Sunroc Corporation. (Ongoing). Conduct annual sage-grouse lek and raptor nest surveys for a mine site north of Rawlins, Wyoming in Carbon County.

Baseline Wildlife and Vegetation Surveys for the Proposed Sinclair Pit Mine in Carbon County, Wyoming. (In progress) Conducted wildlife, vegetation and wetlands surveys for a proposed large mine permit on private land adjacent to the North Platte River.

Tolsa Wyoming Bentonite, Inc. (ongoing) Conducted wildlife, vegetation and wetland baseline studies for proposed bentonite mines in central Wyoming. The work included data collection for the wildlife, vegetation and wetland sections of a non-coal large mine permit.

Raptor Nest Surveys for Energy Fuels, Inc. (Ongoing since 2010). Conduct annual surveys to locate new raptor nests and report activity status of existing nests for a proposed uranium mine in central Wyoming.

Biological Assessment and Evaluation for South Dakota Broadcasting Microwave Tower Site (Subcontractor to Land Recyclers, Inc.) Conducted site surveys and reporting for a proposed microwave tower on the Buffalo Gap National Grasslands of the Nebraska National Forest.

Preble's Meadow Jumping Mouse surveys at the Wyoming Army National Guard Camp Guernsey Training Area. Conducted live trapping surveys to determine the presence of this threated wildlife species on five wetland sites at the Training Area.

Environmental Assessment for the Killdeer Wetlands Project in Green River, Wyoming. Prepared the EA for a proposed wetland enhancement project adjacent to the Green River near the town of Green River on lands managed by the BLM.

Raptor Nest Surveys for Mountain Cement Company. (Ongoing since 2004). Conduct annual monitoring surveys of known raptor nests and search for new nests on mine sites and buffer areas in southeast Wyoming.

Wildlife Surveys for proposed coalbed methane sites in Wyoming's Powder River Basin for: EMATS, Inc., J.M Huber Corp., Black Diamond, CH4 Energy, Inc., Baker Energy, Inc., Pearl Development, and CBM Associates, Inc. Conducted environmental evaluations, Threatened and Endangered species surveys, sage-grouse lek surveys, and habitat assessments of proposed coalbed methane well sites in the Powder River Basin of Wyoming and southeastern Montana.

North Butte ISL Uranium Project for Cameco Resources. Conducted vegetation and wetland delineation surveys for a proposed in-situ uranium mine in Campbell County, Wyoming.

Wildlife, Wetlands, and Vegetation Analysis for Proposed Bentonite Mine Permits, Bentonite Performance Minerals. Conducted field surveys for wildlife, wetlands and vegetation for several proposed bentonite mine permits in northeastern Wyoming.

Wetland Delineations and Environmental Evaluations at various construction and waterline projects located in various Wyoming locations – Subcontractor to HKM Engineering. Conducted site assessments for Threatened and Endangered Species and wildlife habitats of concern as well as wetland determinations and delineations for various projects including a creek bridge crossing, waterline corridor, and road construction projects.

Threatened, Endangered and Candidate Species Surveys, Wetland Delineation, and Wetland Mitigation Plan, City of Laramie Greenbelt Pathway. Conducted T&E species surveys for a proposed pathway adjacent to the Laramie River. Also conducted wetland determination and prepared a wetland mitigation plan that was accepted by the U.S. Army Corps of Engineers. Monitored the wetland mitigation site until it was deemed "successful" by the Corps.

Least Tern, Piping Plover, Arkansas Darter, and Preble's Meadow Jumping Mouse Biological Assessments for the Colorado Bureau of Land Management. Prepared biological assessments for programmatic application for conducting Section 7 consultation with the U.S. Fish and Wildlife Service.

Cover Page

Project Name: Lower Alamosa River Riparian Restoration Project

Project Description: The proposal will directly improve and restore riparian corridors and productive, locally-owned ranchland along approximately two and a half miles of the Alamosa River in the CR10 area.

Offeror: Rio Grande Headwaters Land Trust

Point-of-contact:
Allen Law, Executive Director
Rio Grande Headwaters Land Trust
PO Box 444
Del Norte, CO 81132
719-657-0800
allenl@riograndelandtrust.org

Total Project Cost: $94,620

Total Request: $44,120

Total Match: $50,500
In-kind: $17,500
Cash: $33,000

Signature:

Allen Law, Executive Director

Description of the Offeror's Organization

The Rio Grande Headwaters Land Trust (RiGHT) is a regional land trust and 501(c)3 nonprofit with a mission to "conserve our land, water, and way of life in Colorado's San Luis Valley." RiGHT was founded in 1999 and celebrated its twenty year anniversary last year. Over those twenty years, RiGHT has completed over fifty major, grant-funded projects.

The majority of these projects have been conservation easements to permanently protect private agricultural lands and wildlife habitat from fragmentation, separation of water rights, or other forms of intensive human development. To date RiGHT has conserved over 27,000 acres across all six counties of the San Luis Valley. Our most successful and best-known project was the *Rio Grande Initiative* to conserve over 25,000 acres along the Rio Grande and its tributaries, which was achieved in 2015.

While land protection is the primary focus of RiGHT, the land trust occasionally pursues other projects like riparian restoration. In partnership with the Rio Grande Headwaters Restoration Project (RGHRP), RiGHT has successfully implemented four Great Outdoors Colorado Conservation Service Corp grants for riparian restoration projects on RiGHT conservation easements. These projects were substantially similar to the project proposed here with youth corps improving fencing, doing light streambank restoration, and planting riparian vegetation in identified areas of need.

The primary subcontractors to this grant proposal will be work crews through nonprofit partners. RiGHT has existing relationships with two regional nonprofit work crews who would be capable of completing the project. Both have expressed initial interest in participating.

RiGHT currently has a full time, professional staff of three and plans to expand to four by the end of 2020. Two current members of the staff are qualified to lead this project, and any new staff hired would also have experience with restoration projects. RiGHT is also partnering with RGHRP to provide technical assistance. RGHRP has completed numerous similar projects, but the Alamosa River is not a priority for the organization.

Finally RiGHT has the financial systems and resources to complete the project and administer this grant. RiGHT regularly completes multi-year conservation projects with over $1 million of public funding, numerous contractors involved, and complex due diligence required. RiGHT also typically handles multiple projects with restricted funding at once, including reimbursable grants through the Colorado Water Conservation Board that have similar granting requirements to this program.

Response to Statement of Work Requirements

a. Target Natural Resource(s):

The proposal will directly improve and restore riparian corridors and productive, locally-owned ranchland along approximately two and a half miles of the Alamosa River in the CR10 area. The area is important habitat for numerous game and non-game wildlife species, including mule deer, waterfowl, the federally endangered Southwestern Willow Flycatcher, the federally threatened Yellow-billed Cuckoo, and other migratory birds. Restoration of the corridor will also benefit streambank stability and floodplain function. Finally, the project will improve the sustainability of two locally-owned, family agricultural operations, which are important to both the local economy and maintaining high-quality land management.

Restoration of this major stretch of river will benefit the following Target Natural Resources:

- Surface water quality – minor, by improving streambank stability and stream function
- Sediments – minor, by improving streambank stability and stream function
- Riparian habitat – major – restoring woody riparian vegetation is a focus of the project
- Biological resources – major –habitat restoration has benefits for most area wildlife
- Agricultural use – major – land health is critical to long-term, sustainable ranching
- Wildlife and habitat – major – see above
- Wetlands – major – restoration of floodplain, improved vegetation diversity of slough project site, and enhanced flood irrigation all benefit wetland function
- Vegetation – see above

Note that the major benefits of this project: streambank stability, riparian habitat, biological resources, and agricultural resources are all listed as in 'poor' condition in Table ES-1 of the Master Plan Executive Summary, demonstrating the urgency of need for this project.

The project will restore the riparian corridor through two primary methods: improving fencing and reestablishing woody riparian through planting. Improved fencing allows landowners to manage grazing in the riparian area in a way that the land remains productive but livestock only graze grass and do not damage young willows and cottonwoods. Planting is necessary in areas where entire stands of trees were lost during major drought years in the early 2000s and regrowth can be expedited. Finally, the proposal will also replace several flood irrigation structures, which are important to riparian health because irrigation sustains the water table and keeps the floodplain functional.

i. State the project type(s) from the above table of Master Plan Tier I, II, or III Project Types (Section IV.C).

This project is within the 'Restoration' project category. It is both a Tier II.4 "Riparian buffer zone" and Tier III.3 "Lower watershed sediment deposition locations combined with stream restoration from County Road 10 to County Road 13" project.

ii. Describe how the natural resources/sites were chosen for inclusion in the proposal.

Two sites were chosen for inclusion in this proposal. Both sites were chosen because the landowners have pre-existing relationships with RiGHT and are geographically proximate to one another. The first, Cactus Hill Farm, is RiGHT's first conservation easement in the area and on the Alamosa River. Opportunities to improve habitat on the property were identified by biologists during the conservation easement due diligence. The second, the Valdez Ranch, is a large ranch property with over two miles of river channel. While this property is not under conservation easement, RiGHT is working on multiple conservation projects with the landowner. It has one of the longest, if not the longest, stretch of river under a single management on the Alamosa River. The property has an area of very high restoration need just east of County Road 10.

iii. Describe how owners/managers of the target natural resource(s) will be/have been involved in proposal planning and implementation.

These are private land restoration projects, so the landowners have been involved in project development since conception. RiGHT and the landowners worked together to develop a project that would be mutually beneficial for the RiGHT's mission, the environment, and the landowners themselves. The landowners have committed substantial time to implement the project as in-kind match, which indicates their full support.

iv. Describe how the proposal will restore, replace or acquire the equivalent of injured natural resources, and how the development, design, implementation and restored site can be made available for public benefit.

The proposal will restore injured riparian corridor natural resources directly by both lessening ongoing impacts through fencing and also by intervening at certain sites of high need with riparian planting, streambank stabilization, and improvement of flood irrigation infrastructure. Sharing success is a major component of this project. Within the area of highest planting and restoration need, RiGHT and RGHRP plan to use and monitor multiple strategies for planting and ongoing restoration. After two or three years, it should be clear which strategy is most efficient and effective. This information will be very useful in the lower Alamosa River watershed where, in particular, numerous cottonwood stands are in severe decline and there is little recruitment of young trees.

v. Provide a detailed description of the area (acreage, linear footage, etc.) of natural resources to be restored in the proposal.

Overall the project will benefit approximately two and a half miles of Alamosa River channel on two properties. There will likely be a tangential benefit to the approximately one mile of river between the sites, and also downstream for several miles.

More specifically the project has several separately identifiable areas of focus. The major planting site is 15 acres along .6 miles of river channel and will plant and protect 90 cottonwood seedlings, 12 XL cottonwood saplings, and transplant over 100 willows. The two streambank stabilization sites are approximately 8 acres and will transplant around 50 willows. The slough site is approximately 8 acres and will transplant 100 willows and add a mile of fencing. The north riparian fence is 2 miles in length and will add protection to approximately 1.5 miles of stream channel. Finally the Cactus Hill site is 12 acres and 50 to 100 willows will be transplanted to add diversity to the site.

b. Objectives:

Please note that all tasks will be completed in 2021. Shaded tasks in Q2 will be completed in a single, 3-week block of activity that will start once both a Restoration Crew and cottonwood seedlings are available. We anticipate this will be between late April and mid-May. Work away from the active river channel is saved for last in case of early runoff.

Task	Timing / length	Description
Contracting	Q1	RiGHT will contract heavy equipment and restoration work crew with assistance from RGHRP as needed
Purchasing	Q1	RiGHT will purchase fencing, seedlings/trees, and irrigation infr. with assistance from RGHRP and landowner
Final layout	Q1	RiGHT and RGHRP will visit all sites with landowners to review and final 'ground truth' of project
Irrigation Infras. 1	Q1	Landowner installs majority or all flood irrigation infrastructure improvements prior to runoff
Crew introduction	Q2 / 1 day	Introduce crew to project; show scope of work
Heavy equipment and willows	Q2 / 2 days	Excavator with auger on site to drill for cottonwood planting in order to increase survival rate; crew working on willows at major site at same time
Major planting	Q2 / 5 days	Crew plants cottonwoods and continues planting willows at major planting site
Streambank stabilization	Q2 / 3 days	Crew smooths banks and plants willows at streambank impact sites, 1.5 days each
Slough planting	Q2 / 2 days	Crew plants willow within existing cottonwood forest along slough and clears any area needed for fencing
Clearing for fence	Q2 / 2 days	Crew clears deadfall from mapped out line for north riparian fence
Cactus Hill planting	Q2 / 1-2 days	RiGHT and RGHRP partner with youth organization like Conejos Clean Water to have willow planting and education day(s)
Fence building	Q2-3	Riparian fencing will be built throughout summer and fall by the landowner
Irrigation Infra. 2	Q3	Any remaining infrastructure improvements are installed post-runoff
OMM	Ongoing	Project sites will be monitored annually to assess performance of project and landowner compliance with OMM agreement.

c. Operational Plan:
i. Describe in detail how the work described in each category will be implemented.

