



December 1, 2023

To: Ben Wade, Colorado Water Conservation Board (CWCB)

From: The Watershed Center (formerly Lefthand Watershed Oversight Group)

RE: CWCB WSRF Grant – Fish Passage & Education on Left Hand Creek Final Report (POGG1 2019-2468)

The purpose of this memo is to provide a final report on activities related to The Watershed Center’s Fish Passage & Education on Left Hand Creek project. The project timeline is 11/09/2018 – 11/09/2023 and the total project budget is \$99,165 with \$25,000 from CWCB SPBRT account and \$25,000 from the CWCB statewide account).

1. Project Summary and How the Project Was Completed

Over the last four years, Fish Passage and Education on Left Hand Creek has been foundational to The Watershed Center’s success towards 1. Identifying and implementing on-the-grounds solutions for restoring stream connectivity in Left Hand Creek while meeting the needs of diverse interest groups such as water managers and 2. Implementing a multi-media educational initiative focused on the significance of ditch systems and fish populations, and realities and complexities of a “working river.” Through this project, The Watershed Center conducted work under two main tasks: Fish Passage and Feasibility Study and Education and Outreach. Figure 1. Below summarizes project components for each of these tasks.

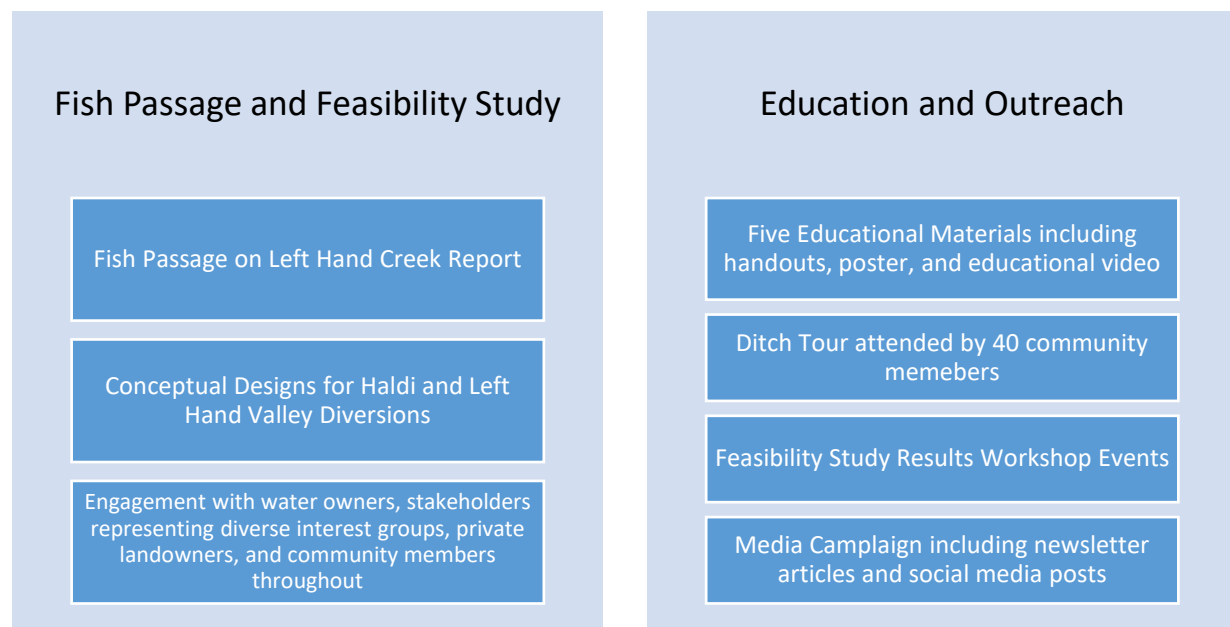


Figure 1 shows the two key steps and associated deliverables involved in this project. Each deliverable is discussed in more detail within this report.



2. Deliverables, Obstacles, and Lessons Learned

On the following pages, Table 1 describes each project deliverable and associated accomplishments, obstacles, and lessons learned across the project.

