Kirwin Lake WRAPS

9 Element Watershed Protection Plan

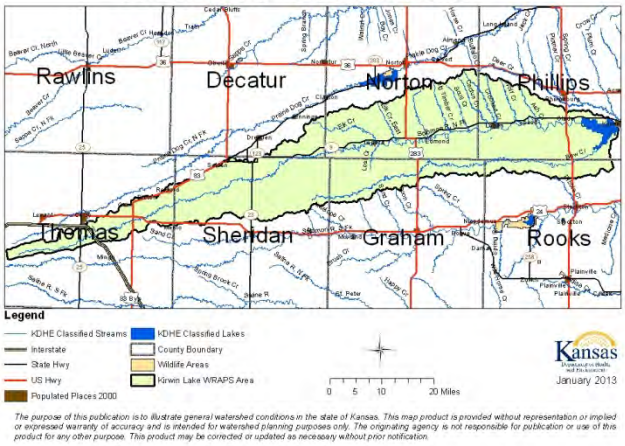
Water Quality Impairments Directly Addressed:

- Kirwin Lake Eutrophication TMDL (Medium Priority)

Other Impairments Which Stand to Benefit from Watershed Plan Implementation:

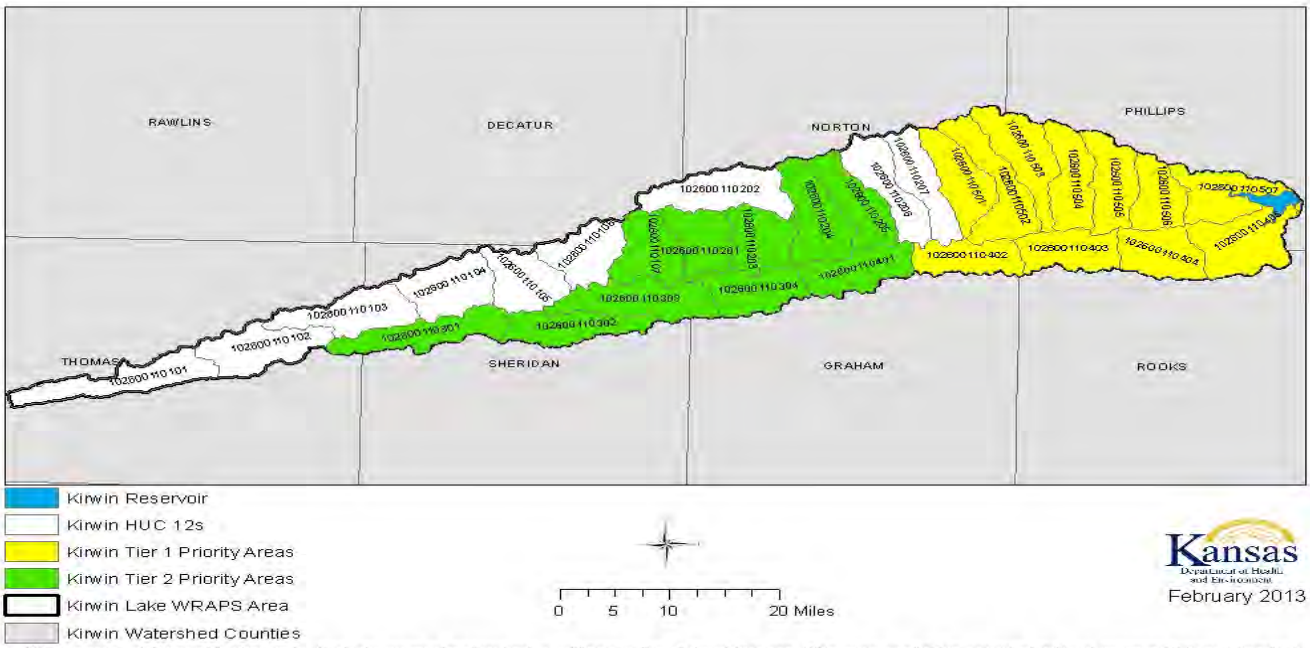
- Kirwin Lake Dissolved Oxygen TMDL (Medium Priority)
- Bow Creek Near Stockton Total Phosphorous 303(d) listing
- North Fork Solomon River Near Glade Total Phosphorous 303(d) listing
- Logan City Lake Eutrophication 303(d) listing

