

Stauffer Creek Project

DEQ NPS Sub-Grant S528

Final Report

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Lower end of Stauffer Creek just upstream from new crossing

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In Cooperation with:

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Idaho Soil and Water Conservation Commission

Idaho Department of Environmental Quality

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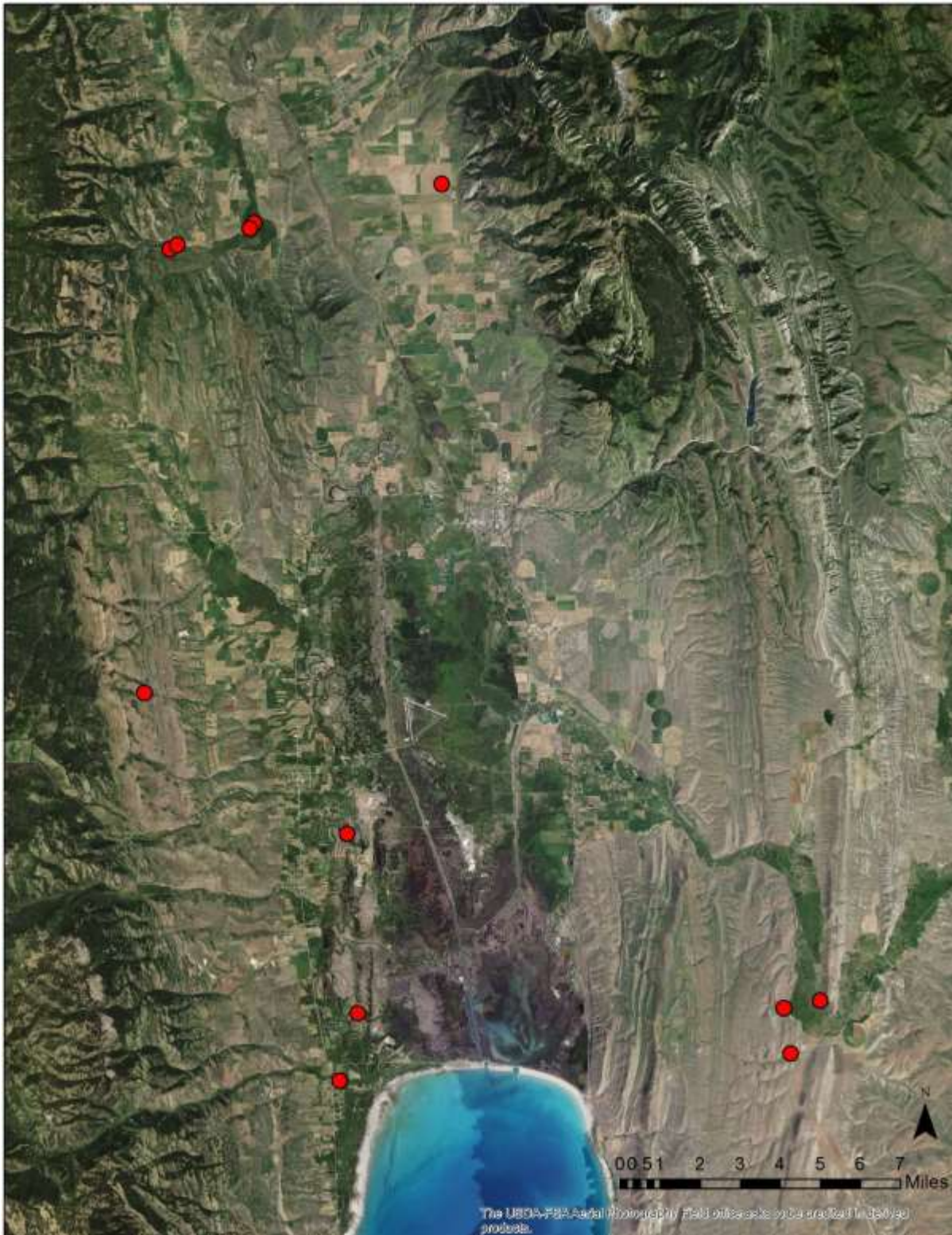
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Abbreviations