The various mapped sites are described separately below:

1. **Major planting site:** the majority of work will occur in this site, where willows and cottonwoods are no longer present since the major drought of 2002. Cottonwood seedlings and larger trees will be planted in holes drilled to the water table with an auger. Larger trees will be saved for priority sites. Willows will also be transplanted from healthy stands on the property approximately one mile upstream using hand tools. Planted vegetation will be protected with a mix of different strategies, including cages and livestock and wildlife exclusion fencing. Areas with significant disturbance will be reseeded with grass. One objective of this site is to intentional design the project to provide feedback on the effectiveness of multiple planting and protection strategies, which may be useful for future restoration efforts in the area.
2. **Streambank stabilization sites:** shallow cut-banks will be stabilized by smoothing the banks with hand tools, transplanting willows, and reseeding the area with grass. These sites are relatively small and should only take 1.5 days each. While these sites are small, if unaddressed the impacts could spread downstream. Landowner may invest afterward in hardening the vehicle and livestock crossing points that seem to contribute to the bank stabilization issues.
3. **North riparian fence:** riparian exclusion fence will be mapped by landowner in advance of work crew arrival. Work crews will assist with clearing deadfall that is on the intended fence line. Landowner will construct fence throughout the summer and fall as in-kind match. The fence ties into existing internal fencing on the property and is expected to be effective because riparian areas on the property with fence are in noticeably better condition than areas without. The fence is intended to be a management tool and not a complete exclusion; the area will continue to be used for grazing but for a shorter duration and under greater control than in the past.
4. **Slough planting and fencing site:** the slough, which typically has water year-round, currently has healthy stands of cottonwood, but willows are absent. Willows will be transplanted to the site to improve vegetation diversity and, potentially, eventually grow into quality habitat for the endangered Southwestern Willow Flycatcher. Exclusion fences will be built on both sides of the slough so this important wetland habitat will be undisturbed by grazing impacts.
5. **Irrigation infrastructure:** non-functional irrigation infrastructure will be replaced to improve flood irrigation along the Alamosa River. Landowner will spec, install, and maintain the structures. Improved irrigation sustains water table within the floodplain and enhances sustainability of ranching operation.
6. **Cactus Hill planting site:** overall this site is currently similar to the slough; it is in good condition and could benefit from greater vegetation diversity. Beneficial projects here are likely to be fairly simple, so this site is identified as an area to engage the community in this project. RiGHT and RGHRP will partner with a group like Conejos Clean Water to make the planting an educational opportunity for young people.

ii. Describe who the Offeror will collaborate with to accomplish the scope of work; include letters of support from those agencies you will be collaborating with, as well as community letters of support.

RiGHT is collaborating most directly with the RGHRP, who will provide technical support and additional, experienced staff during the three weeks of on-the-ground work. Two different local landowners are also participating in the project by allowing restoration on their properties and contributing in-kind match. RiGHT will likely contract with either the nonprofit San Luis Valley Great Outdoors or Southwest Conservation Corp for work crews. Finally, RiGHT and RGHRP expect to hold at least one youth education event on the Cactus Hill site; Conejos Clean Water has expressed interest in participating. See letters of support from RGHRP and San Luis Valley Great Outdoors.

iii. Describe the type, donors and equivalent dollar amount of matching funds.

Matching funds for this proposal come from two sources: in-kind match and cash match.

The $17,500 of in-kind match is labor by the landowner to construct fence from the materials purchased with grant and match funds, as well as to install irrigation structures purchased with grant and match funds. The majority of this will most likely be time spent by the landowner himself, family, and ranch hands. Depending on a variety of factors, a local crew may be hired by the landowner out-of-pocket to assist with the project. Time and cost estimates were provided to RiGHT by the landowner.

RiGHT will raise $33,000 in cash match for the project. RiGHT plans to raise these funds through the North American Wetlands Conservation Act Small Grant program, which seeks to protect and restore riparian and wetland habitat that is important to migratory birds. The funding is federal and can support a wide variety of restoration project costs. The next grant cycle is in Q4 2020, and if successful the award would be secure by Q1 2021. If RiGHT is unsuccessful in raising funds from this source, it will use funding from a multi-year regional commitment from the Gates Family Foundation, which is already secure.

*iv. Provide construction designs and drawings, if applicable, maps of proposed restoration location(s), and a schedule and/or time line for the completion of major project components. For proposals that require an engineering design, prior to construction final design documents must be submitted with appropriate professional engineer stamp or certification of design documents. Following construction completion surveyed as-builts documents will be required. The submittals shall be provided in hardcopy, original electronic and *.pdf format.*

Please see attached map and timeline in the “b. Objectives” section above.

v. Describe to what degree the proposal described in the operational plan matches the goal of NRDA fund expenditure.

The proposed project aligns directly with goals and project types to be funded in the Alamosa River Watershed NRDA SPP. The project will directly benefit five of the Target Natural Resources described. It is both a project type and location that is specifically noted in Tiers II and III of SPP. Furthermore, the major benefits of this project: streambank stability, riparian habitat, biological resources, and agricultural resources are all listed as in 'poor' condition in Table ES-1 of the Master Plan Executive Summary, demonstrating the urgency of need for this type of multi-benefit project.

vi. Describe how the proposal will be coordinated with complimentary, similar existing or other proposed restoration in the area, if any.

All of the identified project sites received significant restoration investments in the past, mostly in-stream work focused on restoring a more natural shape and function to formerly straightened river channel. The proposed restoration project complements past intensive, in-stream work by using low-impact and cost methods to improve riparian health outside of the river channel. In addition, this project will build on work by the landowner, who has invested significant time and resources over the past decade in planting willows and other trees along the stream channel. This project will provide the additional resources, particularly labor and protection, needed to fill in the last gaps in riparian corridor.

vii. Describe the operation, maintenance and monitoring (OMM) requirements and the entity(ies) accepting those responsibilities for the duration of the project and a minimum of 10 years thereafter, if applicable. Describe the plans or methods and schedule for how the project will be monitored to measure whether it is successful in achieving the restoration objectives. Describe the 6 and 12 month warranty inspections required following substantial completion of the proposed project. Detail the funding source, cost and entity responsible for conducting the long- term operation, maintenance and monitoring. This shall include an Annual Report documenting the OMM.

RiGHT plans to develop OMM agreements with the landowners based on template agreements from similar organizations in the SLV, likely using RGHRP and/or Partners for Fish and Wildlife as a template. The agreement will at a minimum require landowner to maintain all infrastructure, supplement river flows by irrigating planted areas for at least one year, and set management goals for the project sites.

Monitoring this agreement is not expected to be a problem for RiGHT. The land trust has 47 conservation easements (CE) to monitor in perpetuity and has an approximately $1 million restricted fund to ensure its ability to fulfill this responsibility. One site is on an existing CE and already needs to be monitored annually. The remaining sites owned by a landowner who RiGHT is working on a CE with on La Jara Creek nearby, so it too will be easy to monitor at the same time as the future La Jara Creek CE is monitored. Indirect costs included in this proposal budget will help offset long-term costs of monitoring.

viii. Permits/Approvals/Certifications: Describe all permits, licenses, approvals, professional engineers stamps of engineering design and as-built documents and NEPA compliance (see Attachment D) that will be required to complete the project and describe current status/progress towards obtaining these permits/approvals.

Based on preliminary discussions with RGHRP and Riverbend Engineering, it does not appear that any element of this project will require permits, licenses, approvals, or engineering. NEPA compliance will be completed upon receipt of funding and is not expected to be a major issue because of the low-impact nature of the project.

ix. Project Schedule: Provide a timeline with identification of projects phases, milestones, midpoint and pre-final inspections.

Please see timeline in the "b. Objectives" section above. Midpoint inspections will be conducted by RiGHT and RGHRP staff during the work crew time period in Q2, and pre-final inspections will be completed in Q3 after the landowner confirms that all fencing and irrigation infrastructure is built or installed.

x. Monthly Invoice and Status Report: Describe which activities outlined in the operational plan will be tracked, how they will be counted and how they will be reported in the monthly invoice.

RiGHT has a sophisticated time and expense tracking system in Quickbooks and can easily isolate and report staff time and costs for each of its numerous projects. All activities in the operational plan will be tracked. Staff time will be reported based on signed timesheets, and expenses will be reported based on paid receipts.

xi. Project Documentation and Deliverables: Provide a list of documentation and deliverables that will be supplied for the proposed project and throughout the duration of the project including the OMM phase.

The pre-final deliverable will be a short report on the project success accompanied by photos and a map in Q4 2021. During the OMM phase RiGHT will develop an annual monitoring report, including photos, to keep on file in its Stewardship database. Annual monitoring reports will be available to CDPHE if required and requested.

3. Cost/Price Data:

Budget is also attached in Excel format.

Lower Alamosa River Riparian Restoration project budget					
	Grant	Cash Match	In-Kind	Total	Description
Work crew of 6-8	$11,000	$16,000		$27,000	15 days @ $1800/day
Fencing	$10,000	$10,000	$15,000	$35,000	Materials: 3.2 mi x $1.15/foot; Labor (in-kind): 180 hrs/mi x $25/hr
Cwood trees	$1,500			$1,500	Seedlings: $100/30 x 3; XL Sapling: $100/tree x 12
Tree cages	$500			$500	12 tree cages @ approx. $40/cage
Heavy eqt.	$2,000	$2,000		$4,000	2 days @ $2,000/day
Irrigation structures	$5,000	$5,000	$2,500	$12,500	6 structures @ $1500; Labor (in-kind): 16 hrs/str x $25/hr
RiGHT staff	$7,200			$7,200	160 hours @ $45/hr
RGHRP staff	$2,520			$2,520	56 hours @ $45/hr
RiGHT indirect	$4,400			$4,400	approx. 10% indirect rate
Total	$44,120	$33,000	$17,500	$94,620	

Key staff: RiGHT staff will lead this project. Executive Director Allen Law will be the primary staff on the project. Allen has worked at RiGHT for over 5 years, assisted with or managed over 10 conservation easement projects, managed several restoration projects of a similar scope, and raised over $5 million for conservation and restoration. Associate Director Joelle Marier will assist and provide backup. Joelle has worked at RiGHT for 2 years and prior to RiGHT managed public lands restoration programs in New Mexico. RGHRP staff will assist, with Executive Director Emma Reesor providing the majority of support. Emma has completed numerous similar restoration projects on the Rio Grande.

Funding sources: RiGHT intends to raise cash match funds through the North American Wetlands Conservation Act Small Grant program, which seeks to protect and restore riparian and wetland habitat that is important to migratory birds. The funding is federal and can support a wide variety of restoration project costs. The next grant cycle is in Q4 2020, and if successful the award would be secure by Q1 2021. If RiGHT is unsuccessful in raising funds from this source, it will use funding from a multi-year regional commitment from the Gates Family Foundation, which is already secure.

4. Public Communication Strategy:

Because this restoration project is occurring on private lands, public feedback and input is not a major component of the project. In lieu of engaging the public in development of the project, RiGHT has worked to engage numerous partners prior to this proposal including Rio Grande Headwaters Restoration Project, San Luis Valley Great Outdoors, Colorado Open Lands, Wetland Dynamics, LLC biological consulting, multiple area landowners, Riverbend Engineering, LLC, Trout Unlimited, and Conejos Clean Water. These groups have a wide range of knowledge of restoration techniques and biological conditions in the area.

RiGHT will promote the success of the project through print and online media, primarily. RiGHT annually mails print information to approximately 2,000 contacts, with approximately half being in the San Luis Valley and the other half living elsewhere but interested in regional conservation issues. Increasingly RiGHT is using online communication in lieu of print because it is cheaper and more effective. RiGHT's eNews is regularly opened by 300-500 people, mostly local, and RiGHT Facebook posts about project success often reach over 5,000.

This project will also have a youth outreach component, with RiGHT and RGHRP planning to work with local young people on the Cactus Hill restoration site. Both organizations traditionally run 3 to 5 youth outreach events a year, engaging several hundred Valley kids annually. Typically these events have both a 'work' component as well as educational opportunities, lunch, and more unstructured time. These events are a great opportunity to teach young people about the special natural resources that exist on the Valley floor and inspire a place-based environmental ethic to care for their home.

Finally, multiple planting and protection strategies will be tested at the major planting area project site. RiGHT and RGHRP will use this information for future restoration projects regionally, and the information will also be shared freely with other partners and landowners. This is particularly important for cottonwood restoration and regeneration, which is becoming a major concern in the Alamosa River watershed. If one or multiple techniques is highly successful, we will likely publish a short pamphlet explaining the technique to pass out to interested landowners.

