

# **WIRB Final Report**

**Project Name: Walnut Creek Watershed Project**

**Project Number: 1114-006**

**Huc # :10240002- West Nishnabotna River Basin**

**Soil and Water Conservation District: Montgomery & East Pottawattamie**

**Planning Period: January 1, 2012 to Dec 31, 2016**

**Date Report Prepared: December 6, 2016**

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## **INTRODUCTION**

Walnut Creek is a tributary to the West Nishnabotna River in Southwest Iowa. The 144,000 acre watershed is long and narrow in shape, averaging four miles wide and flowing through six counties, stretching sixty-two miles from its headwaters in Shelby County to its confluence with the West Nishnabotna River in Fremont County. Soils in the watershed are loess derived making them extremely fertile and erosive.

As throughout much of the region, sediment delivery to the stream is the primary resource concern. Although tillage practices employed on row crop land is generally good, the number of acres and shape of the watershed are conducive to a high delivery rate of sediment to the stream. Therefore, despite the fact that there is a great deal of reduced and no-till practices in the watershed, sheet and rill erosion on cropland is the main soil and water resource concern. Sediment delivery to Walnut Creek from cropland is aggravated by erosion in areas of concentrated flow throughout the watershed. Due to the slope of the landscape, outside the floodplain, classic and ephemeral gully erosion is a significant problem.

Another major source of sediment delivery to the stream stems from erosion that takes place in the stream corridor itself. Walnut Creek is significantly incised but in most areas, due to prior channelization, stream channel degradation and other modifications have taken place in the corridor. Despite all of these modifications, the streambed is beginning to reach equilibrium and the floodplain is being restored. Occasionally, however, high flows reap havoc in the corridor and undermine the stream bank resulting in significant sediment loads being delivered to the stream once again. Although grade has been controlled in the main channel by in-stream grade control structures, there is significant grade differential between the areas of concentrated flow and the main channel itself. These areas are currently experiencing severe head cutting.

Flooding is also a major concern in the Walnut Creek basin. Flash flooding damages homes, roads, bridges, and cropland in the watershed. The most significant area of impact occurs well downstream in Fremont County where Walnut Creek outlets into the West Nishnabota River.

The net result of all these processes is that in many reaches of Walnut Creek sediment has smothered rock substrate, destroying critical fish and aquatic life habitats. Walnut Creek is designated as Class B(WW) stream. Uses include wildlife, fish, aquatic and semi-aquatic life. All uses are listed as partially supporting.

Upon completion of a comprehensive watershed assessment, a 40,000 acre priority area was selected to focus conservation efforts. In July of 2009 ,2011, and 2013 the Montgomery and East Pottawattamie Soil and Water Conservation Districts were awarded grants from the Watershed Improvement Review Board to begin working on the above described issues. The following is the final report of the practices installed through the use of the 2011 grant.

**FINANCIAL ACCOUNTABILITY**

The primary cost share mechanism used in this grant was the Watershed Improvement Review Board funds contributing \$309,849.75 or 41.8% of the total funds expended. Private landowners contributed \$333,555.72 or 45% of the total funds expended. The Iowa Financial Incentive program totaled \$44,996.33. The EQIP program contributed \$48,065.00. Total dollars expended equaled \$741,466.80.

**WIRB Funds Expended by Line Item**

<b>Grant Agreement Budget Line Item Practices &amp; Activities</b>	<b>Total Funds Approved</b>	<b>Total Funds Approved-Amended(\$)</b>	<b>Total Funds Expended (\$)</b>	<b>Available Funds(\$)</b>
Personnel- 1 FTE	168,100	168,100	168,100.00	0
Terrace Systems	122,500	122,500	119,228.25	3,271.75
Grade Stabilization Structures	45,000	45,000	22,521.50	22,478.50
<b>TOTALS</b>	<b>335,600</b>	<b>335,600</b>	<b>309,849.75</b>	<b>25,750.25</b>

