Memorandum

To: Therese Thompson, Western Native Trout Initiative

From: Leslie Steen, Trout Unlimited

Re: Final Report – River Bend Ranch Restoration and Passage Project Phase 2

Date: December 29, 2023

Project Description:

The River Bend Ranch Restoration and Passage Project Phase 2 was a multi-year, collaborative effort to improve habitat and passage for native Snake River cutthroat trout; stream, floodplain and riparian function; and bank and channel stability on the upper Hoback River outside of Bondurant, Wyoming. The project is located on a mix of working cattle ranch, bison ranch, and Bridger-Teton National Forest (BTNF) lands and is the site of the Wyoming Game and Fish Department's (WGFD) McNeel elk feedground and a Jackson Hole Land Trust conservation easement. Habitat degradation as a result of instream disturbances from two gravel push-up dams were addressed through the project's first phase in 2018-2019 through the installation of a fish passage-friendly rock diversion and headgate structure at a stable location. The project's second phase addressed the entire 2.5 mile river corridor from the new diversion to the Highway 191 bridge through an innovative approach that works with the river's ecological processes. Together, these improvements will over time benefit fish habitat, fish passage, stream stability, and agricultural operations in one of the most degraded sections of the Hoback River.

Project Goals and Objectives:

The goals of the River Bend Ranch Restoration and Passage Project Phase 2 were to restore stream and floodplain function on 2.5 miles of the upper Hoback River to improve habitat and connectivity for all life stages of Snake River cutthroat trout, re-establish a thriving riparian zone, promote bank and channel stability, and reduce erosion and land loss.

The project's objectives were to:

1) improve habitat quality and diversity and connectivity for all life stages of Snake River cutthroat trout;
2) re-establish the woody riparian vegetation community of cottonwoods and willows through floodplain revegetation units and riparian fencing treatments;
3) increase bank and channel stability and reduce risk to infrastructure through vegetated brush bank treatments at identified high-risk areas; and
4) improve water quality by reducing downstream sedimentation from erosion.

Project Budget and Matching Contributions:

Project Expenditures

Cash Expenses	Total
Contractor Expense: Design, Engineering, and Construction Oversight	$89,399
Contractor Expense: Excavation and Brush Bank Structures	$197,127
Materials: Materials Procurement and Hauling	$257,947
Contractor Expense and Materials: Fencing Contract and Materials	$81,698
Contractor Expense: Montana Conservation Corps and Other Work Crews	$43,938
Other: RFP Advertising, Reclamation Seed, Etc.	$2,531
Other: TU Indirect	$43,102
Cash Subtotal	**$715,742**
In-Kind Expenses	
TU and Partner Staff Expenses: In-Kind	$33,075
In-Kind Subtotal	**$33,075**
Total	**$748,817**

Partner Contributions - $769,335 Total Cash and In-Kind

Partner	Cash	In-Kind
Bridger-Teton National Forest	$500	$11,250
Jackson Hole One Fly	$32,000	
Jackson Hole Trout Unlimited	$52,660	$3,000
Ricketts Conservation Foundation	$100,000	$2,100
River Bend Ranch		$2,100
Rocky Mountain Elk Foundation	$7,500	
Trout Unlimited Embrace-A-Stream	$4,500	
Trout Unlimited Private Fundraising	$20,000	$5,625
US Forest Service - TU Keystone Agreement	$167,345	
Water for Wildlife Foundation	$10,000	
Wyoming Game and Fish Department	$101,755	$9,000
Wyoming Landscape Conservation Initiative	$25,000	
Western Native Trout Initiative	$40,000	
Wyoming Governor's Big Game License Coalition	$5,000	
Wyoming Water Development Commission	$35,000	
Wyoming Wildlife and Natural Resources Trust	$135,000	
Total	**$736,260**	**$33,075**

- WNTI funding was spent as follows: $35,137 in construction contractor expenses and $4,863 in TU indirect expenses.

- Note that there is a balance of $20,518 remaining for anticipated 2024 expenses including excavation contractor costs for finishing the 140 feet of brush bank treatment and fencing contractor costs for putting wire fencing on the remaining floodplain revegetation fencing units.

Project Outcomes:

Project implementation was completed in 2023 by Trout Unlimited and key technical partners including the Wyoming Game and Fish Department (WGFD) and Bridger-Teton National Forest (BTNF), who provided in-kind staff support for project planning, permitting, design review, and monitoring. River Design Group, Inc. of Whitefish, MT provided final design plans, engineering, and construction oversight. Aqua Terra Restoration of Driggs, ID was the excavation contractor, and Swift Creek Fence of Farson, WY was the fencing contractor. Materials were sourced from Ross Howard of LaBarge, WY, the Bridger-Teton National Forest, and on-site.

The project's goals and objectives were successfully met. The project addressed the major sources of stream instability in the 2.5 mile upper Hoback River project reach through the installation of floodplain revegetation units and bioengineered brush banks. As cottonwoods and willows become re-established and take root, the health of the riparian zone and stream and floodplain function will continue to increase and provide better habitat quality and diversity for Snake River cutthroat trout. The brush bank structures (and associated willow trench and floodplain roughness treatments), strategically located along the margins of the river's braidplain in key locations, will also provide improved habitat for native fish, reduced risk to existing infrastructure (including the WGFD McNeel elk feedground and private homes and fences), increased bank and channel stability, and reduced erosion and land loss. These benefits are also expected to increase over time as riparian vegetation becomes established and the river has a chance to create scour pools and undercut banks.