5. Relationship to the Ranking Criteria:

i. *Alamosa River Watershed Restoration Master Plan Projects:* This project is within the 'Restoration' project category. It is both a Tier II.4 "Riparian buffer zone" and Tier III.3 "Lower watershed sediment deposition locations combined with stream restoration from County Road 10 to County Road 13" project.

ii. *Public Acceptance:* In Table ES-2, restoration projects between the Gunbarrel and County Road 13 scored a 4.2 for public acceptance, which is the highest of any listed project type in the Master Plan.

iii. *Likelihood of Adverse Impacts:* The likelihood of any adverse impact from the proposed project is extremely low. All project sites are low-impact and should recover and show benefits within a year.

iv. *Likelihood of Success:* Likelihood of success is expected to be medium-high. The landowner has not had success reestablishing vegetation in the major planting site; however, the strategies in this proposal typically are two to three times more likely to succeed than un-protected pole planting. All other project sites have a very high likelihood of success.

v. *Technical Feasibility:* The project uses low-impact restoration strategies that RiGHT and RGHRP have implemented for over a decade with great success and most work crews are pre-trained to implement. Cottonwood planting is likely the most difficult part of this project, and it is not difficult with a contractor operating the auger.

vi. *Multiple Natural Resource Benefits:* This project will directly five of the Target Natural Resources, with several more likely seeing secondary or tangential benefits.

vii. *Time to Provide Benefits:* Planting projects will need 5-10 years to provide significant benefit. Fencing project sites provide both a short-term benefit to understory vegetation and a more long-term benefit to woody riparian vegetation. Irrigation infrastructure improvements have an immediate benefit.

viii. *Duration of Benefits:* Benefits can be expected to last a minimum of 25 years, although will likely be much longer as a healthy riparian corridor becomes self-sustaining with proper management.

ix. *Opportunity for Collaboration/Matching Funds:* RiGHT will secure a minimum of 50% matching funding through a mix of landowner in-kind contributions and, most likely, another grant award through the U.S. Small NAWCA grant program, which RiGHT has had success with using in the past.

x. *Protection of Implemented Project:* Planting sites will be protected day-to-day by fencing and/or cages. The Cactus Hill site is permanently protected by a conservation easement with RiGHT. The majority of the sites are not under conservation easement but will be protected with the OMM agreement likely for 10 years. The ranch property has been owned by the same family for decades and is not anticipated to be for sale nor is management expected to change.

xi. *Project Cost:* The project is highly cost-effective because it relies on upgraded fencing around existing riparian vegetation for the majority of its acreage and stream-length impact. The major planting site, which is higher cost, is an area of extreme need. More significant human/restoration intervention is clearly necessary because prior small and inexpensive efforts have failed to reestablish riparian vegetation.

xii. *Project Consistency with Regional Planning:* The project is consistent with RiGHT and other conservation organizations goals to restore riparian habitat on private lands along the lower Alamosa River. In particular it is consistent with the San Luis Valley Habitat Conservation Plan to protect and enhance habitat for the endangered Southwestern Willow Flycatcher and threatened Yellow-billed Cuckoo.

xiii. *Public Benefit and Access:* Public benefits for the project will be improved scenery when riparian vegetation is reestablished near County Road 10, increased wildlife populations because of habitat enhancement, and improved river function downstream.

xiv. *Public Communication Strategy:* RiGHT will document and publicize the project through its social media, print, and email communications, which include approximately 5,000 unique users. In addition local young people will be exposed to the project and importance of habitat restoration and conservation at the Cactus Hill planting site.

6. Project Fact Sheet

Lower Alamosa River Riparian Restoration Project
Offeror: Rio Grande Headwaters Land Trust
Total Request: $44,120
Total Match: $50,500
Total Project Cost: $94,620

Offeror Summary: The Rio Grande Headwaters Land Trust (RiGHT) is a regional land trust and 501(c)3 nonprofit with a mission to "conserve our land, water, and way of life in Colorado's San Luis Valley." In partnership with the Rio Grande Headwaters Restoration Project (RGHRP), RiGHT has implemented similar riparian restoration projects on its conservation easements in the past. RiGHT regularly completes multi-year conservation projects with over $1 million of public funding, numerous contractors involved, and complex due diligence required.

Project Summary: The proposal will directly improve and restore riparian corridors and productive, locally-owned ranchland along approximately two and a half miles of the Alamosa River in the CR10 area. The area is important habitat for numerous game and non-game wildlife species, including mule deer, waterfowl, the federally endangered Southwestern Willow Flycatcher, the federally threatened Yellow-billed Cuckoo, and other migratory birds. Restoration of the corridor will also benefit streambank stability and floodplain function. Finally, the project will improve the sustainability of two locally-owned, family agricultural operations, which are important to both the local economy and maintaining high-quality land management.

This project is within the 'Restoration' project category. It is both a Tier II.4 "Riparian buffer zone" and Tier III.3 "Lower watershed sediment deposition locations combined with stream restoration from County Road 10 to County Road 13" project. The major Target Natural Resource benefits of this project: streambank stability, riparian habitat, biological resources, and agricultural resources are all listed as in 'poor' condition in Table ES-1 of the Master Plan Executive Summary, demonstrating the urgency of need for this project.

Public Outreach: RiGHT will promote the success of the project through print and online media, primarily. RiGHT outreach channels annually reach over 5,000 people, with approximately half in the San Luis Valley and half living elsewhere but interested in regional conservation issues. This project will also have a youth outreach component, with RiGHT and RGHRP planning to work with local young people on the Cactus Hill restoration site.

Multiple planting and protection strategies will be tested at the major planting area project site. RiGHT and RGHRP will use this information for future restoration projects regionally, and the information will also be shared freely with other partners and landowners.

7. Application/Assurances

See attached confirmation of 501(c)3 status for the Rio Grande Headwaters Land Trust.

IRS Department of the Treasury
Internal Revenue Service

OGDEN UT 84201-0029

In reply refer to: 4077591934
Dec. 16, 2014 LTR 4168C 0
84-1495770 000000 00
00030540
BODC: TE

RIO GRANDE HEADWATERS LAND TR A
COLORADO NONPROFIT CORPORATION
PO BOX 444
DEL NORTE CO 81132-0444

031542

Employer Identification Number: 84-1495770
Person to Contact: Ms. Wiles
Toll Free Telephone Number: 1-877-829-5500

Dear Taxpayer:

This is in response to your Oct. 14, 2014, request for information regarding your tax-exempt status.

Our records indicate that you were recognized as exempt under section 501(c)(3) of the Internal Revenue Code in a determination letter issued in December 1999.

Our records also indicate that you are not a private foundation within the meaning of section 509(a) of the Code because you are described in section(s) 509(a)(1) and 170(b)(1)(A)(vi).

Donors may deduct contributions to you as provided in section 170 of the Code. Bequests, legacies, devises, transfers, or gifts to you or for your use are deductible for Federal estate and gift tax purposes if they meet the applicable provisions of sections 2055, 2106, and 2522 of the Code.

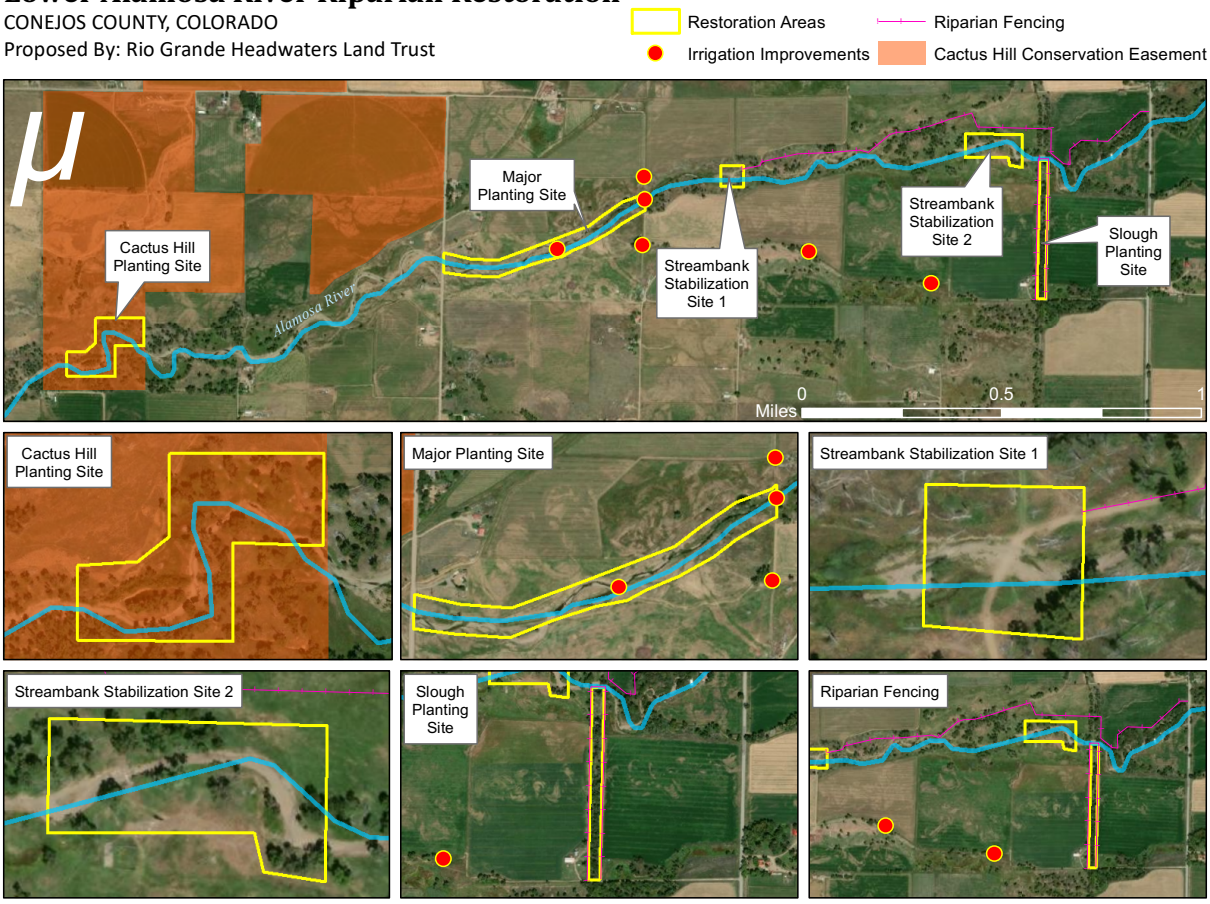
Please refer to our website www.irs.gov/eo for information regarding filing requirements. Specifically, section 6033(j) of the Code provides that failure to file an annual information return for three consecutive years results in revocation of tax-exempt status as of the filing due date of the third return for organizations required to file. We will publish a list of organizations whose tax-exempt status was revoked under section 6033(j) of the Code on our website beginning in early 2011.

8. Map

Lower Alamosa River Riparian Restoration

CONEJOS COUNTY, COLORADO

Proposed By: Rio Grande Headwaters Land Trust



9. Letter of Support/Partnership

Colorado Rio Grande Restoration Foundation
Rio Grande Headwaters Restoration Project
623 Fourth Street
Alamosa, CO 81101
(719) 589-2230

July 30, 2020

Susan Newton
4300 Cherry Creek Drive South
Denver, CO 80246

Re: Lower Alamosa River Riparian Restoration Project

Dear Ms. Newton,

The Rio Grande Headwaters Restoration Project (RGHRP) is excited to partner with the Rio Grande Headwaters Land Trust (RiGHT) on the Lower Alamosa River Riparian Restoration Project. The RGHRP is furthering our mission "to restore and conserve the historical functions and vitality of the Rio Grande in Colorado for improved water quality, agricultural water use, riparian health, wildlife and aquatic species habitat, recreation, and community safety while meeting the Rio Grande Compact" by participating in this excellent opportunity for restoration on the Alamosa River.

The RGHRP has a proven track record of successfully managing projects to improve the condition of the Rio Grande through collaboration with local, state, and federal partners since 2001. The projects, which include a combination of riparian restoration, diversion and headgate rehabilitation, watershed stewardship, and outreach and education, have resulted in improved upland and in-stream habitat, streambank stability, floodplain function, water quality, diversion efficiency, recreation, and community engagement. Currently, the RGHRP is leading the Stream Management Planning effort in the San Luis Valley with SMPs being developed on the Rio Grande, Conejos River, and Saguache Creek. The resulting SMPs will provide the RGHRP and local stakeholders and partners with the data needed to develop and implement priority projects that address the needs facing each stream reach.

Because RGHRP is expanding its efforts to multiple other streams at this time, it made more sense strategically for RGHRP to partner with and provide technical assistance to RiGHT on the Lower Alamosa River Riparian Restoration Project rather than lead the effort. RiGHT and RGHRP have successfully collaborated on several similar projects during the history of our organizations and are excited to work together again on the Alamosa River.

Sincerely,

Emma Reesor
Executive Director, RGHRP

Alamosa River Instream Flow Project- Phase II
Community based stream flow restoration on the Alamosa River

Project Name: Alamosa River Instream Flow Project- Phase II
Project Manager: Trout Unlimited
Point-of-Contact: Kevin Terry, Rio Grande Basin Project Manager
85 Pinon Circle, South Fork, CO 81154
(970)799-7682 (Cell)
kevin.terry@tu.org

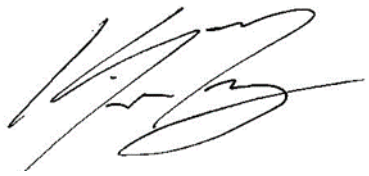
Project Description: The Alamosa River Instream Flow (ISF) Project- Phase II, will build upon the stream flow restoration work underway on the Alamosa River, which was started in 2012 by the Alamosa Riverkeeper (ARK) and partners organizations. Trout Unlimited (TU) will be leading this phase of work, but key partners including the ARK, the Alamosa River Foundation (ARF), the Colorado Water Trust (CWT), and the Terrace Irrigation Co. will continue to serve active roles. We expect to add partners through program and project work over the next 5 years. This proposal includes Tier 1 and Tier 2 projects identified in the Alamosa River Watershed Restoration Master Plan and Environmental Assessment (Master Plan), and the project work touches on each of the five objectives of the Master Plan.

