

REPORT TO THE FISHAMERICA FOUNDATION

Tainter Creek/Ernest Rayner Stream Restoration Project

Soldiers Grove, Wisconsin

FAF Grant No. FAF-17-13

Report Date: September 25, 2019

Duke Welter, Outreach Coordinator

TROUT UNLIMITED

Driftless Area Restoration Project



Figure 1: Tainter Creek from the Highway C bridge after restoration, August 19, 2019.

I. Introduction

A grant of \$19,180 was made by the FishAmerica Foundation to the Rayner project on Tainter Creek near Soldiers Grove, Wisconsin. In this report, we will discuss the conditions which needed to be

addressed and the specifics of the project itself. Invoices for payment for the project and disbursement of the FAF grant funds will also be provided, followed with a preview of future restoration efforts along Tainter Creek.



Fig. 2: Typical eroding streambank before restoration, at confluence of Conway and Tainter Creeks. July 2018



Fig. 3: Tainter Creek looking downstream from Highway C bridge after tree removal but before restoration, May 30, 2019

Those limitations, which began to develop several decades after the European settlement of the region, primarily consist of a thick blanket of soft sediment which eroded off the ridges and bluffs into the valleys from about 1890 to the 1930s. While the area is blessed with thousands of springs which bring cold, calcium-rich groundwater into the streams, the same streams are incised from 3 to 9 feet, clogged with sediment and edged with unstable softwood corridors, primarily box elders, which collapse and dump more sediment into them.

When heavy rainstorms fall in the watershed, runoff beats against the streambanks, undercuts the shallow-rooted softwoods and dumps timber and soil into the stream. Where cropland or pasture edges the stream, the high water erodes into those areas. Accompanying the eroded soil downstream are significant amounts of phosphorus which would otherwise remain entombed in the blanket of soil across the valley.

III. Planning and Project work

The standard pre-project approach of Trout Unlimited's Driftless Area Restoration Effort (DARE) has been to identify key watersheds needing restoration work, finding landowners who are willing to undertake a project on their lands, obtain a perpetual public fishing easement, raise the funds so that there is no cost to the landowner. When those items have been accomplished, specific surveys, permitting, and budgets are developed. In this case, Landowner Ernest ("Wayne") Rayner talked with a TU member who referred him to DARE staff. He sold a perpetual easement to the DNR which provides access for the project and maintenance and a 66-foot wide access corridor along both sides of the stream.

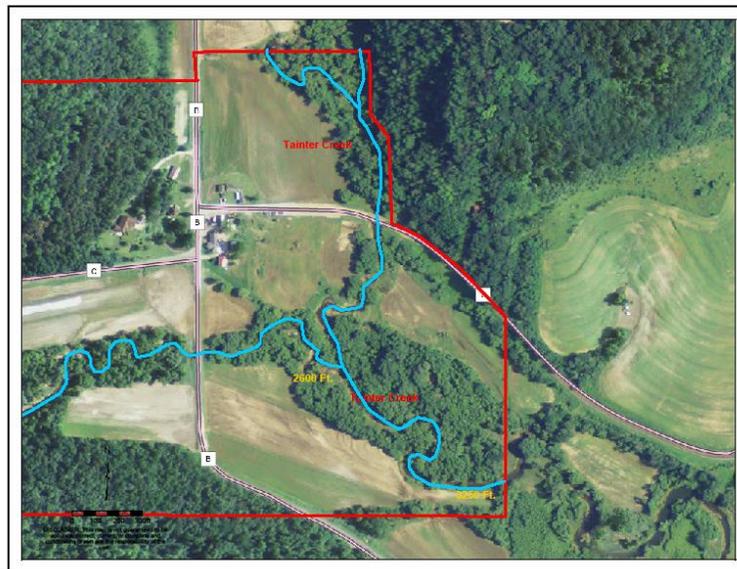


Fig. 5: Aerial view of Rayner Project site. Tainter Creek flows from the top, under the Highway C bridge and then southeasterly. Conway Creek flows in from the left to its confluence with Tainter.

DARE Habitat Project Specialist Paul Krahn did the survey, permitting and developed the budget, and put it out for competitive bidding. A contract was let to Wanless Construction LLC of Richland Center,

Wisconsin, an experienced company doing this type of work on a regular basis. Krahn supervised every step of the project.