**Funding Expended by Source**

<b>Funding Source</b>	<b>Cash</b>		<b>In-Kind Contributions</b>		<b>Total</b>	
	<b>Approved Application Budget (\$)</b>	<b>Actual (\$)</b>	<b>Approved Application Budget (\$)</b>	<b>Actual (\$)</b>	<b>Approved Application Budget (\$)</b>	<b>Actual (\$)</b>
WIRB	\$335,600	\$335,600			\$335,600	\$309,849.75
IFIP	\$110,000	\$44,996.33			\$110,000	\$44,996.33
EQIP(Other)	\$0	\$48,065				\$48,065
Landowners	\$92,500	\$333,555.72			\$92,500	\$333,555.72
HC(Other)	\$0	\$5,000			\$0	\$5,000
<b>Totals</b>	<b>\$538,100</b>	<b>\$741,466.80</b>	<b>\$0</b>	<b>\$0</b>	<b>\$538,100</b>	<b>\$741,466.80</b>

Approved WIRB contribution percentage 62%  
Actual WIRB contribution percentage 41.8 %



## ENVIRONMENTAL ACCOUNTABILITY

### *Project Goals:*

The primary goal of the Montgomery and East Pottawattamie SWCDs' is to address the resource concerns discovered in the watershed assessment by controlling drainage as it enters Walnut Creek. This will not only curve the sediment load to the stream but will also slow the rate at which water enters and travels through the creek. The milestones established for this grant were to construct one hundred thousand feet of terraces on cropland, two grade stabilization structures to control drainage, cutback areas, and gully erosion. All of these practices should have reduced sediment delivered to Walnut Creek by 1,800 tons per year.

### *Ranking Method:*

In order to prioritize which applications would be funded a formula which calculates the cost per sediment ton reduced was used to rank practice applications. RUSLE 2 was calculated for every practice according to their conservation plan and each project was run through the Division of Soil Conservation's Sediment Delivery Calculator. The total cost of each project was then divided by the sediment delivery reduction to rank the cost per ton of sediment reduction.

### *Practices Installed/Environmental Benefits:*

The following table quantifies the types and number of practices actually installed and their sediment delivery reduction from those practices:

<b>Grant Agreement Conservation Practices &amp; Activities</b>	<b>Unit</b>	<b>Approved Application Goal</b>	<b>Accomplishments</b>	<b>% Completion</b>
Terraces	ft	100,000	141,465	141%
Grade Stabilization Structures	num	2	2	100%
Sediment Delivery Reduction	Tons /Year	1800	1,413.6	79%
Phosphorous Reduction	Lbs/ Year	2340	1838	79%

## PROGRAM ACCOUNTABILITY

### *Administration:*

Practices were surveyed and designed according to NRCS specifications by qualified technical staff. Individual practices were ranked in order to prioritize. Cost share applications were administered by both SWCDs' whom had administered these types of projects on numerous occasions in the past. Maintenance agreements for all practices were recorded at the courthouse.