Idaho Soil and Water Conservation Commission - ISWCC
Conservation Basics LLC-CBLLC
USDA Natural Resources Conservation Service - NRCS
Idaho Department of Environmental Quality - IDEQ
Environmental Protection Agency – EPA
Total Maximum Daily Load – TMDL
Hydrologic Unit Code - HUC
Best Management Practices – BMPs
Stream Evaluation Control Indicator-SECI
Stream Visual Assessment Protocol- SVAP
Bonneville Cutthroat Trout-BCT

Stauffer Creek Project §319

DEQ NPS Sub-Grant S528-Project Location Map



Stauffer Creek Project Project Map 2017



Project Overview

The idea for the Stauffer Creek Project arose when two landowners, whose properties sit in the upper portion and lower portions of Stauffer Creek respectively, approached the Bear Lake Soil and Water Conservation District (SWCD) about improving two (2) stream crossings, irrigation methods from flood to sprinkler, and diversion structures. Flood irrigation allowed for entrapment of Bonneville Cutthroat Trout at the upper diversion structures which were not passable. The landowner would pile up rocks and tarps to divert water across his meadows. Also, a wide crossing was developed at the lower end of the upper landowners property. The landowner had installed a large rock diversion to shallow up the crossing. The lower landowner had been using large 3x4 (1800 Lbs.) bales and tarps to divert water at his project site, these were also impassable for fish when in use. The landowner had installed culverts historically which were not large enough to carry spring flows and they had washed out repeatedly, making the crossing wide and impassable. The project focused on sites located on St. Charles Creek, two unnamed tributaries, and Main Stem of the Bear River, working with 3 landowners. These other landowners wanted to install off-stream watering facilities, riparian fencing, stream crossings, a telemetry station for irrigation records, and wanted to spray 75 acres of noxious weeds.

Photo 1. This Photo shows an unnamed spring creek, east of St. Charles, Idaho (tributary to St. Charles Creek) with newly installed riparian fencing directly below an animal feeding operation, SC Photos.



The Bear Lake SWCD voted in the spring of 2014 to work toward improving fish passage in Stauffer Creek by removing a large rock dam at a stream crossing by working with Idaho Department of Fish and Game to install a large oversized culvert. The project would also focus on improving an irrigation system to eliminate the need to check up the stream in three other locations. When the original landowner experienced some financial

hardships, the Bear Lake SWCD petitioned IDEQ to use money in a few other areas in Bear Lake County to improve water quality and sensitive riparian areas.

Photo 2. Allan Johnson, ISWCC, and Brett Oxborrow (Landowner) walk across a flood irrigated meadow, SC Photos.



The Stauffer Creek Project worked to reduce the chance of Bonneville Cutthroat Trout (BCT) being stranded in irrigation ditches like the ones pictured above. The project also worked to remove barriers for BCT trying to move upstream to spawn. The Photo below shows a Bonneville Cutthroat Trout which the landowner found stranded in his meadow.

Photo 3. A young Bonneville Cutthroat Trout found Stranded in an irrigation ditch adjacent to Stauffer Creek, SC Photos.



Stauffer Creek Project

Photo 3-This photo shows an old rock diversion structure before implementation, SC Photos.



The goals of the Stauffer Creek Project were to remove barriers for spawning BCT, improve irrigation methods for landowners, protect sensitive riparian areas with fencing, and improve stream crossings that were also troublesome and served as barriers for BCT. The Stauffer Creek Project also worked to reduce sediment by:

- Removing fish migration barriers in Stauffer Creek, Paris Creek, St Charles Creek and two other unnamed tributaries to the Bear River.
- Eliminate the need for continued instream work at diversion locations.
- Stabilize the channel and streambank below old diversion points and newly installed diversion points, by utilizing toe rock and willows.
- Improve stream crossings by installing oversized culverts and providing fish passageways near on-stream diversions.
- Protect sensitive riparian areas and a large spring by installing permanent riparian fence.
- Improve irrigation efficiencies for landowners through the installation irrigation mainline, and 1 telemetry station.