Deliverable	Accomplishments	Obstacles	Lessons Learned (Solutions to obstacles)
Task 1 - Fish Passage and Feasibility Study			
Fish Passage Feasibility Report <ul style="list-style-type: none"> Left Hand Creek Fish Passage Report Report Supporting Data 	<p>- A report that consolidates the fish passage and feasibility study on Left Hand Creek including summary of existing information about fish and ditches, summary and outcomes of the biological and passage (barriers) assessments, evaluation of needs for fish and water managers, and assessment of opportunities including prioritized project list.</p> <p>- Engaged multiple interest groups in feasibility study assessments and in report development (see acknowledgements in report), conducted outreach to community members at public events.</p>	<ol style="list-style-type: none"> Geographic scope of the feasibility study Identified data gaps in historic Colorado Parks and Wildlife database. 	<ol style="list-style-type: none"> Worked with City of Longmont to increase the geographic scope of the project to include reaches east of highway 119. With this inclusion, the feasibility study was more comprehensive as it included the entirety of Left Hand Creek. Worked with Colorado Parks and Wildlife to identify additional sampling locations for the biological assessment and collected additional biological data from six locations on Left Hand Creek to increase the comprehensiveness of the feasibility study.
Conceptual Designs for Haldi and Left Hand Valley Diversions	<p>- Developed two conceptual alternatives for two priority barriers (Haldi and Left Hand Valley Diversion) that considered existing conditions, constraints and opportunities, water management, stakeholder, and private landowner perspectives, and considerations for permitting and construction cost estimates.</p> <p>- Collaboration throughout the feasibility study and conceptual design development identified the need for a “Passage Playbook” to guide future passage projects and created momentum for stakeholders including St. Vrain and Left Hand Water Conservancy District, City of Longmont, and Boulder County to collaborate and develop the Playbook.</p>	<ol style="list-style-type: none"> Operations and management constraints at the Left Hand Valley limited opportunities for work in the diversion footprint. The Left Hand Ditch Company raised concerns about roles and responsibilities with future maintenance and operations associated with proposed designs. 	<ol style="list-style-type: none"> In order to identify design opportunities given the constraints at Left Hand Valley, the design and stakeholder group invested more time in understanding existing conditions and conducted a flow study. Ultimately, the design team and stakeholders developed an “out-of-the-box” concept alternative that incorporated reach-scale river restoration features that could address some of the management requirements (constraints) at the diversion structure and then allow for more diversion enhancement opportunities for fish passage. These concerns emphasized the need for a plan to develop an agreement for maintenance and operations as a next step of the project. To begin this process, we worked with local stakeholders including Boulder County, City of Longmont, and St. Vrain and Left Hand Water Conservancy District to develop a Passage Playbook as guidance for relationship-building and addressing operation and maintenance for Passage projects.



Task 2 - Education and Outreach			
Educational Materials <ul style="list-style-type: none"> • Science Bulletin • Restoration Project Features and Benefits • Educational Poster • Ditch Map • Fish and Ditches Video (minor edits in progress) 	<ul style="list-style-type: none"> - Created materials that addressed community knowledge gaps by working with diverse partners, community members, and water users. - Developed a wide range of educational materials on identified topics including ditch operations, fish passage, fish ecology and habitat, and the “working river” aspects of Left Hand Creek. - Created engaging materials that were illustrative and visually robust by working with graphic designers and other professionals. 	<ol style="list-style-type: none"> 1. COVID restricted in-person and group events 2. We found that there are varying levels of understanding about ditches and fish in our watershed which made it challenging to develop materials and content across audiences with varying ditch and fish literacy. 	<ol style="list-style-type: none"> 1. We modified how we presented materials and shifted timelines. For example, many of our educational materials are viewable online and shared through online platforms, or we waited to share materials in person when COVID risk was lower. 2. To better understand what materials would be most beneficial in our watershed, we collected survey data on knowledge gaps and interests from members in the community and tailored educational materials based on survey results.
Ditch Tour (Event Flyer)	<ul style="list-style-type: none"> - Engaged 40 community members in a Farm and Ditch Bike Tour to educate and engage community members on the importance of ditch operations. - Built collaboration among diverse interest groups to lead the tour, including Colorado Ag. Water Alliance, Colorado Cattleman’s Association, Longmont and Boulder Valley Conservation District, and St. Vrain and Left Hand Water Conservancy District. 	<ol style="list-style-type: none"> 1. COVID restricted in-person and group events. 	<ol style="list-style-type: none"> 1. Worked with partners to postpone tour to a time when COVID risk was lower and we could host more people. - This event was limited to outdoor components to allow for social distancing, and attendees were limited to 40 in number to ensure that all could hear and participate while distancing.
Fish Feasibility Results Workshop	<ul style="list-style-type: none"> - Integrated fish passage feasibility results workshop into series of workshops/presentations to emphasize how water management priorities are connected with river and forest restoration, climate adaptation, and project prioritization. - Achieved broader audience and feedback from stakeholders such as Boulder County, City of Longmont, CWCB, St. Vrain and Left Hand Water Conservancy District, Left Hand Ditch Company, Colorado Parks and Wildlife, USFS, Trout Unlimited, Mile High Flood District, City of Boulder, and community through a public webinar. 	<ol style="list-style-type: none"> 1. COVID restricted in-person and group events to host workshop. 	<ol style="list-style-type: none"> 1. Since we were limited by COVID restrictions to host a large group workshop, we incorporated the Feasibility Study Results and key project stakeholders in our existing St. Vrain Basin Annual Collaborative Meeting to discuss the study and results. We also conducted a series of virtual meetings with local agency and organizational partners to discuss results and takeaways as well as to the community through a public webinar.