The overriding project objective is to restore stream flows in the Alamosa River, and thereby improve the health of the river downstream of Terrace Reservoir. To accomplish this goal, TU will lead a community-based effort that will strive to utilize 2,000 acre-feet of available storage space in Terrace Reservoir each year by purchase or lease of water rights, and through coordinated water rights operations that take advantage of partnership opportunities. To that end, project activities are summarized below:

- Acquire additional senior irrigation water rights, through purchase or lease, on the Alamosa River
- Dedicate acquired water rights to the Colorado Water Conservation Board instream flow (ISF) program
- Change water right decrees through water court proceedings
- Maximize the annual use of 2,000 acre-feet of dedicated storage space in Terrace Reservoir to provide flow restoration and complimentary community benefits such as groundwater recharge and temporary storage.
- Operate a storage-and-release regime with ARK, CWCB, the Colorado Division of Water Resources (DWR), the Colorado Division of Parks and Wildlife (CPW) and Terrace Irrigation Company in accordance with CWCB's ISF program and water right decrees.
- Use NRDA funding leverage to support Terrace Irrigation Co. if they need to repair/replace the outlet pipe at Terrace Reservoir. Terrace is awaiting engineering analysis results for the pipe.
- Work with the Rio Grande Water Conservation District and the Alamosa Groundwater Management Sub-District to identify partnership opportunities relating to the groundwater crisis in the San Luis Valley, and to maximize the benefit of the groundwater recharge that occurs by releasing instream flow water in the winter or non-irrigation season.

- Coordinate with the Alamosa-La Jara Water Conservancy District to leverage projects and identify partnership opportunities
- Work with the Land Trust community on potential conservation easements with water acquisition or water leasing potential, or to support them in easements that provide public access and Riparian protection.
- Purchase and install water measurement devices and data sensors that help guide the instream flow program management and assist the DWR to administer water rights on the Alamosa River by providing a more efficient measure of conveyance loss in a key stream reach.
- In coordination with the ARK, host educational programming for local youth through the Re-Discovering the Alamosa River program. The program demonstrates the benefits of stream flow restoration and watershed health through fun and novel activities including fishing on the Alamosa River

NRDA Request- The phase II request is $450,000 over a 5 year period
Matching Funds- Terrace Irrigation Co. has provided the in-kind match of 2,000 acre-feet of storage space that is permanently dedicated for in-stream flow storage. This match is secured and valued at $15,400,000.
Total Project Cost- The total project cost is $15,850,000.



Signature of an Authorized Representative of the Offeror

ALAMOSA RIVER WATERSHED NATURAL RESOURCE DAMAGES PROPOSAL
ALAMOSA RIVER INSTREAM FLOW PROJECT-Phase II

Section 1. Description of the Offeror's Organization

Trout Unlimited (henceforth, TU) is the proposed Offeror and will coordinate the activities of the proposed project team.

TU's Mission: To conserve, protect, and restore North America's coldwater fisheries and their watersheds.
TU Vision: By the next generation, Trout Unlimited will ensure that robust populations of native and wild coldwater fish once again thrive within their North American range, so that our children can enjoy healthy fisheries in their home waters.
Organizational Background: Founded in 1959, Trout Unlimited (TU) is a national, non-profit fisheries conservation organization. Nationwide, TU has over 300,000 members and supporters and over 250 employees; in Colorado, we have over 12,000 members and a staff of approximately 20. Our water work in Colorado is focused on developing innovative water management projects that meet multiple needs within a local community. We develop projects that restore fish habitat and stream flows while also creating benefits for water users.

Through our upper Rio Grande program, TU works to improve water management, increase stream flows, and restore fisheries habitat throughout the upper Rio Grande Basin in Colorado. Our program relies on innovative measures and diverse partnerships and benefits not only trout, but also farmers, ranchers, and local economies alike.

The highlight of our work in the upper Rio Grande Basin is our winter flow program. Under the winter flow program, TU partners with water users and reservoir managers to move water rights into high-altitude storage reservoirs through leases or other free-market arrangements. We subsequently release the water during winter months when flows historically have been depleted to the point that fisheries suffer. Using its strong relationships with the water user community in the Rio Grande River basin, TU structures creative water management arrangements and pays the storage fees, incentives, and management costs required to release water at critical times of the year to maximize benefits. For example, during the winter of 2019-2020, the Winter Flow Program delivered 4,946 acre-feet of water in the Conejos and Rio Grande Rivers. This includes the expansion of the program to North Clear Creek during the winter of 2019-2020, releasing 760 acre-feet of water out of Continental Reservoir in the headwaters of the Rio Grande. Historically, the reservoir shut off flows entirely for the storage season, but this transaction resulted in 2.5 cfs of stream flow over the 150-day period.

The Winter Flow Program is supported by foundation grants, corporate partners, and through private donations, and the diverse partnership includes many agencies and organizations throughout the San Luis Valley, positioning TU well to perform the project duties. Additionally, TU will provide senior staff support for the project, including a grants administrator and supporting grant management software.

TU Staff Bios:

Kevin Terry: Kevin is TU's Rio Grande basin project manager and is primarily responsible for implementing our Rio Grande river project work in Colorado. Kevin was hired in 2013, and in addition to developing the Winter Flow Program he has led riparian restoration and stream restoration projects throughout the San Luis Valley. Kevin is a fish biologist with 17 years of experience in the field and he is an active member of the range-wide Rio Grande cutthroat trout Conservation Team. Raised on the Rio Grande in Taos, New Mexico, Kevin and his young family now live upstream on the banks of the Rio Grande in South Fork, Colorado.

Drew Peternell: Drew is an attorney and the director of Trout Unlimited's Colorado water program, the mission of which is to protect and restore Colorado's rivers and creeks in order to sustain healthy coldwater fisheries. Based in Eagle, Drew will provide strategic guidance on the projects funded under this proposal.

Section 2. Response to Statement of Work Requirements

a. Target Natural Resources

i. State the project type(s) from the above table of Master Plan Tier I, II, or III Project Types (Section IV.C).

The Alamosa River Watershed Restoration Master Plan endorses developing an instream flow (henceforth, ISF) for the Alamosa River downstream of Terrace Reservoir as a high priority under Tier I and II and ranked it number 2 out of 50 prioritized initial projects. The first phase of the Alamosa River ISF Project secured senior irrigation water rights on the Alamosa River downstream of Terrace Reservoir and transferred that water right from farming into a CWCB held ISF water right with a storage-and-release plan using Terrace Reservoir. Also during phase 1, 2,000 acre-feet of storage space in Terrace Reservoir was permanently secured, establishing a benchmark for maximum ISF storage in Terrace Reservoir.

Phase II of the ISF project focuses on filling up the 2,000 acre-feet on an annual basis, in order to provide the maximum amount of water for ISF purposes out of Terrace reservoir. In addition to restoring flows to benefit the aquatic and riparian ecosystem health and function, there will be measured and efficient aquifer recharge as a result of the program operations. The phase II objectives will be accomplished through the acquisition of additional senior water rights and through long term lease agreements. Every effort will be made to coordinate with all water users and the groundwater sub-district to explore ways to partner and satisfy as many beneficial uses as possible. DWR will assist project partners in making sure the operations plans are beneficial to general water administration in the Alamosa River.

ii. Describe the rationale for proposing a project to restore the particular resource addressed by the proposal.

The Alamosa River watershed has been impacted by the acid mine drainage generated at the Summitville Mine Superfund site. According to the Colorado Department of Public Health and Environment, acidity mobilizes a variety of metals that contaminate the Alamosa River system below the Superfund site. Surface water quality downstream of the mine has been degraded by low pH (acidic water), and elevated dissolved solids and heavy metals, especially copper.

The ISF Project addresses the following natural resources that were injured, destroyed or lost as a result of the release of hazardous substances from the Summitville Mine Superfund Site as designated in the NRD Application. ISF provides multiple natural resource benefits.

- **Surface water quantity and quality**: Storing senior water rights in Terrace Reservoir and releasing the water to improve instream flow levels in the lower Alamosa River will restore the highly altered hydrologic regime which currently impairs natural functions and values. The river is dry downstream of Terrace Reservoir during late fall, winter, and early spring due to senior storage rights in Terrace Reservoir. Acquiring senior irrigation rights for instream flows will improve surface flows for environmental and recreational purposes and help mitigate adverse impacts from the over-appropriated Alamosa River water rights administration.

- **Terrace Reservoir:** Terrace Reservoir serves as a sediment catch, capturing nearly all of the sediment load transported from the upper Alamosa River watershed including sand, silt, and heavy metals, while reducing the amount of sediment being carried by the river to the historical downstream alluvial fan area. The reservoir has lost about 15% of its original storage capacity due to sedimentation (Reinhardt, 2006). Phase 1 of the project work permanently secured 2,000 acre-feet of storage space in Terrace reservoir, creating the potential for long term replacement of natural hydrology

- **Riparian habitat (vegetative communities):** Riparian habitat is considered properly functioning when adequate vegetation and landforms are present to dissipate stream energy associated with high water flows, create stable streambanks, provide adequate shade, cover and biomass for aquatic organisms, as well as provide adequate wildlife habitat. Riparian habitats that are unfragmented and contain a high complexity of structure on both a vertical and horizontal axis are considered of the highest quality. Existing riparian habitat along the lower Alamosa River will be enhanced and new habitat created as part of the ISF Project due to introduction of more sustained and dependable stream flows and increased ground water levels.

- **Biological resources**: Instream aquatic habitat remains the most impacted component of the watershed (Master Plan, 2-143). Below Terrace Reservoir, the cottonwood-willow habitat along the lower segments of the river is currently in poor condition. Damage to riparian vegetation also has been caused by lack of overbank flood flows. Improving streamflow characteristics in the lower Alamosa River will improve biological resources, leading to a sustainable fishery for a portion of the lower river.

- **Agricultural use**: ISF would help increase the water table in an over-appropriated system. A related benefit to agriculture results from program operations in that the ISF water is not diverted form the river and therefore contributes to aquifer recharge. The timing of the program, in the winter months or non-irrigation season, also provides for more efficient recharge due to colder temperatures, reduced evapo-transpiration rates of dormant trees and plants, and because irrigators are not diverting water at that time. Phase II also aims to strategically acquire and lease water for ISF purposes but may also have other benefits to water users and the community.

- **Recreation uses:** The new water treatment plant at Summitville has improved water quality in the Alamosa River. Fish have been caught above, below, and within Terrace Reservoir. Instream flows have been supporting the re-claimed fishery. Increasing the duration and magnitude of streamflows in the lower river will enhance fishing, tubing, and swimming. TU

will work with CPW and Terrace irrigation to expand recreation potential and protect the infrastructure from increased recreational use. This may result in projects supported or leveraged by this effort to improve access and resource protection. One topic to consider is the threat of Aquatic Nuisance Species and developing solutions that protect the reservoir but alos accommodate recreation access. It is also worth noting, that directly below the dam, there is public fishing access for 1.5 miles providing access for anglers and other recreational pursuits on the Alamosa River.

iii. Describe how owners/managers of the target natural resource(s) will be/have been involved in proposal planning and implementation.

In 2002, a community survey was mailed to 200 water users in the Alamosa Watershed. Out of the sixty responses, the majority indicated an increase of water in the river was a priority. (See Appendix B Community Survey and Comments). Several of the water users have been involved in the development of the Alamosa River Watershed Restoration Master Plan and continue to serve in the development of the application for funding for the ISF. The board of Terrace Irrigation Company have been periodically briefed on the ISF Project and will continue to be part of the program

The following people or entities have been briefed on the ISF Project: Heather Dutton, director of the Colorado Water Conservation Board (CWCB) representing the Rio Grande Basin, Alamosa River Foundation, Alamosa-La Jara Water Conservancy District, Rio Grande Basin Roundtable and ditch companies, Amber Pacheco of the Rio Grande Water Conservation District, Virginia Christensen board member of Terrace Irrigation, appointee to the Alamosa-La Jara Water Conservancy District Board, and Board member of the Alamosa Sub-district.

iv. Describe how the proposal will restore, replace or acquire the equivalent of injured natural resources, and how the development, design, implementation and restored site can be made available for public benefit.

In 1984, Summitville Consolidated Mining (SCMCI), began construction of a cyanide leaching gold mine. By 1987, problems with releases of metal and acid began, culminating in a massive fish kill along the entire 53 miles of the Alamosa River from upstream of Terrace Reservoir all the way to individual farm ponds in the farming district in Conejos and Rio Grande County. Don Grett (*Valley Voice*, Spring 1993), an irrigator on the Terrace Ditch Company system who lives 10 miles from the Alamosa River, watched the fish population in his reservoir crash. “Every time I turned ditch water into my reservoir in 1990 and 1991 fish would die,” Grett said. “But as soon as I started pumping water into the reservoir from my well no other fish died.” For two decades prior to 1990, Grett’s pond boasted a healthy fish population, he said. The extinction of the fish population was the end for recreational activities in the river. In addition, the impaired water quality adversely affected biological communities and reduced the quality of riparian vegetation (Master Plan). The proposed ISF project will continue to develop environmental resources in the Alamosa River downstream of Terrace Reservoir to restore damaged resources in the lower reach of the river and replace lost resources in the upper reaches of the river due to Summitville.