Milestones, Challenges, and Accomplishments:

- A monitoring plan with WGFD was developed and pre-project monitoring completed in summer 2023. Post-project monitoring is in progress. An adaptive management plan was developed for the project by River Design Group (project engineer), and will be referenced alongside the monitoring plan to evaluate the success of the project into the future.
- Materials procurement began in summer 2023 and was completed in fall 2023. The project required an immense amount of materials to build the brush bank structures – 2,194 medium logs with rootwads, 6,632 small logs, 14,191 pieces of brush, and 26,325 willow cuttings. At the outset of the summer, logs had been sourced from the Hoback Rim close to the project area and brush had been sourced from a BTNF forest thinning unit in the LaBarge Creek drainage. Unfortunately, by late summer, we were informed that the logs were now being sourced from the Middle Piney area, therefore requiring much more hauling time and associated cost, in addition to being more time consuming to harvest. Also, we were informed that only about 3,000 pieces of brush were able to be staged by a BTNF fire crew before they had to leave for fire assignments. In addition, we contracted several Montana Conservation Crew hitches, with the intent of having them work on cutting willows and installing fencing as time allowed. Due to several factors on their end, they did not cut as many willows as anticipated, and did not have any remaining time to install fencing. As a result of all of the above materials sourcing issues, a lot of time and effort was spent throughout the fall to line up new sources of brush as well as additional funding to cover the unexpected additional hauling costs. While we were ultimately

successful in addressing both needs, this led to ripple effects in terms of staff and volunteer bandwidth and a few tasks remaining for 2024 (further described below).

- Construction mobilization and implementation for earthwork and brush bank structures began in early October 2023 and was completed by November 2023. A total of 4,387 feet of brush bank structures, 878 feet of willow trenches, and 1.01 acre of floodplain roughness treatments will have been installed when the final 140 feet are completed in 2024.
- T-posts for 67 floodplain revegetation units were staked out and installed in September 2023. Wire fencing was installed on 26 of the 67 revegetation units in December 2023. In previous years, 11 units were installed in 2020, 10 units were installed in 2021, and 20 units were installed in 2022. A total of 108 units will have been installed when the remaining units are finished in 2024. A couple of notable adjustments to the original fencing plan for the project were made. The first is that the riparian fencing planned for cattle exclusion at the lower end of the project area was determined to be unnecessary after speaking with the River Bend Ranch manager, who pledged to not graze the riparian pasture in question. The second is that the Jackson Fork Ranch installed new bison fence on an 11-acre section at the upper end of the project area to further encourage floodplain and riparian vegetation growth.
- Partners and volunteers assisted with several aspects of the project implementation, making significant contributions to the floodplain revegetation unit fencing in prior years and willow harvesting and staging in 2023. A total of 8 work days were held over the course of the project from 2020 – 2023 (2 in 2023).
- A press release was distributed to regional newspapers and posted online at TU.org, and was covered as follows:
    - An article on Buckrail.com, an online news source based in Jackson, WY. 11/21/23.
    - An article in the Pinedale Roundup newspaper based in Pinedale, WY. 11/20/23.
- A few tasks remain for 2024 in order for the project to be 100% complete. About 140 feet (of the 4,387 feet total) of brush bank treatment located on BTNF land was not able to be completed before the construction window specified in the Forest's Decision Memo closed on October 15th. In addition, although t-posts were drilled for 67 floodplain revegetation units, fencing was only installed on 26 of the 67 units due to the end of the volunteer season and onset of winter.

Project Photos:

Photo 1: The Upper Hoback river is an actively anastomosing channel, with a naturally wide braid-plain that has become more dynamic and erosive due to the removal of riparian vegetation from land management practices and elk feeding.

Photo 2. Bioengineered brush bank structures using a combination of medium logs with rootwads, small logs, brush, and willows were installed from October-November 2023.

Photo 3. A representative example of a completed brush bank structure with floodplain roughness treatment. In total, 4,247 linear feet of brush bank were installed in 2023 (140 feet remain for 2024).

Photo 4. Excavators work to place logs with rootwads into a brush bank structure.

Photo 5. Volunteers from Jackson Hole Trout Unlimited help to harvest willows in October 2023.

Photo 6. Floodplain revegetation fencing units being completed in December 2023. Fencing units were sited around existing cottonwoods and willows. Once protected from grazing and browsing, they are expected to mature and root, and provide stability and habitat complexity. A total of 26 units were fully installed in 2023, with an additional 41 planned to be completed next year.

Photo Set 7. High, eroding outside banks lacking floodplain connectivity (above); brush bank structure with floodplain bench and floodplain roughness treatment (below).

Photo Set 8. Eroding bank along pasture with little vegetative protection (above); brush bank structure (below). Brush banks along outside bends are expected to create good undercut bank habitat for trout.

Photo Set 9. Steep eroding bank with poor fish habitat (above), regraded bank with logs with rootwads, brush, and willows (below).