Project specifications called for 3,200 feet of work along Tainter Creek, including tree removal, bank sloping, toe rock emplacement, habitat structures, seeding and mulching. Removed soil (2,000 yards) was hauled off by the contractor and purchased from the landowner.

Site preparation work began in late April 2019 with mechanized removal of many of the box elders and some other tree species along the stream corridor. Sadly, about a week after the work began, Mr. Rayner died unexpectedly. But his purpose in undertaking the project was already being accomplished.

Cottonwoods and willows were left in place to provide some shade and insect roosting habitat. Many of the removed trees were torn out with an excavator and stockpiled for eventual use as habitat structures, root wads and weirs.

Further work commenced in late July, after the riparian corridor had a chance to dry and rock could be hauled into the site. Banks were sloped back at a 4:1 ratio (one foot of rise for four feet of horizontal slope), so that flood waters will spread out across the newly-reconstructed flood plain and not beat at the banks. Limestone was quarried locally and used at the toe, especially on bends. Inside bends were lowered to allow flood waters to cover them.

Box elder trunks were emplaced as crosslog weirs to create deeper pools as security and winter cover. Other trunks with rootwads still attached were embedded along the outside bends of banks. They will provide scour pools and habitat for insects, and smaller and larger fish. Boulder fields of four or five larger pieces of limestone were emplaced in straighter reaches to provide scour holes and accessible gravel. Side channels and turtle basking logs were emplaced at numerous sites along the 3,200-foot restoration area.



Fig. 6: Confluence of Tainter Creek and Conway Creek (Looking across stream from Fig. 2).

Some specifics of the project include: 2,245 feet of bank shaping; 2,245 feet of toe rock, 8 boulder clusters (five boulders/cluster, Figure 10), 47 log deflectors (rootwads, per Figures 8-9), 2 cross-channel log weirs, 2 basking logs, 2,000 yards of soil removed from site.

Using NRCS formulas, Mr. Krahn estimated that the work will reduce sediment loss by 605 tons per year.



Fig. 7: Bank sloping and soil removal under way.



Fig. 8: Rootwads and bank sloping at confluence with small feeder above County C bridge.



Fig. 9: Rootwads in place along outside bend.



Fig. 10: Boulder field in place

IV. Public Outreach and Education

Throughout this project, TUDARE has worked with partner groups in the Tainter Creek watershed, and has striven to communicate with the public about restoration opportunities there. A key partner group is the three-year-old Tainter Creek Farmer-Led Watershed Council, with whom we have worked to organize and conduct two Stream Days in 2018 and 2019. They have been held just downstream (2018) and just upstream (2019) of the Rayner site. In 2018 we talked with neighbors about the planned project and what impact we expected it to have; in 2019 Paul Krahn took a hay wagon load of attendees down to the project and explained what would go on there. In all, about 300 people have attended the two events. At this point two landowners downstream and up have expressed interest in doing restoration projects on their own reaches of the stream. We are working with both, and with landowners on other nearby streams who have visited the Rayner site and want work done on their own streams. Facebook and newspapers have provided outlets for news about the council and the stream days.



Fig. 11: Stream day banner in place.



Fig. 12: Stream Day 2019 crowd watches WDNR fisheries team doing electroshocking demonstration.

V. Project completion

The Tainter/Rayner project was completed in early September, 2019. Invoices from Wanless Construction are attached below as exhibits A & B. The FAF funds were paid for tree clearing (\$14,400) and part of the Wanless bill (\$4,780).

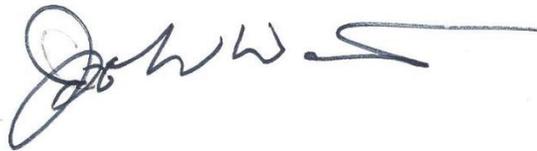
Heavy rains in the area occurred the week of September 9. By that time, most of the seed had germinated and begun to grass in. Minor soil loss from overbank flows occurred, but will be easily repaired in spring 2020, when the Conway project gets under way, if not before the end of the 2019 season in mid-October.