*Deviations from original grant:*

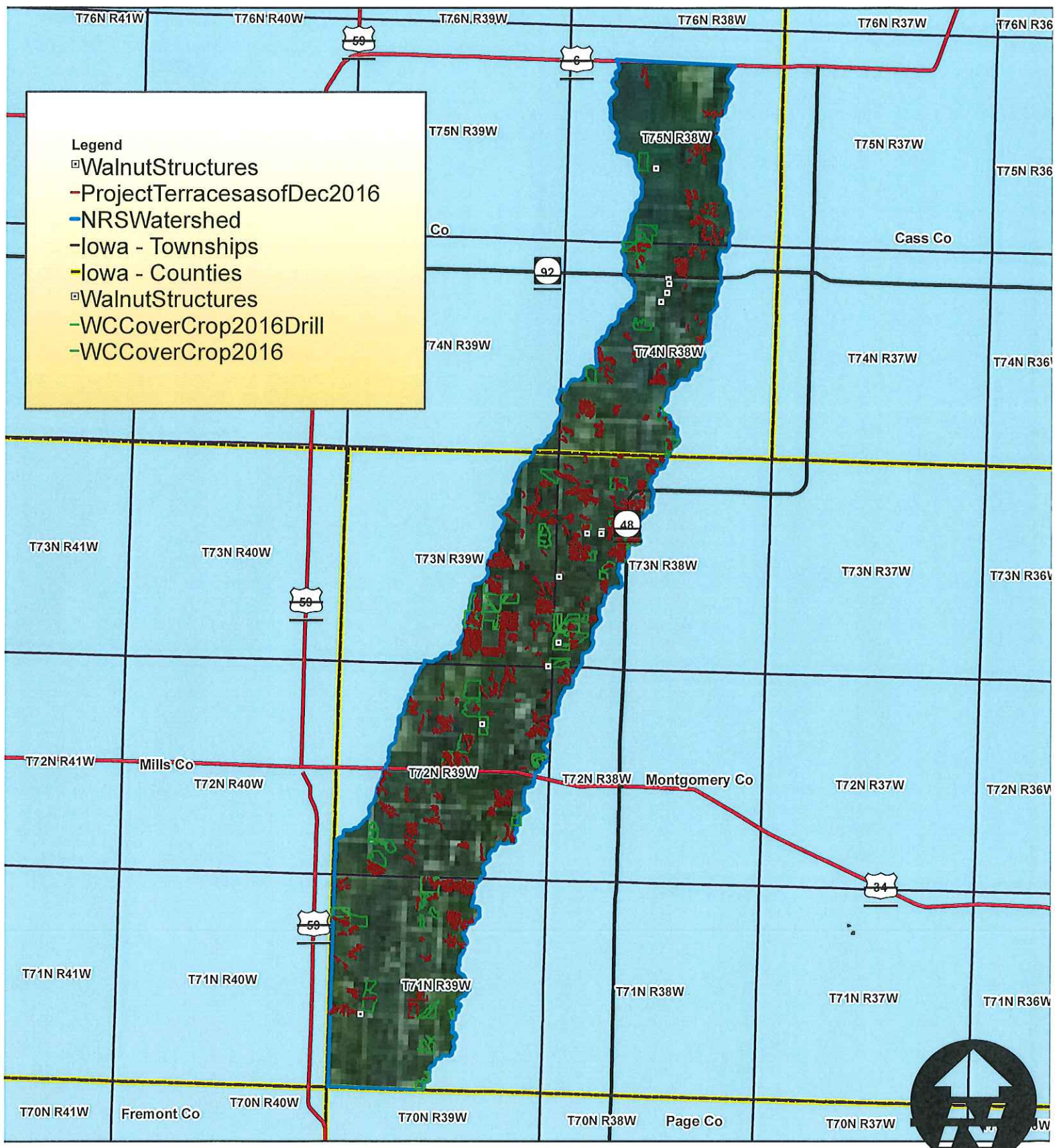
Most of the project went as planned. Terrace footage installed exceeded our estimate. We fell short utilizing WIRB cost share for grade stabilization structures. One structure we obligated for funds was too wet for construction and the landowner eventually, after several extensions, opted to construct the structure on their own.

*Future Watershed Work:*

Watershed work continues in the priority area through the use of one additional WIRB grant. Landowner interest is extremely high, many landowners have installed practices without cost share. An amazing amount of work has been done since Walnut Creek began in 2009. I'm sure the coming years will be much of the same. The attached map shows all of the terraces and grade stabilization structures constructed in the targeted Walnut Creek Watershed from 2009 through 2016. The map also shows cover crops established in 2016 through a Water Quality Initiative grant.



# Walnut Creek Watershed Terraces/Grade Stabs/2016 Cover crops



0 2.25 4.5 9 13.5 18 22.5 Miles