Photo 4. This Photo shows a newly installed riparian fence on an unnamed tributary to St. Charles Creek, SC Photos.



Stauffer Creek, Parris Creek, and St Charles Creek have HIGH priority rankings for sediment. These projects are in the Tier 1 category for treatment units in the Bear Lake TMDL Agricultural Implementation Plan (ISCC, 2008).

Background

The decline of BCT populations and habitat in the western United States is well documented. These declines have led to BCT being considered as a potential candidate for federal listing and protections under the Endangered Species Act (ESA). Not only does the Stauffer Creek Project provide an ideal opportunity to support BCT conservation efforts in the Bear River Basin, it supports the following criteria which are not only part of Bear Lake SWCD's five-year plan and goals, but it adheres to the agendas of our participating partners as well.

Protect

- Native trout watersheds
- Stream habitat and riparian zones

Restore

- Native trout
- Riparian habitat and water quality

Sustain

- Trout fisheries through land conservancy

-Education and outreach

Conservation Impact

Southeast Idaho represents some of the last remaining critical habitat for BCT, and improving diversion structures, increasing riparian vegetation, and reducing erosion and the transport of Total Suspended Sediments provides increased spawning opportunities for fluvial Bear River adults and works toward restoring resident populations in Stauffer Creek, Paris Creek, St. Charles Creek and other tributaries within the Bear River Basin. Improvements in riparian habitat and water quality benefit not only the streams within the focus of this project, but the entire Bear River Basin.

Other projects which have been completed or that are expected to be implemented are listed below:

Completed-

PBJ Diversion Project

Georgetown SRF

Dingle CAFO

Martin Mast River Stabilization

Ongoing-

Thomas Fork AFOs

Future or anticipated projects-

Bear Lake SWCD Diversions and Streambank Stabilization Project

Organizational Structure

The Bear Lake SWCD is comprised of five locally elected board supervisors who serve on a voluntary basis. There is one, part time district employee who is non-voting and serves in an advisory capacity. Technical assistance for this grant was provided by Conservation Basics LLC., and the Idaho Soil and Water Conservation Commission.

The Bear Lake SWCD set a goal to implement BMPs within the Bear River Basin, as part of their five-year plan established in 2014. The District wanted to address animal feeding operations, overgrazed range and pasture issues, riparian degradation, fish barriers, and sediment inputs to the Bear River and its tributaries.

The Bear Lake SWCD would like to continue the work in the upper Bear River Basin with other water quality projects and they are actively seeking funding sources to be able to accomplish those efforts. Bear Lake SWCD values voluntary conservation and believes it is the vehicle of success when it comes to putting conservation on the ground.

Accomplishments

The Stauffer Creek Project saw the implementation of: Two (2) Diversion Structures, one (1) with fish passage, one (1) telemetry station, 4,609 feet of riparian fencing, three (3) stream crossings, one (1) sump well, 5,608 feet of pipe, three (3) troughs, 2,568 feet of irrigation mainline, and approximately 70 feet of streambank stabilization including toe rock. The project also installed 1 scour pool for instream stability.

Cumulative Load Reductions

A Stream Erosion Control Inventory (SECI) was completed in the fall of 2017. The 2017 inventory estimates showed the Stauffer Creek Project will reduce sediment loading in Stauffer Creek, St. Charles Creek, Paris Creek and two unnamed tributaries by approximately 128 tons/year.

Cumulative Total Suspended Sediments, Nitrogen and Phosphorous reductions:

Contract Number	Nitrogen Reduction (lbs./yr.)	Phosphorous Reduction (lbs./yr.)	Total Suspended Sediment (Tons/yr.)
SC-14001	900	208	9
SC-14-002	499	300	30
SC14-003	N/A	N/A	N/A
SC14-004	400	138	23
SC14-005	391	206	52
Total Cumulative Savings	2190 Lbs./Year	762 Lbs./Year	128 Tons/Year

** The calculations for the inorganic nitrogen and phosphorous were taken from the Nutrient Management Manure Calculation Sheet from the Department of Agriculture.*

Monitoring

Monitoring of the Stauffer Creek Project consisted of two parts; photo points, and BMP Effectiveness Monitoring. Monitoring took place through the help of ISWCC technical assistance, ISWCC Engineer, and the Project Coordinator.