The project will be monitored by a faculty member from the University of Wisconsin Limnology Department and volunteers working with the Valley Stewardship Network. Fish populations will be assessed on a periodic basis by the WDNR Fisheries staff.

VI. Conclusion

With the help of partners and funders, the Tainter/Rayner project will have significant impact on sedimentation and habitat in Tainter Creek. Thank you for your support.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "John Welter", with a long horizontal flourish extending to the right.

John (Duke) Welter, Outreach Coordinator

TU Driftless Area Restoration Effort

329 S. Lincoln Avenue

Viroqua WI 54665

715-579-7538

Exhibits:

A: Wanless Clearing Invoice April 27, 2019

B: Wanless Final Invoice August 25, 2019

C: DARE Facebook Post Stream Day June 4, 2019

D: Crawford County Independent Article on project Sept. 12, 2019

Sent



Wanless Construction LLC
27160 Maple Ridge Ln.
Richland Center, WI 53581
608-604-3734

Invoice

DATE	INVOICE #
4/27/2019	1109

BILL TO
Trout Unlimited c/o Paul Krahn S4296 Cty Hwy S Viroqua WI. 54665

ITEM	DESCRIPTION	QTY	Due On Receipt		PROJECT
			4/27/2019		
			RATE	AMOUNT	
Excavation	clear, burn and bury trees Wayne Rayner property Cty Rd B Per Bid	1	14,800.00	14,800.00	
			Total	\$14,800.00	
			Payments/Credits	\$0.00	
			Balance Due	\$14,800.00	



Wanless Construction LLC

27160 Maple Ridge Ln.
 Richland Center, WI 53581
 608-604-3734

Invoice

Invoice #: 1158
Invoice Date: 8/25/2019
Due Date: 8/25/2019
Project:
P.O. Number:

Bill To:

Trout Unlimited
 c/o Paul Krahn
 S4296 Cty Hwy S
 Viroqua WI. 54665

Description	Hours/Qty	Rate	Amount
Wayne Rayner Project original bid \$128530.00 pmt for clearing adjustments	1	128,530.00 -14,800.00 -4,552.67	128,530.00 -14,800.00 -4,552.67
Total			\$109,177.33
Payments/Credits			\$0.00
Balance Due			\$109,177.33

Exhibit C

Exhibit C: TUDARE FACEBOOK Page post for 2018 Stream Day on Tainter Creek:



TU Driftless Area Restoration Effort (TUDARE)

Published by John Welter ·

June 4 ·

Tainter Creek near Soldiers Grove was a busy scene Saturday as over a hundred people came to enjoy a streamside celebration. Kids cast spinners, worms and flies and learned to tie flies and identify stream insects. The DNR fisheries crew led by Kirk Olson did a very educational stream electroshocking that brought up dozens of trout (browns and one brook) and other coldwater fish like the hard-to-catch white sucker. Volunteers cooked a delicious lunch with plenty of grass-fed burgers, Johnsonville brats and hot dogs wolfed down by the kids, and adults as well. Organic Valley donated plenty of its dairy drinks and cheese sticks. Cabelas and Coulee Region Trout Unlimited together donated 20 spin and fly rods which were given to lucky kids, and other donors contributed spinners and other fishing gadgets. The creek's Farmer-Led Watershed Council sponsored the event, with support from Trout Unlimited, Valley Stewardship Network, Vernon County Land Conservation, DNR and others. Trout author Jay Thurston showed his own expert spin-casting approaches. TUDARE's entire staff was on hand. Paul Krahn showed a masterful hand as grillmeister and Jeff Hastings helped show kids how to cast spinners like an expert. Duke, as usual, spoke ad infinitum about stream restoration. Gratifying to see a variety of folks from different walks of life united in their regard for a good trout stream with great restoration and fishing potential. Even more, to see the scores of enthusiastic kids who were eager to see what lived in this stream, and try ways to catch them.



Exhibit D

Tainter Creek streambank restoration focused on flooding and fishing



INDEPENDENT EDITOR Charley Preusser takes his new waders for a spin in the newly restored stretch of Tainter Creek in Star Valley recently. The editor received lots of trout fishing coaching and tips from veteran trout fishers Bruce Ristow and Duke Welter.