A report that supports ISF is the “Vegetation Monitoring Report” that was prepared for the channel restoration project and was based on data collected in 2002 and 2003. Local scientists Julie Burt and Maya ter Kuile conducted this research along the riparian corridor both upstream and downstream of Gunbarrel Road. Transects near or upstream from Gunbarrel Road (TR 1-8) experienced losses

averaging 16% of vegetative cover in 2002, while transects in the more heavily dewatered and channelized area downstream of Gunbarrel Road (TR9, 11-19) lost 100% of the potential 200% overstory/understory cover. Losses in diversity (species per frame) registered after 2002 were also much heavier below Gunbarrel Road. These statistics and trends can be interpreted as indicators that sustained channel flows developed by the proposed ISF project will directly benefit riparian plants and trees.

A monitoring study of ground water table levels northeast of Capulin, 2002–2006, found a strong connection between Alamosa River flows and a domestic well's weekly levels. Autumn and winter flows comparable to our projected ISF had a positive effect on depth to groundwater at this site ¼ mile north of the river. The well was located within our primary targeted area for ISF benefits.

Public benefits of the proposed ISF project include the following:

- Enhance habitat for the restored fishery and increase ecosystem function in the lower Alamosa River
- Terrace Reservoir will increase recreation opportunities available to the public and the ISF program will supply storage water to help sustain water quality and access seasonally through direct flow storage.
- The ISF water delivered from Terrace will recharge the aquifer to maintain artesian pressure, and increase the unconfined ground water table, benefitting residential and agricultural wells, riparian sustainability, and efforts to maintain sustainable aquifer levels pursuant to the Groundwater Rules in Division 3
- The multiple benefits of ISF will positively impact many people with estimates of over 500 residents in the lower watershed.

iv. Provide a detailed description of the area (acreage, linear footage, etc.) of natural resources to be restored in the proposal.

The Alamosa River is located within the Rio Grande Basin in the San Luis Valley. Current ISF deliveries are targeted to augment streamflows between Gunbarrel Road and County Road 10, approximately 5.3 miles. Benefits will also accrue to the 11-mile section of stream between Terrace Reservoir and Gunbarrel Road. The Master Plan suggests that a reasonable target is 10 cfs for flow to reach Capulin. This estimate was based on the Division Engineer's experience with the Alamosa Rivers loss of surface water to ground water. The addition of ISF water rights and water leases in Phase II will continue to provide additional positive impacts to the 16 mile reach identified above, by increasing the duration of releases to this reach. Further, a measurement device around the Gunbarrel road will help provide better resolution for the quantity need to be released at a given time in order for the water to reach the desired 5.3 mile reach below the Gunbarrel road.

According to the Master Plan, areas below Terrace Reservoir are shown to consist of riparian vegetation. Below Terrace Main Canal to Gunbarrel Road the dominant riparian tree species is cottonwood. Reduced groundwater levels and a dropping channel bed have damaged the existing riparian vegetation, including cottonwoods. Damage to riparian vegetation also has been caused by lack of winter flows. In the segment of Gunbarrel Road to County Road 10, reduced groundwater levels and a dropping channel bed have damaged the existing riparian vegetation, including cottonwoods.

The Rio Grande Compact of 1938 apportions water between Colorado, New Mexico and Texas, and requires minimum volumetric deliveries of water from Colorado's portion of the Rio Grande Basin at the New Mexico state line. In any given year Colorado is required to deliver between 25 to 70 percent of the water generated in the Rio Grande and Conejos River Basins. The Colorado Department of Water Resources (CDWR) has administered the Compact under the assumption that normal surface flows in the Alamosa River are not tributary to the Rio Grande (and thus are not subject to Compact limitations). Therefore the proposed ISF Project will neither benefit nor compromise the State's ability to meet Compact obligations. And at no time, is the ISF water to be used in any way to fulfill any obligations to the Compact.

b. Objectives, and c. Operational Plan

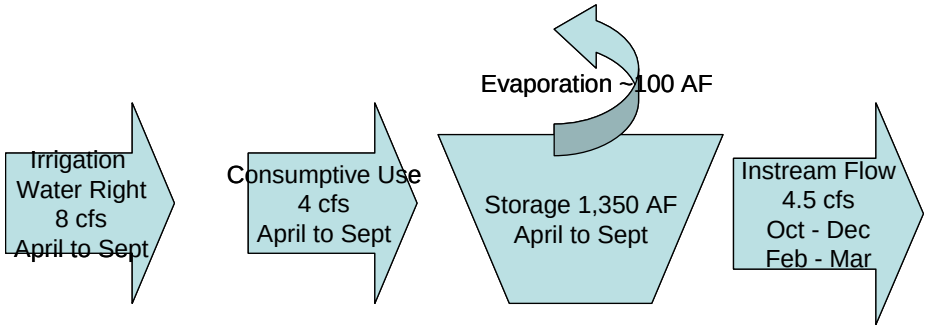
i. Describe in detail how the work described in each category will be implemented.

Objective 1: Create healthy and more natural river flows in the lower Alamosa River by purchasing and leasing senior water rights for instream flow.

- Create budget and schedule for this task.
- Identify available senior water rights and willing sellers, and water leasing opportunities
- Perform engineering analysis for targeted water rights to determine historic consumptive use and value.
- Complete water rights purchase.
- Work with Colorado Water Trust to coordinate donation of ISF water rights to the CWCB; to comply with CWCB donation rules and procedures; to work with CWCB to complete water court proceeding for changing use of water right to ISF.
- Plan and Implement ISF operations in collaboration with CWCB, DWR Division-3, Terrace Irrigation Company, and Alamosa Riverkeeper
- Work with experts to develop management/restoration plan for any agricultural land that will
    - no longer be irrigated as a consequence of water rights purchase.

The following is a description of the conversion of an existing agricultural water right to instream flow:

Direct flow water rights (typically depicted as a rate of flow, or cfs) must be obtained, then temporarily transferred to storage water rights (typically depicted as volume, or acre-feet) in order to provide instream flow water rights for the Alamosa River during the winter time, when there is currently very little flow, and also at other times of the year when flow below the Terrace Main Canal drops to levels below 10 cfs. Therefore, there are both storage and flow components of the project. The figure below gives one potential scenario for the conversion from an agricultural flow and storage right to an instream flow right.



Conversions: 1 cfs for 24 hours is about equal to 2 acre-feet of storage. 1 cfs for a year is about 720 acre-feet of storage.

Objective 2: Community engagement

- Leverage the project to help secure funding for other needs in the Alamosa River Watershed including outlet repairs at Terrace Reservoir, recreational access at Terrace and the Alamosa River, Sub-district operations, habitat restoration work, and conservation easements.
- Host an annual program operations meeting with DWR, Terrace, CWCB, and the Alamosa Riverkeeper
- Present to the board of the Alamosa-La Jara Water Conservancy District on an annual basis
- Present to the RGWCD board on an annual basis
- Meet with the sub-district manager and board on an annual basis
- Participate in the Re-Discovering the Alamosa River program to educate local youth about watersheds.

ii. Describe who the Offeror will collaborate with to accomplish the scope of work; include letters of support from those agencies you will be collaborating with, as well as community letters of support.

This project requires the collaboration of the following entities:

Colorado Water Trust
(Staff Bios & Organization information)
Tony LaGreca: A longtime resident of Colorado, Tony earned undergraduate and graduate degrees in geography from the University of Colorado before moving to the Klamath basin in Oregon. At the Klamath Tribes, he directed research and monitoring programs, and worked with stakeholders to develop watershed scale restoration strategies. Later, he went to work for Trout Unlimited and implemented numerous stream restoration projects designed to benefit ESA listed species and native trout. Tony has been with the Colorado Water Trust since early 2019 and he is developing new flow projects across the state as well as leading a monitoring and accounting effort to better document the benefits of the Water Trust's permanent projects.

Kate Ryan: Kate is the Senior Staff Attorney for the Colorado Water Trust. Her work includes legal representation of the Water Trust and project development. She leads streamflow restoration projects in partnership with water users, including farmers, ranchers, municipalities and the Colorado Water Conservation Board. Prior to joining the Water Trust, Kate worked in private practice and with the Colorado Attorney General's Office. Her practice included trial work and argument before the

Colorado Supreme Court. Before going to Berkeley Law, Kate obtained a master's degree at the University of Colorado and worked in climatology and snow hydrology at the National Snow and Ice Data Center.

Colorado Water Trust: is a statewide nonprofit organization that works collaboratively with partners all across Colorado on restoring flow to Colorado's rivers in need using solutions that benefit both the people we work with and our rivers. Since 2001, we've restored 12 billion gallons of water to rivers and streams across the state.

Terrace Irrigation Company
is a non-profit irrigation company with approximately 30 shareholders. The company owns and operates Terrace Reservoir, which stores water during winter months and releases water during the irrigation season for agricultural use. During the irrigation season, senior downstream water rights are passed through the reservoir without attenuation, creating streamflow in the target reach. Water for instream flow will be stored in Terrace Reservoir and delivered to the river following the irrigations season, resulting in uninterrupted streamflows in the target reach. Contact person is Virginia Christensen at 719-580-2128.

Colorado Water Conservation Board
CWCB's mission statement is to "conserve, develop, protect and manage Colorado's water for present and future generations." In 1973, the Colorado legislature recognized the need to "correlate the activities of mankind with some reasonable preservation of the natural environment" and passed Senate Bill 97 creating the State's Instream Flow Program. This program, one of the first of its kind, vested the CWCB with exclusive authority to protect streamflow through a reach of stream rather than just at a point, and to protect levels in natural lakes. Under the Water Acquisitions Program, the CWCB can acquire "water, water rights or interests in water" to preserve or improve the natural environment, to a reasonable degree. For more information go to www.cwcb.state.co.us. Contact person is Linda Bassi at 303-866-3977

Alamosa River Foundation
According to the *Alamosa River Watershed Restoration Master Plan and Environmental Assessment*, "The Alamosa River Foundation was formed to provide local Master Plan oversight. The Alamosa River Foundation is a non-profit organization formed by local citizens and organizations to coordinate watershed-based projects within the Alamosa River watershed." In addition, the Foundation provides a 501-(C)(3) umbrella for organizations that need a non-profit fiscal sponsor.

iii. Describe the type, donors, and equivalent dollar amount of matching funds.

The following table summarizes the source of match proposed for this project.

Fund Source	Value	Application	Status
Terrace Irrigation Company **2,000 acre-feet of permanent storage space**	**$15,400,000**	**Instream Flow Project**	**Secured**

In-kind storage provided by Terrace Irrigation Company has been valued at $15.4 million. This amount covers all matching requirements and provides the annual target water volume for the project.

iv. Provide construction designs and drawings, and a schedule and/or timeline for the completion of major project components.

Designs and drawings are not required for the project.

v. Describe to what degree the proposal described in the operational plan matches the goal of NRDA fund expenditure and how the proposal matches the specific objective for the Master Plan restoration project.

ISF is the project that brings to life the Master Plan's objectives and watershed vision of "river and watershed health" in the lower Alamosa River. The targeted area for ISF is presently dry about 7 to 9 months of an average year. The proposal puts water in the channel for several months. ISF "restores" or "protects resources" including a falling groundwater table, riparian vegetation and wildlife. "Bio-diversity" is a lynchpin of the proposal, because the river corridor ecosystem is very dependent on flowing water. The public's "resource services" gained by ISF would include maximizing storage in Terrace Reservoir, fishing in the Alamosa River and Terrace Reservoir, other recreation such as bird watching and the ISF program helps recharge the groundwater aquifer and water tables benefiting sub-irrigation and wells

vi. Describe how the proposal will be coordinated with complementary, similar existing or other proposed restoration in the area, if any.

The coordination of the ISF Project will involve communications with all water interests and throughout the local communities. Every effort will be made to support complimentary project activities in the watershed, and TU will help these entities leverage the ISF project through in-kind match and letters of support.

Implementation of the ISF Project will continue to benefit the Alamosa River channel restoration project by improving the streamflow condition in the restored channel sections. Improved streamflows will accelerate re-establishment of riparian vegetation in the restored channel and will create many of the project benefits associated with recreation and biological resources that are the objectives of the channel restoration project.

vii. Describe the operation, maintenance and monitoring (OMM) requirements and the entity(ies) accepting those responsibilities for the duration of the project and a minimum of 10 years thereafter, if applicable.

The Colorado Water Conservation Board, with the help of the Colorado Division of Water Resources (State Engineers Office), will monitor the ISF in perpetuity. The Division Engineer will assure that the instream flow right is properly administered. TU, CWT, and the Alamosa

Riverkeeper will assist by hosting program meetings, developing annual operation plans, and recording and reporting on program deliveries. The addition of measurement devices will assist all parties in the monitoring, reporting, and planning efforts.

Terrace Irrigation Company will be responsible for activities and costs associated with operating and maintaining Terrace Reservoir to store and release the CWCB instream flow right.

viii. Permits/Approvals/Certifications: Describe all permits, licenses…that will be required to complete the project and describe current status/progress towards obtaining these permits/approval.

No permits are required to acquire water rights. However the CWCB has exclusive authority to hold and protect instream water rights. Consequently, TU and project partners will work closely with the CWCB to transfer the acquired water rights to them according to their rules and procedures. TU and CWCB will ultimately be responsible for the water court proceedings that would legalize any changes in the type of use or place of use for the water rights.

ix. Project Schedule: Provide a timeline with identification of projects phases, milestones, midpoint, and pre-final inspections.