Photo Points

Photo points were established to show the progress of each BMP before, during, and after installation. These photo points will also be used to track the condition of the BMPs throughout the life span of each project. Photos will also be used in this final report document, as well as, in future presentations about this project to showcase to other landowners who might be interested in participating in future 319 projects, what type of projects can be done to not only improve the environment. The photos shared in this document captured the great work which has taken place through this concerted effort to improve water quality in Stauffer Creek, Paris

Creek, St. Charles Creek and the Bear River. Photos were taken extensively during the entire project. These photos will be used to show the before, during, and after aspects of the project.

Photo 5. Two troughs installed to reduce livestock impacts to sensitive riparian area, SC Photos.



Tours & Outreach

The Bear Lake board sponsored a tour of the Stauffer Creek §319 project in September of 2015. Those in attendance for the tour included Bear Lake County Commissioners, Idaho State Senator Mark Harris, Bear Lake Regional Commission, Highlands CWMA, Natural Resources Conservation Service, and several local and neighboring landowners, conservation districts supervisors, and Bear River Basin Advisory Group members. The tour was held to increase awareness of the DEQ NPS §319 program, and to showcase the water quality work that could be accomplished with this funding.

Financial Summary

319 Payment	Match Amount	Description
\$119,037.75	\$135,005.42	BMP installation
\$1,040.00	\$855	Outreach
\$14,951.70	\$5,544.31	Reporting
\$135,029.45	\$144,404.73	Total \$276,434.18

The original project budget anticipated another \$51,331.75 of 319 Grant funds to be spent on the ground. Two of the participating landowners had set backs which enabled them from completing portions of their respective projects. The work the landowners performed was evaluated and projected to be the most important in regard to water quality and protection of BCT. The first landowner experienced financial hardship and was not able to complete everything he originally wanted too. The second landowner had two sets of 3x3 Alfalfa hay bales fall on him. He broke his back, pelvis front and back, his hip, and severely dislocated his ankle. Although he had severe injuries, he was able to recover and complete a large portion of his project, but not everything he originally wanted too. The Bear Lake SWCD was disappointed to not be able to spend all of the monies available in the grant, but considering the circumstances they are pleased with the work which was completed.

Conclusions

The Stauffer Creek Project has been successful in its focus to improve BCT habitat, remove barriers, and to improve irrigation efficiencies. The project improved riparian habitat through the installation of fencing to reduce livestock impacts in those sensitive areas. This project worked with 5 willing landowners to implement best management practices which not only improved and protected natural resources, but that also improved the participating landowner's operations as well.

One major hurdle the project had to endure was when one of the participating landowners had several large bales of hay fall on him breaking several bones including vertebrae in his back. This slowed his progress on his project, and at one point even seemed like it might completely derail his portion. However, he recovered and was determined to work hard and complete his project. While he wasn't able to complete everything that he originally planned on implementing, he did focus on and complete the most important BMPs. His water system will draw livestock away from the stream and improve grazing management. Also, the fences which he had installed will also provide protections to sensitive riparian areas.

The 319 program has gained traction in southeast Idaho, mainly because of the success landowners have had through participating in the program, and then in-turn talking with their neighbors about the program. The enthusiasm of the participants in completing their projects on time, the hard work of the project coordinator, and the dedication of the engineer helped to make sure project was completed in a timely matter.

Acknowledgements

Current Bear Lake SWCD Board Members Jennifer Jenson, James Hardcastle, Mark Parker, Todd Lloyd, and Devon Boehme wish to thank the project participants, and cooperating agencies, cities, and Bear Lake County for their assistance and hard work enabling the design, implementation and completion of the Stauffer Creek Project.

The willingness of the participants to undertake these projects allowed for a great deal of work to be accomplished in the watershed over the past two years. Thanks to Dave Pisarski, Tim Wendland, Lynn Van Every, Steven Smith, and Charlie Parkins of IDEQ for their support and assistance.