GILLIAN POMPLUN, Crawford County Independent & Kickapoo Scout

Updated: Sept. 12, 2019, 11:20 a.m.

CRAWFORD COUNTY - For those who enjoy the fishing on Tainter Creek in Star Valley, things have gotten a little bit better with the recently completed stream bank restoration project on the Rayner property.

The project in Star Valley was overseen by Paul Krahn of the Trout Unlimited Driftless Area Restoration Effort (TUDARE), and was completed in August.

“Ernie Rayner decided that he wanted to leave his land better than he found it for the next generation,” TUDARE’s Duke Welter said. “After talking with neighbor Bruce Ristow, Ernie sold a permanent easement for fishing to the DNR, and from there we were able to work with public and private funding sources to secure the \$140,000 needed to complete the project.”



A picture of the area before the restoration work was started.



A picture of the area after restoration work was completed.

In 2020, the group plans restoration on a connected section of Conway Creek, from its confluence with Tainter Creek up to the bridge across County B. This project will cost an additional \$60,000, and is already fully funded.

“The areas of the creek that are suitable for restoration work are those where the banks are in the optimal three-to-eleven-foot range,” Welter said. “This means that the middle part of the stream from about where it crosses County B north of Towerville to about Bruce Ristow’s farm is the area that we are hoping to do restoration projects in, and we have had other landowners express interest.”

Welter explained that in the upper portions of the Tainter Creek Watershed, the gradients on the tributary streams are so steep that it is unlikely that restoration efforts would hold up in the face of large rain events and runoff. In the lower part of the watershed, below Ristow’s farm, the creek banks are so high that it would not be cost effective to remove the volume of sedimentation and sculpt the banks.

“TUDARE is interested in restoration efforts along Tainter Creek because, like other major tributaries of the Kickapoo River, it provides good conditions for a healthy trout fishery,” Welter said. “The water, from spring-fed sources, is always cold with a steady, high flow, and the limestone and sandstone bedrock that the water is filtered through provides nutrients that create fertile conditions for water plants, insects and crustaceans that trout rely on for food.”

Welter explained that the headwaters of Tainter Creek are largely protected by the land use in the area. He explained that the upper portions are mostly wooded hillsides, and there is not a lot of row crop plantings above most of the tributaries, which reduces runoff of water and nutrients. He emphasized that the existence of a group of conservation-minded farmers like the Tainter Creek Watershed Council is also a big plus.



BRUCE RISTOW talks with Duke Welter about future streambank restoration possibilities along Tainter Creek, while giving Independent editor Charley Preusser lots of tips and suggestions. According to Welter, Ristow's support in bringing the project to be has been of inestimable value.

"Bruce Ristow's management of his lands and his restoration efforts provides a great example to other landowners in the watershed," Welter said. "Bruce has been instrumental in our outreach efforts, and this project literally would not have been possible without him."

Unlike other organizations dedicated to conservation, TUDARE is focused on restoration efforts on working agricultural lands. Their efforts rely on forging good partnerships with local landowners, and they have undertaken a total of 350 projects in the Driftless Region.

"We've had some successes and some failures over our many years of working in the Driftless Region, and learned from them all," Welter said with a smile. "The addition of Jeff Hastings and Paul Krahn to our staff is a tremendous asset to our work. Both are former Vernon County Conservationists with years of experience in restoration and working with local landowners."

The project

According to TUDARE Project Manager Paul Krahn, from the time it was surveyed and designed until project construction, a time of two years, the stream did change in section after a major flood event.



"This changed the area significantly, and the design plan needed to be altered to adjust for these changes," Krahn explained. "A DNR permit modification had to be submitted, and they came through with the permit modification approval in a timely manner."

Work on the project on Tainter Creek this summer started in April and May, with the clearing of the softwoods out of the corridor with heavy equipment. Towering Cottonwood trees and Willows were left standing because of their deep root structures, while shallow-rooted Box Elders were removed.



“Tragically, shortly after the project started, Ernie Rayner passed away and did not see his vision realized,” Welter noted. “We are tremendously grateful to the Rayner family for making this project possible. Ernie’s vision showed great foresight and commitment to land stewardship, and our group is thinking of installing a bench at the site dedicated in Ernie’s memory.”