Project Schedule: This project schedule will mostly be repetitive on a yearly basis, and the project is proposed to begin in 2021 ending in 2026. The day to day activities will vary from year to year, but the general schedule is outlined in the table below. Purchase and installation of a stream gage measuring device and associated data collection sensors will be the exception to the project schedule, since it be accomplished in the first year of project work.

Project Activity	**Schedule**
Identify senior water rights and willing sellers/lessors	year-round
Engineering analysis to quantify consumptive water use	year-round as needed
Water Court Proceedings	year-round as needed
Annual Program operations Meeting	October each year
Annual reporting to RGWCD, RGBRT, ALJWCD, CWCB	January-March each year
Re-Discovering the Alamosa River program	August- October
Installation of Stream Gage near Gunbarrel Rd. and Data Sensors	2021 TBD
Coordination with other Alamosa River stakeholders and Projects	year-round
Develop management plan for lands coming out of irrigated ag	year-round as needed

x. *Monthly Invoice and Status Report: Describe which activities outlined in the operational plan will be tracked, how they will be counted and how they will be reported in the monthly invoice.*

The following reporting procedure will be followed:

1. If applicable, monthly invoices for completed work will accompany the status report.
2. A combined report and invoices will be submitted to the Program Manager for the NRDA on a mutually approved schedule.
3. The following tasks will be tracked:

Terrace Reservoir

- Annual storage amounts
- Annual ISF operations plan

Tasks for Acquisition of Water Rights

- Costs associated with acquisition and leasing of senior water rights and willing sellers
- Costs of Engineering analysis for targeted water rights to determine yield, historic use, and value
- Costs associated with Water Court proceedings and the donation of water rights to the CWCB Instream Flow Program
- Project Management expenses

xi. Project Documentation and Deliverables: Provide a list of documentation and deliverables that will be supplied for the proposed project and throughout the duration of the project including the OMM phase.

Water Rights Acquisition

- Engineering Report for targeted water rights
- Deed for acquired water rights
- Donation agreement with CWCB
- Annual report on yield from instream flow rights and water leases.
- Terrace Reservoir operation plan for ISF delivery

Project Management

- Annual reports during project implementation

Section 3. Cost/Price Data

Phase II- Total Project cost $15,850,000
The costs of Phase II will vary depending on opportunity for water rights acquisition. It is predicted that there may be an additional funding need for high value water rights should they be available for purchase, in which case TU and partners will leverage the NRDA funding as match for pursuing additional grant and foundation funding.
.

- The cost of water rights acquisitions will be a function of the value and number of transactions required to meet the conservation objectives stated in the Master Plan of 10 cfs downstream of Terrace Reservoir. A single transaction would help lower the overall project cost. Water rights will only be acquired from willing sellers, with the price decided through negotiation and could include a full appraisal of the water rights value. For budgeting purposes, in Phase I, an average value of $375/ac-ft was used for senior irrigation rights on the Alamosa River.

The cost of Phase II includes the value of 2,000 acre-feet of storage in Terrace Reservoir. The storage value of $15,400,000 is based on the cost of increasing storage in an existing reservoir according to an engineering analysis by URS. This approach to valuing the reservoir storage cost is considered reasonable because:

1.) The reservoir space will be dedicated to the ISF Project in perpetuity; in essence the space will be owned by the ISF Project.
2.) Terrace Irrigation Company will be releasing its right to develop this storage space for its own benefit in the future, and thus must incur the cost of this lost opportunity for its shareholders.

Labor costs for project/program management are based on 10 hours per week for Trout Unlimited staff computed using existing salary (including benefits and PTO), with a predicted 3% increase per year following TU's standard cost of living adjustments.

The project budget table below shows the tasks and associated budgets

Budget Line item tasks for Phase II Alamosa River ISF Project	**Entities** (receiving funds)	**NRDA Request**	**Match**	**Total Budget**
Engineering analysis to quantify consumptive water use	TBD- subcontractors	20,000.00		20,000.00
Consultations with sellers/lessors & Water Court Proceedings	CWT, Subcontractors	25,000.00		25,000.00
Project Management	TU	25,080.00		25,080.00
Alamosa River Foundation operating budget (5 years)	ARF	2,080.00		2,080.00
Water Right Acquisitions and Leases	TBD sellers/lessors	350,000.00		350,000.00
Installation of Stream Gage near Gunbarrel Rd. see note below	Mackay Const.	11,100.00		11,100.00
Develop management plan for lands coming out of irrigated ag	TBD subcontractor	3,000.00		3,000.00
Trout Unlimited Indirect (13.74%) see note below	TU	13,740.00		13,740.00
2,000 acre-feet storage in Terrace Reservoir	N/A		15,400,000.00	15,400,000.00
TOTALS		**450,000.00**	**15,400,000.00**	**15,850,000.00**

*Note that indriect costs will not be charged to te Water Acquisitions line item
*Note that the Mackay Const. estimate is from a 2020 bid for Terrace Irrigation for the same equipment at differnet locations on the Almosa River. Therfefore the $11,100 shoud be considered an estimate at this time

The budget below breaks down the TU project management costs for the 5-year project

Trout Unlimited Project Management Cost Breakdown	**Cost**
2021 labor (based on 100 hours/ year includes benefits)	$4,240.00
2022 labor (based on 100 hours/ year includes benefits + 3% increase from previous year)	$4,367.00
2023 labor (based on 100 hours/ year includes benefits + 3% increase from previous year)	$4,498.00
2024 labor (based on 100 hours/ year includes benefits + 3% increase from previous year)	$4,633.00
2025 labor (based on 100 hours/ year includes benefits + 3% increase from previous year)	$4,772.00
Travel- 500 miles per year current FY 20 Federal Reimbursement Rate $.575/mile	$1,437.00
Supplies and expenses ~ $225/year for printing, paper, etc	$1,133.00
Total	**$25,080.00**

The budget below breaks down the Alamosa River Foundation 5-year budget

Alamosa River Foundation operating Budget	**cost/year**	**cost over 5 years**
PO Box	$56.00	$280.00
Project Financial Manager (Wall Smith & Bateman)	$200.00	$1,000.00
Cost of Webpage www.alamosariverfoundation.com	$50.00	$250.00
State of Colorado Yearly Filing	$10.00	$50.00
Other	$100.00	$500.00
Total		**$2,080.00**

The Rate sheet below shows the rates for Colorado Water Trust services in 2020

Category	Hourly Rate (2020)
Executive Director	$ 152.88
Director of Programs	$ 132.50
Staff Attorney	$ 132.50
Water Resources Engineer/Project Manager	$ 96.83
Water Transactions Coordinator	$ 81.54
Communications Specialist	$ 76.44

Section 4. Public Communication Strategy

In order to discuss the public communication strategy, one must understand the culture and values prevalent in the San Luis Valley. Strategies that may be successful in a metropolitan area may not work in a rural setting. Fewer people at the grassroots level use a computer to access information or as a means of communication. The strength of the Valley's culture is the emphasis on family and community. Therefore, relationships would be an effective means of conveying information.
Trout Unlimited recognizes the need to serve the entire community and realizes the importance of inclusiveness, especially with polarizing issues such as water. TU is already very active in the water community and will strive to engage additional Alamosa River Watershed stakeholders in this effort. For instance, TU believes that a strong relationship with the Alamosa La-Jara Water Conservancy District will produce project benefits and community benefits resulting from the NRDA funding

Successful Strategies

- Newspaper articles, op-eds, and LTEs in the Valley Courier and other local and regional publications
- Presentations to the Rio Grande Basin Roundtable, Rio Grande Water Conservation District, Rio Grande Basin Water Leaders program, Terrace Irrigation Board, Alamosa-La Jara Water Conservation District, Alamosa River Foundation Board, and the Conejos County Board of County Commissioners
- Re-Discovering the Alamosa River Program activities
- TU has a regional communications director that will assist the Rio Grande Basin Project Manager with communication strategies
- In-person coffee table meetings with local stakeholders including water users, agencies, landowners, and interested parties such as conservation organizations.

Section 5. Relationship to the Ranking Criteria

The following paragraphs summarize how the ISF Project meets the Ranking Criteria objectives listed in the Request for Proposals.

i. Compliance with the RFP requirements: We have made every effort to meet solicitation requirements and will gladly address and rectify any noncompliance perceived by the Trustees.

ii. Compliance with laws: TU will participate in any environmental analysis required for the ISF Project, and Terrace Irrigation Company recognizes the need for dam safety. All laws and administrative procedures regarding water rights purchases and transfers, as well as dam upgrades, will be followed.

iii. Public health and safety: The project will increase community health through environmental and recreational enhancements and through programming. Public safety will not be impacted by the project work.

iv. Eligibility for NRDA Funding: The project work is identified as Tier 1 and Tier 2 projects in the Alamosa River Watershed Restoration Master Plan, and the work touches on each of the objectives of the Master Plan. TU is a 501-C-3 non-profit organization eligible to receive NRDA funding.

v. Alamosa River Watershed Restoration Master Plan Projects: ISF was endorsed as the second highest-ranked project (Master Plan 4-1).

vi. Public Acceptance: Since this is Phase II, the project work is well known and has long been underway in the Alamosa River Watershed. The designated storage space in Terrace is specific to ISF water rights, and therefore there is no competition for that space. The effect, is that the project work serves many community interests that have been identified throughout this proposal, that extend beyond the primary purpose of flow restoration in the lower Alamosa River Watershed.

vii. Likelihood of Adverse Impacts: TU and the project team do not perceive any adverse impacts of the project. Whenever water rights are changed for place or type of use, the change must comply with the "non-injury" provisions of Colorado Water Law. As mentioned in Section 4.ii this project will comply with all laws and procedures.

viii. Likelihood of Success: CWCB is responsible for protecting all water rights it holds. As such the State will fulfill its obligations and stewardship of any new ISF water rights acquired through this project. It is expected that vegetation (including arboreal) and ground water table gains will continue. The fishery in the Alamosa River has recovered to a reasonable degree in the lower watershed and will be further enhanced by this project. The likelihood of success is high due to the expertise of the participating groups, previous experience with NRDA funds, and a broad coalition of partners.

ix. Technical Feasibility: CWCB has protected over 8,500 miles of streams statewide using ISF. If there is a willing seller, water rights can be purchased and secured for instream flows. The CWCB would ultimately be responsible for the ownership and stewardship of the water rights and has expressed support for this project. Additionally, partners like the Colorado Water Trust, intimately involved in the Phase I project, and whose operating principles are to work within the framework of Colorado water law and interstate compacts; work with willing participants, act on sound factual, scientific, technical and legal bases and act with ethics and integrity, will provide experiences technical support.

x. Multiple Natural Resource Benefits: Multiple benefits for natural resources is the foundation of this project. By restoring hydrology to the Alamosa River, the project impacts an entire ecosystem and the interconnected relationships and processes within it. The environmental

benefits are clear, but less obvious are the social and economic impacts. The ISF project will increase recreational value, diversity, and opportunity. The project will also help recharge the unconfined aquifer, benefiting local residential wells and agriculture, which is the basis of the economy in the watershed.

xi. Time to Provide Benefits: The project will result in short term and long term benefits and will compliment previous ISF gains. Increasing the volume and duration of streamflows in the Alamosa River will immediately provide additional aquatic habitat and ecosystem resiliency. Over time, this translates into a more diverse aquatic, and riparian species composition and habitat. The goal to deliver 2,000 acre-feet of ISF water to the lower river each and every year, if achieved, would result in a quantifiable supply of water to the aquifer, and assist the community in managing groundwater hydrology needs/constraints.

xii. Duration of Benefits: The duration of benefits is into perpetuity or for generations to come.

xiii. Opportunities for Collaboration/Matching Funds: The $15,400,000 match for 2,000 acre-feet of storage space in Terrace Reservoir is the driver for this opportunity. The project partners have a clear target for this project and an incredibly valuable space to fill. TU and partners will actively leverage the storage space and any NRDA funding received, to secure additional funding for ISF program work, but also as partners to other projects in the watershed.

xiv. Protection of Implemented Project: CWCB has an explicit protection component for its ISF holdings. The CWCB's Stream and Lake Protection Division monitors water usage to ensure that instream flow water rights are left in the stream. The priority of an instream flow is observed, and the water must be left in the stream, even if other lower priority water users are shut off. In our case, the ISF water will be delivered outside of the irrigation season, when there are no diversions of water, offering further protection.

xv. Project Cost: Using a market-based approach, we will strive to minimize cost and maximize benefits. The cost of the project components are variable and subject to negotiation. This will place and increased responsibility on project partners to create transparent processes for decision making and thorough accounting following budget constraints. TU and the partners are expectant that any NRDA funding received would follow a detailed budget developed and agreed upon through the contracting process.

xvi. Project Consistency with Regional Planning: The project aligns with the goals and objectives identified in the Rio Grande Basin Implementation Plan and the Colorado Water Plan. The project also could easily be incorporated into an Alamosa River specific Stream Management Plan, if that were to be developed in the future. The project partners are active in the water community, with intimate knowledge of concurrent water issues including export threats and groundwater management sub-districts.

xvii. Public Benefit and Access: Fishing and other recreational activities will be improved on public lands directly impacted by ISF deliveries. These lands are accessible to the public, and the opportunities will expand and gain value, as the duration of streamflows and natural flow restoration occurs.

xviii. Public Communication Strategy: Please refer to Section 4 above for a detailed communication strategy.