The Bear Lake Soil and Water Conservation District sends many thanks to Chris Banks, project coordinator of Conservation Basics, LLC. The Bear Lake SWCD wishes to thank Larry Mickelsen, Bear Lake County District Conservationist, our invaluable NRCS partner. Finally, The Bear Lake SWCD would like to thank Allan Johnson (ISWCC Staff Engineer). Allan inspected, designed, worked with the project coordinator and the contractors to ensure the diversion structures, water system, stream crossings, and the streambank stabilization BMPs were installed correctly. Allan, is a very important part of the conservation team in Southeast Idaho.

Photo Documentation of BMPS as they were installed



These photos show a the before and after of an unnamed tributary which was fenced to protect the sensitive riparian area. Above, is the stream before fence was installed and below is after the fence had been installed, SC Photos.





The above photo shows a crossing before implementation on Stauffer Creek. A rock diversion was made to allow vehicles to cross the creek. The photo below shows an oversized culvert installed to remove the rock barrier, and to provide a way to cross the stream without having to be in it, SC Photos.





Both of these photos show riparian exclusion fences which were installed to reduce livestock impacts and protect streambank stability. The above photo shows an unnamed tributary to St. Charles Creek. The Lower photo shows the “big arm” of St. Charles Creek, SC Photos.





The above photo shows more of the installed riparian fence along the “big arm” of St. Charles Creek. The lower photo shows Steven Smith (IDEQ) inspecting a spring exclusion on an unnamed tributary to the Bear River, SC Photos.





Both photos on this page show a large spring which was fenced and excluded to reduce livestock impacts. This spring is located in Peagram, and feeds an unnamed tributary to the Bear River, SC Photos.





The photos on this page show the telemetry station which was installed in Pegram. This telemetry station is solar powered and provides up to the minute flow data to the landowner, helping to also ensure that the proper amount of water is being used in the irrigation canal. The lower photo shows the probe that sits in the bottom of the stream and sends information back to the computer mounted on the pole, SC Photos.





This photos shows ISWCC Engineer Allan Johnson discussing the route of a stockwater system, as we surveyed the elevations and topography to ensure the system would work properly after installation, SC Photos.



These photos show the installation of irrigation mainline which was installed adjacent to Stauffer Creek. This irrigation system upgrade was installed to reduce the need for flood irrigation and to prevent standing of migrating BCT, SC Photos.





These two photos are the before and after of another stream crossing on Stauffer Creek. The historic culverts had washed out (one of two still pictured) and made it difficult for the landowner and for livestock to cross the stream. The lower photos shows the newly installed oversized culvert, which will provide access to the other side of the stream, and eliminate barriers to migrating BCT, SC Photos.





The above photos shows an installed stockwater line which was ripped in by a large bulldozer to provide water for livestock from a sump well installed near the Paris Slough pictured below, SC Photos.





The above photos show the installation of the solar array, which will power the pump providing water to livestock. This arm of Paris Creek was completely fenced off, and a grazing management plan will be followed to improve riparian habitat and reduce livestock impacts. Three water troughs were installed as part of this project to provide off-stream water for livestock. The lower photo shows a portion of the newly installed barbed wire exclosure fence, SC Photos.





The Above photo shows the installation of the diversion box next to Stauffer Creek. The below photo shows the actual box structure which was installed. There are three holes in the box two, 12 inch holes for the irrigation water and one 21 inch whole which is the stream return and allows fish to passthrough the box as they travel up and down stream, SC Photos.





These two photos show how smaller gravels were filtered into the larger rocks for stability and for bank protection. Also, the smaller gravels provide excellent spawning beds for Bonneville Cutthroat Trout, SC Photos.





Above, is the area where a sump well was going to be installed. Below is after the sump well was installed, SC Photos.





Above photo shows one of the large tires which was installed. These tires are 12 foot tires and are estimated to hold ~1400 gallons of water. Below shows a tire trough installed in the fence line so it can be used on both sides of the fence. This system was installed to draw livestock away from sensitive riparian areas and reduce livestock impacts on a small unnamed tributary, SC Photos.





(Above) This photo shows the contractor putting the finish on the cement inside one of the troughs, SC Photos.