After clearing the trees, the process of sculpting back the banks to a 3:1 or 4:1 slope began. What this means is that for every foot of rise off the level of the creek, the banks were sloped back three to four feet. Multiple dump truck loads of sediment were hauled out of the area to accomplish the aims of the project. Local rock was used to reinforce the banks. After sculpting, the banks were seeded into a fast-growing nurse crop as well as perennial and native vegetation that will develop deep roots to hold the stream bank in place.



Sculpting back the banks and removing the sedimentation that has built up over decades results in the creek being restored more to what it was like before the area was settled, the hills cleared, and massive soil erosion occurred. Now a fisher can basically just walk right to the edge of the creek versus scrambling down 3 to 11-foot vertical banks.



“Over 1,100 cubic yards of soil was removed from the flood plain. The soil removed from the project area is considered post settlement alluvium,” Krahn said. “This is soil that began accumulating when agricultural lands developed after settlement in the mid 1800s. There is a distinct color change in the original soil surface which is very black, and the more recent soil deposition, which is a brown color with more fine sands in its’ composition. Post settlement alluvium thickness varied from two-to-seven feet in this section of stream.”



The sculpting also serves to reconnect the creek with its floodplain. Instead of fast-moving and highly destructive floodwaters rushing down a deep, narrow corridor, the waters will be able to spread out into their natural floodplain and slow down. According to Krahn, the estimated soil savings from erosion reduction is 605 tons per year from stabilizing the streambanks.

“Weather is typically a major factor when working in the stream corridors,” Krahn said. “We were very fortunate, and did not get slowed down much by rain on this project.”

The trees that were removed from the streambank corridor were used to create various structures. Some were used to create root balls sticking out into the creek, which serve as habitat for trout.



Others were placed across the stream to create weirs, and a plunge pool with deep water where trout can overwinter. Diamond-shaped patterns of boulders from locally sourced stone were placed in the creek to create white water, which aerates the creek and increases oxygen.



“In this project, we improved 3,320 feet or 0.63 miles of stream,” Krahn said proudly. “For promotion of fish habitat, we installed log deflectors, scattered boulders, cross-channel logs, basking logs and rock weirs.”

Project financing

TUDARE limits their restoration efforts to properties where perpetual easements have been granted in order to ensure longevity of the results against their member’s investments. Once a landowner has granted a perpetual easement, then fundraising from public and private sources becomes possible.

The Tainter Creek project was paid for through public funding from USDA-NRCS, Crawford County Conservation Aids, the FishAmerica Foundation, and the U.S. Fish and Wildlife Service (USFWS). Trout Unlimited members also contributed funding from funds raised from their membership.

“Our partnerships with a variety of conservation organizations, federal, state, county and local allow these projects to be a success,” TU’s Paul Krahn said. “We would not have any projects without landowners having a strong conservation ethic and committing to making the watershed healthier by allowing these types of projects be implemented on their land.”

The funding from NRCS came from a \$9.3 million dollar grant given to TUDARE for a Regional Conservation Partnership Project. The three-year grant focuses on restoration efforts on working agricultural lands, with priorities of preventing soil erosion and protecting water quality. NRCS grants require cost share, and TUDARE provided that funding.

Crawford County receives funds from the State of Wisconsin for restoration efforts, and those funds are administered through the Crawford County Land Conservation Department. This source supplied a \$5,800 grant for the project.

The FishAmerica Foundation is the American Sportfishing Association’s conservation and research foundation. Their mission is to unite the sport fishing industry with conservation groups, government natural resource agencies, corporations and foundations, to invest in sport fish and habitat conservation and research across the country.

Since 1983, the FishAmerica Foundation has awarded \$12.1 million to 1,007 projects in all 50 states and Canada to enhance fish populations, restore fishery habitats, improve water quality and advance fishery research to improve sport fishing opportunities and help ensure recreational fishing’s future.

The group provided an almost \$20,000 grant to help make the Tainter Creek project possible.

USFWS has money available for fish habitat partnerships through their National Fish and Wildlife Foundation and the National Marine Fishers Service. The first focuses on inland freshwater streams, and the second focuses on coastal fisheries. Specifically, USFWS' Fishers & Farmers Program awarded the Tainter Creek project a \$40,000 grant.