Section 6. Project Fact Sheet

Project Name: Alamosa River Instream Flow Project- Phase II "Community-based stream flow restoration on the Alamosa River"

Offeror: Trout Unlimited
Total Request: The phase II request is $450,000 over a 5 year period
Total Match: Terrace Irrigation Co. has provided the in-kind match of 2,000 acre-feet of storage space that is permanently dedicated for in-stream flow storage. This match is secured and valued at $15,400,000.
Total Project Cost: The total project cost is $15,850,000.

Project Manager: Trout Unlimited
Point-of-Contact: Kevin Terry, Rio Grande Basin Project Manager
85 Pinon Circle, South Fork, CO 81154
(970)799-7682 (Cell)
kevin.terry@tu.org

Offeror Summary: Trout Unlimited's (TU) mission is: To conserve, protect, and restore North America's coldwater fisheries and their watersheds.
TU's Vision: By the next generation, Trout Unlimited will ensure that robust populations of native and wild coldwater fish once again thrive within their North American range, so that our children can enjoy healthy fisheries in their home waters**.**

Project Summary: The Alamosa River Instream Flow (ISF) Project- Phase II, will build upon the stream flow restoration work underway on the Alamosa River, which was started in 2012 by the Alamosa Riverkeeper (ARK) and partners organizations. Trout Unlimited (TU) will be leading this phase of work, but key partners including the ARK, the Alamosa River Foundation (ARF), the Colorado Water Trust (CWT), and the Terrace Irrigation Co. will continue to serve active roles. We expect to add partners through program and project work over the next 5 years. This proposal includes Tier 1 and Tier 2 projects identified in the Alamosa River Watershed Restoration Master Plan and Environmental Assessment (Master Plan), and the project work touches on each of the five objectives of the Master Plan.

The primary project objective is to restore stream flows in the Alamosa River, and thereby improve the health of the river downstream of Terrace Reservoir. To accomplish this goal, TU will lead a community-based effort that will strive to utilize 2,000 acre-feet of available storage space in Terrace Reservoir each year by purchase or lease of water rights, and through coordinated water rights operations that take advantage of partnership opportunities.

Section 7. Applications/Assurances

IRS Department of the Treasury
Internal Revenue Service

CINCINNATI OH 45999-0038

In reply refer to: 0248206070
July 22, 2015 LTR 4168C 0
38-1612715 000000 00
00020788
BODC: TE

TROUT UNLIMITED INC
% HILARY COLEY
1777 N KENT ST STE 100
ARLINGTON VA 22209

021720

Employer Identification Number: 38-1612715
Person to Contact: Mrs. Turner
Toll Free Telephone Number: 1-877-829-5500

Dear Taxpayer:

This is in response to your July 13, 2015, request for information regarding your tax-exempt status.

Our records indicate that you were recognized as exempt under section 501(c)(3) of the Internal Revenue Code in a determination letter issued in March 1972.

Our records also indicate that you are not a private foundation within the meaning of section 509(a) of the Code because you are described in section(s) 509(a)(1) and 170(b)(1)(A)(vi).

Donors may deduct contributions to you as provided in section 170 of the Code. Bequests, legacies, devises, transfers, or gifts to you or for your use are deductible for Federal estate and gift tax purposes if they meet the applicable provisions of sections 2055, 2106, and 2522 of the Code.

Please refer to our website www.irs.gov/eo for information regarding filing requirements. Specifically, section 6033(j) of the Code provides that failure to file an annual information return for three consecutive years results in revocation of tax-exempt status as of the filing due date of the third return for organizations required to file. We will publish a list of organizations whose tax-exempt status was revoked under section 6033(j) of the Code on our website beginning in early 2011.

Section 8. Support Letter Colorado Water Trust

COLORADO WATER TRUST

3264 Larimer Street, Suite D, Denver, CO 80205
Tel: 720.570.2897 | www.coloradowatertrust.org

July 30, 2020

RE: Alamosa River Instream Flow Project- Phase II

Dear NRDA Review Committee,

Please accept this letter of support for Trout Unlimited's proposal for the "Alamosa River Instream Flow Project- Phase II". The Colorado Water Trust has been a partner in the instream flow restoration work on the Alamosa River since 2012. We worked to support the Alamosa Riverkeeper with the acquisition and water court changes of water rights on the Alamosa River that are now stored in Terrace Reservoir each year and released to the river at the end or the irrigation season to extend the duration and distance of late fall flows in the river. That work has restored over 3,000 acre-feet of water to the river and continues to improve flows each year.

We are committed to and excited about continuing our work in the watershed alongside Trout Unlimited and all of our great local partners. We are confident that Trout Unlimited has the local staff capacity and experience in the water community to successfully lead this effort and build on the great foundations that we have helped build. The staff of the Colorado Water Trust is prepared to assist with technical aspects of water acquisitions and leasing, including the identification of legal tools to facilitate environmental water transactions, the management of implementing such tools with project partners and the Colorado Water Conservation Board, and assisting with temporary or permanent changes of water rights for instream flow use either administratively or in water court.

Thank you for helping to improve the Alamosa River. We are proud to support Trout Unlimited and look forward to doing what we can to help.

Sincerely,

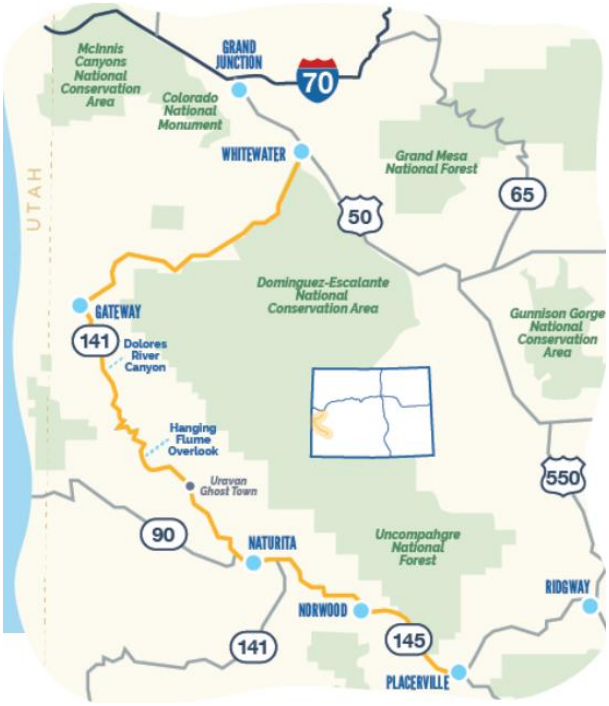
Kate Ryan

Senior Staff Attorney

ITEM #6

Historic Uravan Ball Park

Restoration & Economic Development Project



West End Economic Development Corporation (WEEDC), Rimrocker Historical Society (RHS), Montrose West Recreation (MWR) and the West End Trails Alliance (WETA) would like to apply for funding from the Colorado Resources Damage Program (Uravan Mill Cleanup, Uravan, CO). We are respectfully requesting $216,037.00 to complement the 35% match of $75,218 (cash and in-kind) being put forth by the community.

All the groups mentioned above have been working diligently to improve the economy of the West End of Montrose County, and would like to focus our efforts on projects surrounding the historic Uravan Ball Park. The “Ball Park” is the former ball field for the Town of Uravan that was not contaminated by uranium activities. The area has seen a tremendous increase in the usage, creating not only an economic impact, but an impact on the natural resources and water resources of the area. The primary goal is to protect these natural resources, while providing designated access to the San Miguel and Dolores Rivers.

The last two historical buildings in Uravan were promised and left for the Rimrocker Historical Society (RHS) to use for museums. They received a $100,000 grant from History Colorado to preserve these buildings and were recognized with the Steven H. Hart Award for their efforts. The decision was made by Umetco/Dow to burn those buildings in 2007, and RHS was promised the Ball Park property. In 2012, Montrose County received the property from Umetco/Dow and signed a 50-year lease of the Ball Park over to RHS. The increase in usage of the Ball Park has created stress on the natural resources, and it is the goal of the stakeholders to address and mitigate risks and impact on the environment by providing designated areas for human use.

Aerial view of Ball Park (area inside loop)

Volunteers have restored The Ball Park to its current use, a campground and day use area. The Ball Park has been seeing a tremendous increase in usage from campers coming to our area. Located adjacent to the San Miguel River, the Ball Park is a popular boat launch for rafters, kayakers and paddleboarders floating the San Miguel through the historic Hanging Flume section, and taking out at either the Dolores/San Miguel confluence or on the Dolores River at Biscuit Rock. Recreation and tourism is one of the largest economic drivers for this region, and we would like to create some improvements that will continue this economic trend while protecting our natural resources and habitat, and financial assistance is needed to make them happen.

Volunteers setting up new sign

Projects at the Ball Park have long received significant volunteer support. Citizens who still live in the area with a history in Uravan, as well as former residents of Uravan, often volunteer their time to improve this area and keep the history alive. This very popular location sees extensive use during the summer and fall and has hosted over 1,000 persons at annual Uravan Reunion events. The Rimrock Historical Society works hard to ensure the history of this legendary location is not lost forever.

During the recent COVID-19 shutdown throughout Colorado, the Ball Park saw a tremendous increase in visitation. With this visitation, while appreciated, several needs were identified. Further, a great deal of damage occurred in and around the Ball Park, and we believe several changes are needed to protect the health and safety of visitors to the area.


Uravan Residents Picnic 2015

Due to the remote location, cell phones generally do not work. In order to make the location safer for visitors, Nucla-Naturita Telephone Company has agreed to donate a landline and phone for emergency use at the park (in-kind value between $7,500-$10,000). This donation will aid in getting assistance to the park should there be an emergency in the area.

We are respectfully requesting funding for the following projects (estimated budget to follow:

VAULT TOILETS AT THE BALL PARK & BISCUIT ROCK. Presently, there are no restrooms located along Highway 141 on the Unaweep-Tabeguache Historic & Scenic Byway, between Gateway and Naturita, CO (approximately 56 miles), or along the Rimrock Trail between Montrose, CO and Moab, UT (160 miles). This is a long stretch for folks who are recreating, just enjoying a scenic drive, or who choose to camp at the Ball Park. Because there is no place to relieve themselves, visitors have "taken to the woods" to do their business, leaving a health hazard in their wake. Not only do they leave personal bodily waste, but they often leave their trash when they stop at the side of the road or use the river, causing further erosion of the riverbanks.

We propose that nice, well-maintained facilities would give visitors a location that they know is accessible and would encourage them to help keep our community clean and safe. (See attached design information). Rimrock Historical Society would maintain the facilities on a weekly basis, with a semi-annual pump-out of the vaults by a certified contractor.

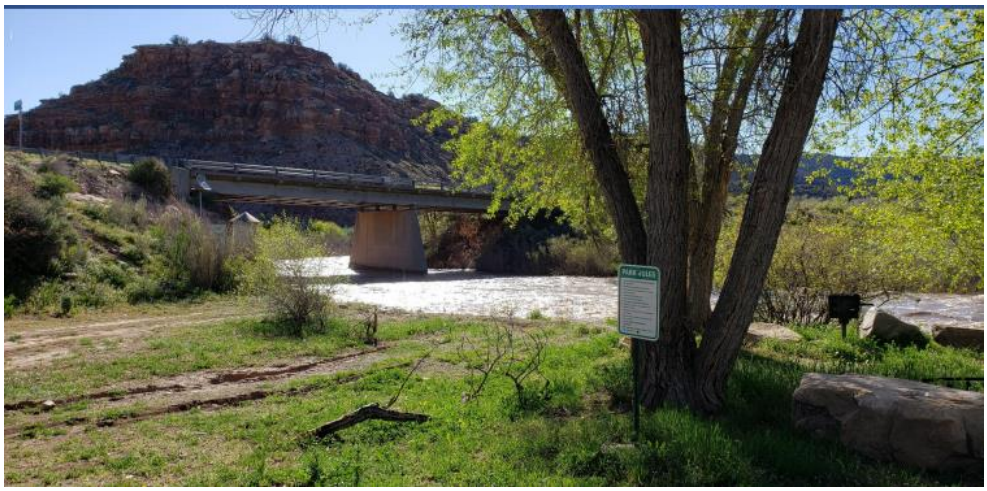
Cost estimate: $77,000 plus $2,400 for 2 years of maintenance; In-kind contribution: $18,643.

POTABLE WATER TO THE BALL PARK. Due to its remote location, water must be hauled to the Ball Park from Naturita (approximately 14 miles) for the purpose of watering trees and native plants. The long drought of this area has put stress on both the trees and the volunteers and having access to well water at the site would help to maintain the beauty of the area.

In conjunction with the vault toilets, adding potable water to this location would help with natural resource improvements and reduce unnecessary usage of the river (further reducing the impacts on native species and water quality).

Cost estimate: $10,000; In-kind contribution: $2,000.