Digital and Social Media Campaign <ul style="list-style-type: none">• Working Rivers post• Conference Presentation story• Ditch Tour posts• April 2020 Newsletter• April 2019 Newsletter	<p>-Utilized The Watershed Center’s digital and social media platforms to share information related to the project and widely disperse educational materials developed as part of this project.</p> <p>- Advertised educational materials and project information to a combined social media audience of over 1,600 community members.</p> <p>- Sent newsletters and bulletins to an email audience of ~600.</p>	<p>1. Reaching audiences outside of those who already support and engage with our organization and water-related issues</p>	<p>1. We presented the project at the Sustaining Watershed Conference to engage a broader audience of scientists, practitioners, agencies, and environmental organizations from across Colorado. Organizations who attended that conference connected us with their communities, and we were able to reach more audiences through those connections. As a result, engagement efforts have resulted in over 300 new community members signing up for our mailing list. We have also increased our following audiences on Facebook and Instagram. In addition, we used multiple forms of media outreach and covered multiple topics to reach and engage a broader audience.</p>
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3. Confirmation of Matching Commitments

Below we provide a confirmation that all matching commitments have been fulfilled.

Task	Funding Source	Revenue	Expense	Status
Task 1 – Fish Passage and Feasibility Study	DOLA CDBG-DR Legacy Grant	\$17,772.40	\$17,772.40	Complete as of 2020
	St. Vrain and Left Hand Water Conservancy District, City of Longmont, and Boulder County	\$14,440.00	\$14,440.00	Complete as of 2022
	Left Hand Ditch Company	\$1,953.00	\$1,953.00	Complete as of 2022
Task 2 – Education and Outreach	St. Vrain and Left Hand Water Conservancy District Donation and Landowner Donations	\$3,091.23	3,091.23	Complete as of 2018
	Ditch Tour Participant Fee	\$1,000.00	\$1,000.00	Complete as of 2021
TOTAL		\$27,873.47	\$27,873.47	

4. Summary of Key Deliverables

Task 1 – Fish Passage Feasibility Study

- Fish Passage Feasibility Report:
 - Left Hand Creek Fish Passage Report: <https://watershed.center/wp-content/uploads/2021/08/Left-Hand-Fish-Passage-Report.pdf>
 - Report Supporting Data: https://lhwatershed-my.sharepoint.com/:f/g/personal/dhummel_watershed_center/Ej7CetUxhbRApm_QRgB-GbYBtydbVy63NO-3RY2H5GgzJw?e=tDdmoH
- Haldi and Left Hand Valley Diversion Concept Designs: <https://watershed.center/wp-content/uploads/2022/05/2022-5-11-Final-Concept-Designs-for-Website.pdf>

Task 2 – Education and Outreach

- Educational Materials
 - Science Bulletin: <https://watershed.center/wp-content/uploads/2021/06/June-2021-Science-Bulletin.pdf>
 - Restoration Project Features and Benefits: https://watershed.center/wp-content/uploads/2023/11/Climate-Adapted_Features-and-Benefits_COMBINED.pdf
 - Educational Poster: https://watershed.center/wp-content/uploads/2023/11/2022-Sustaining-Colorado-Watersheds_Hummel-Final.pdf
 - Ditch Map: https://watershed.center/wp-content/uploads/2022/01/2022-2-28-Maps-Compiled_For-Website.pdf



- Fish and Ditches Video (minor edits in progress- we will send an updated report with final version):
<https://vimeo.com/abraxasmediacompany/review/889278207/d6ef34549b>
- Ditch Tour (event flyer): <https://watershed.center/wp-content/uploads/2023/11/Boulder-Tour-de-Farms-flyer.pdf>
- Digital and Social Media Campaign
 - Working Rivers post: <https://watershed.center/wp-content/uploads/2022/05/Working-Rivers.pdf>
 - Conference Presentation story: <https://watershed.center/wp-content/uploads/2022/11/2022-Conference.jpg>
 - Ditch Tour posts: <https://watershed.center/wp-content/uploads/2023/11/Media-Posts.pdf>
 - April 2020 Newsletter: <https://watershed.center/wp-content/uploads/2023/11/April-2020-Newsletter-Fish-and-Passage.pdf>
 - April 2019 Newsletter: <https://watershed.center/wp-content/uploads/2023/11/April-2019-Newsletter-A-Working-River.pdf>