SAN MIGUEL RIVER ACCESS POINT. With outdoor recreation and tourism as an economic driver, WEEDC has been promoting safe locations for river users to access the San Miguel River. This river is a slow-moving river that appeals to families looking to enjoy safe river activity. Visitors presently attempt to use the Ball Park to access the San Miguel River. As there is not a calm eddy or official launch point adjacent to the campground, boaters have inadvertently damaged the riverbanks, native plants, and wildlife



Current river access point with damage

in the area by dragging their boats and rafts down the riverbank. We would like to propose a legal, designated location wherein they can safely access the river and not cause further damage to the riverbanks. This location would be adjacent to the Ball Park and maintained by RHS and Montrose County.

Cost estimate: $35,000; In-kind contribution: $7,000.

Confluence of San Miguel & Dolores Rivers

CONFLUENCE CLEAN-UP. The San Miguel River and the Dolores River meet approximately 4 miles from the Ball Park, and this beautiful area has seen tremendous damage from the COVID-19 overuse. This region of the two rivers is located in and controlled by Montrose County. This area became a dumping ground for folks, leaving old chairs, couches, and a tremendous amount of trash that needs to be cleaned up. Additionally, Beetle-killed Tamarisk and poison ivy and excessive growth have made clean-up exceptionally difficult. We would like to propose restoring and strengthening the riverbank area, planting native plant species to provide habitat for threatened fish species, and cleaning up all the trash and overgrowth to make this beautiful area safe to recreate. This project would be done complementary to the Dolores River Restoration Partnership which focuses on invasive species removal, but not on clean up and bank restoration (drrpartnership.org). This request would be a one-time restoration to protect habitat and protect water quality.

A river access point at the confluence would continue the river access program developed by the Town of Naturita (in conjunction with Back Country Hunters & Anglers) at the Naturita Town Park as well as complement an access location at the Ball Park, extending the river experience an additional 14 miles from the Town Park to the confluence.

Cost estimate: $40,000; In-kind contribution: $10,000.

INTERPRETIVE SIGNAGE AT THE BALL PARK. As part of the continuing efforts to improve the tourist experience, we would like to improve the area to include historical interpretive information. The Rimrocker Historical Society has a significant amount of antique mining equipment that would make a wonderful interpretive site, enabling visitors to learn "how it was done in the old days," more about the historic significance of the Uravan community and surrounding geography. This site would require cementing in the equipment (to prevent theft) as well as the creation of

Hanging Flume above San Miguel River

interpretive signage(s). The location of the equipment would be distanced from the parking area, encouraging the visitor to walk around the equipment and learn its history.

Cost estimate: $11,637; In-kind contribution: $3,000.

HANDICAP-ACCESSIBLE FISHING DOCK. One of the more challenging components of developing recreation activities in our "wild" region has been making the river accessible to handicapped individuals. We would like to propose the development of a handicap-accessible fishing dock at the Ball Park, providing access to the San Miguel River. This would be a "catch and release" location and would provide expanded recreation opportunities in our region.

Example of fishing dock

This dock would be located in Montrose County along the San Miguel River and would be maintained by RHS under their 50-year lease agreement.

Cost estimate: $35,000; In-kind contribution: $26,075.

BETTER TRAIL ACCESS TO EXISTING TRAILS. Although there are many existing trails in our region, we often find visitors creating "pirate" trails so they can access our most popular trails. We would like to propose improved trail access along the San Miguel River, and better access through "Mill Drive," an existing road through the old Uravan town site, which would allow safer access to the popular Y-11 Trail.

Mill Drive is an existing road presently fenced off to prevent access, but users have found a way around the gate and have begun creating unapproved trails. By creating a designated access, the goal is to protect wild habitats, reduce erosion due to rogue trails, and providing a safe route to designated trails.

Cost estimate: $5,000; In-kind contribution: $1,000.

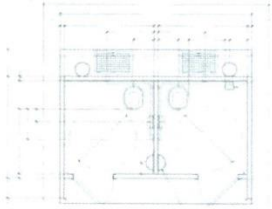
Thank you for your consideration of this grant request.

HISTORIC URAVAN BALL PARK RESTORATION BUDGET			
ACTIVITY	**DESCRIPTION**	**BUDGET**	**MATCH**
Vault Toilet at Ball Park	Men/Women, 2-hole vault toilet	$47,000.00	$11,643.00[1]
Vault Toilet at Biscuit Rock	Single seat vault toilet	$30,000.00	$6,000.00[2]
San Miguel River Access Points (Ball Park & Dolores/San Miguel confluence)	River access for boats, floatation	$35,000.00	$7,000.00[3]
Confluence Clean Up	Cleanup and restoration of riverbanks; plant fish habitat/native species	$40,000.00	$10,000.00[4]
Interpretive Signage	Location for outdoor mining equipment & educational signage. Levelling, concrete & signage	$11,637.00	$3,000.00[5]
Handicap Accessible Fishing Dock	Concrete platform above SM River w/railings	$35,000.00	$26,075.00[6]
Better Trail Access via Mill Drive	Fencing along either side of road; provide better access to Y-11 Trail to Paradox	$5,000.00	$1,000.00[7]
Potable Water to Ball Park	Well development, pump	$10,000.00	$2,000.00[8]
Maintenance for toilets/2 years	$600 pump out 2x per year	$2,400.00	$1,000.00[8]
Emergency Telephone Service to the Ball Park	Emergency phones located at entrance and at Camp Host location	$0	$7,500.00[9]
	PROJECT TOTAL	**$216,037.00**	**$75,218.00**

In-Kind Match Breakdown (35% match)

1. Thompson Builders/Rimrocker Historical Society Donors & Volunteers
2. Thompson Builders/Rimrocker Historical Society Donors & Volunteers
3. Montrose County/Rimrocker Historical Society Donors & Volunteers
4. Montrose County/Rimrocker Historical Society Donors & Volunteers
5. Southwest Construction/ Rimrocker Historical Society Donors & Volunteers
6. Montrose County/Rimrocker Historical Society Donors & Volunteers
7. West End Trails Alliance/Rimrocker Historical Society Donors & Volunteers
8. Rimrocker Historical Society Donors & Volunteers
9. Nucla-Naturita Telephone Company donation of materials and labor to install emergency phones. Value between $7,500-$10,000.

TIOGA SPECIAL



Tioga Special double vault. Standard features include two ABS lined concrete vaults, barnwood textured walls, cedar shake textured roof, off loaded and set up at site.

Base Price		Price per unit	Click to select	
Tioga Special		$ 26,290.00		26,290.00
Added Cost Options:				
Installation		$ 3,280.00	☑	3,280.00
Chase Option		$ 2,000.00	☐	0.00
Optional Wall Texture -choose one ☐ Split Face Block ☐ Struck Trowel		$ 2,255.00		0.00
Optional Roof Texture -choose one ☐ Delta Rib		$ 925.00		0.00
R-19 Roof Insulation		$ 865.00	☐	0.00
Room Wastebasket		$ 120.00	☐	0.00
Owl Guard (each)	Qty: 2	$ 34.50	☐	0.00
Hand Sanitizer		$ 70.00	☐	0.00
Marine Package for Extra Corrosion Resistance		$ 4,200.00	☐	0.00
Solar Light Kit		$ 1,340.00	☐	0.00
Solar Fan Kit		$ 1,290.00	☐	0.00
Conduit Junction Box (chase only)		$ 200.00	☐	0.00
Electric Light Package (chase only)		$ 5,650.00	☐	0.00
Paint Touch-up Kit - Single Color		$ 55.00	☐	0.00
Paint Touch-up Kit - Two Tone Color		$ 61.00	☐	0.00
Total Cost of Selected Accessories from Accessories Price List:				$ 3,280.00
Estimated One-way Transportation Costs to Site (quote):				$ 15,000.00
Custom Options: Stamped plans and CO inspections				$ 2,000.00
Estimated monthly payment on 5 year lease **$ 936.06**		Total Cost per Unit Placed at Job Site: *(excludes all taxes)*		$ 46,570.00

No Cost Options:

Single Color:
(select one)

Two-Tone Color:
Walls (select one)
Roof (select one)

*Signage:
☐ Men ☐ Women
☐ Unisex ☐ Accessible

Wall Vent Location:
(upon entering door)
☐ Right Side ☐ Rear
☐ Left Side ☐ Door

**Building includes restroom signs in Braille and roman lettering.*

Deadbolt Lock:
☐ CXT Supplied (Schlage)
☐ Customer Supplied Lock

Door Opener:
(select one)

Paper Holders:
(select one)

This price quote is good for 60 days from date below, and is accurate and complete.

CXT Sales Representative

Date

Sourcewell
Contract #030117-CXT

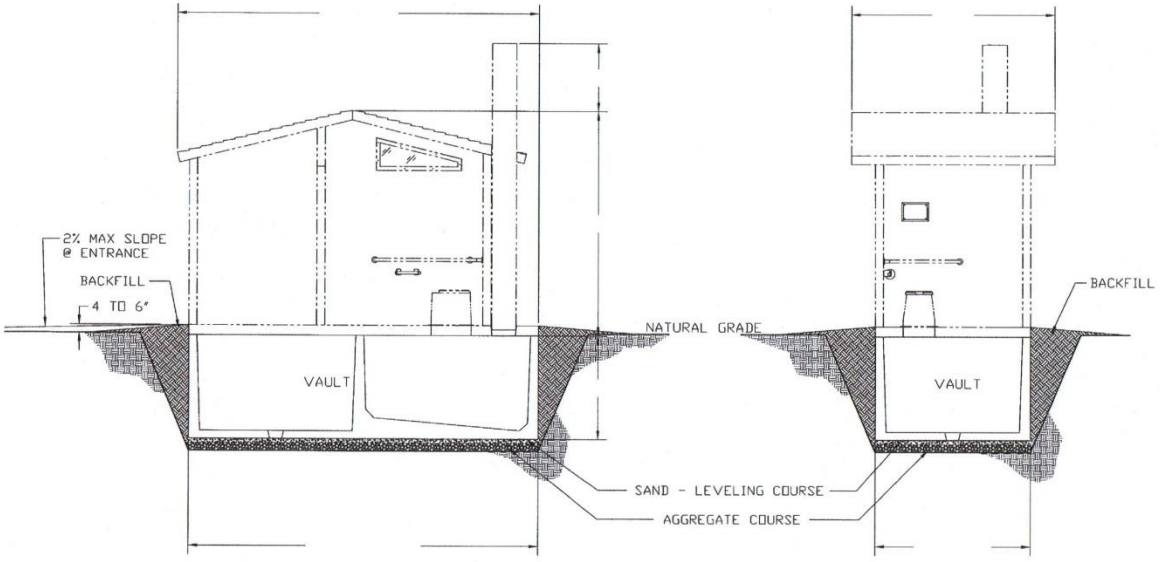
I accept this quote. Please process this order.

NJPA Member Number

Company Name

Customer

Date



SIDE EVLEVATION

END ELEVATION

CXT

Precast Products Division

PROJECT TITLE

VAULT DETAIL

CXT STANDARD BUILDING

NOTICE

REV.	DESCRIPTION	APPROVAL	DATE

SCALE	1/4"=1'-0"	DATE	5/30/02
DRAWN	J COOK	FILE NO.	
CHECKED		PLOT	48

VAULT INSTALLATION

DWG NO.	SHEET	REV.
	1 / 1	

ITEM #7

COLORADO
Hazardous Materials
& Waste Management Division
Department of Public Health & Environment

Memorandum

To: Colorado Natural Resource Trustees
From: Jennifer Talbert
RE: West Creek NRD Update for Dec 2020 Trustee Meeting
Date: November 19, 2020

BACKGROUND

On January 25, 2013, approximately 30 miles southwest of Grand Junction, Colorado, a tanker truck slid off Highway 141, flipped over the guardrail, and rolled down a steep embankment coming to rest on the bank of West Creek. The truck released approximately 6,000 gallons of gasoline and approximately 2,000 gallons of diesel into West Creek about 10 miles upstream from the confluence of West Creek and the Dolores River. The tanker caught on fire which spread to the product in the creek causing the creek to also catch fire. This incident resulted in injuries to natural resources including fish, riparian habitat and recreational uses. In 2015, the Colorado and Federal Trustees settled the natural resource damage claim for $97,550.00.

In December 2017, the State and Federal Trustees approved three projects to restore the natural resources injured. The first project improves fisherman access to West Creek through the installment of two fence stiles adjacent to West Creek. The second project improves fish habitat and increases habitat diversity within three different river segments of the Dolores River by restoring floodplain connectivity. The third project, which uses $32,500.00 in funding through the DOI Restoration Catalyst Fund, is the management of tamarisk and other invasive, non-native species through removal and treatment of tamarisk, Russian knapweed, and white top within 44 acres along the Dolores River on privately owned lands.

UPDATE

All NEPA requirements have been met and the USFWS secured all necessary funding for the three projects. DOI is the agency implementing all three projects with assistance from CPW, when necessary. With respect to the first project, the fence stiles have been built but have not been installed due to limited staff and recent COVID delays. The installation of the fence styles is anticipated in summer 2021. The second project is part of a multistate project with Utah and Colorado. Access to the Colorado segments have been granted and construction work began in October and is expected to continue during periods of low flow (fall, winter and early spring) throughout the upcoming year. The third project is part of a larger area-wide effort being conducted by the Dolores River Restoration Partnership in collaboration with private landowners and stakeholders. Site access is still being obtained to conduct the invasive species management on the entire 44 acres identified as part of one mobilization effort.