Kirwin Lake WRAPS Area

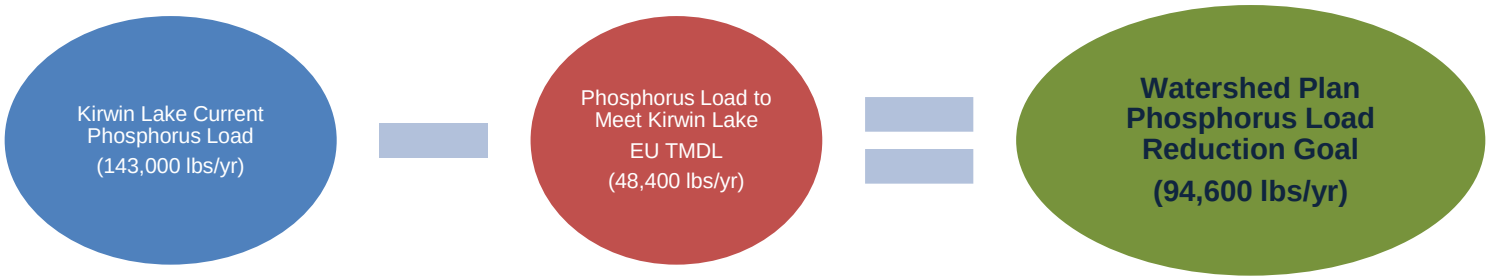


Determination of Priority Areas

Information collected by the Graham, Norton and Phillips county NRCS offices was used by KSU in a SWAT model to identify priority HUC12s. Because of extremely low soil erosion rates, the SLT requested KDHE verify the SWAT model results. KDHE used the Cropland/Slope Analysis method to verify the SWAT model data. The results confirmed the SWAT results identifying nine HUC12s. This method also identified eleven additional HUC12s as significant potential sediment contributors. The SLT agreed to develop two priority area, Tiers 1 and 2, above Kirwin Lake to focus BMP implementation towards addressing nonpoint source impairment issues.



Best Management Practice and Load Reduction Goals



BMPs to be implemented in association with Watershed Plan:

- Cropland-related BMPs
  - Permanent vegetation
  - Grassed waterways
  - No-till cropland production
  - Terraces
  - Nutrient management
  - Vegetative Buffers
  - Subsurface Fertilizer Application
- Livestock-related BMPs
  - Vegetative filter strips
  - Relocate feeding pens
  - Relocate pasture feeding sites
  - Alternative watering systems
  - Rotational grazing
  - Fence out streams and ponds
  - Grazing management plans

Watershed Plan Duration and Costs

- Total plan length = 30 years
  - Load reduction goal of plan met during year 30
- Total plan cost = $25,802,172
  - Cropland BMP Implementation
    - $15,638,153
  - Livestock BMP Implementation
    - $1,072,359
  - Information and Education
    - $5,285,626
  - Technical Assistance
    - $3,806,034

Kirwin Lake WRAPS

Approved April 30, 2013

Smoky Solomon
Resource Enhancement
PO Box 216, 715 N 2nd St.
Natoma, KS 67651
PH: 785-885-4160

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EPA 319 grant 2009-W035 from the Kansas Department of Health and Environment.

Stakeholder Leadership Team

Includes representatives from:
Smoky Solomon Resource Enhancement, Inc.
County Conservation Districts
K-State Research and Extension
Kansas Natural Resource Foundation (KNRF)
North Central Prairie Weed Management Area (NCPWMA)
Local Agriculture Producers

Watershed Representatives:
Phillips County: Bob Quanz, Rod Quanz, Melvin Schooler, Jean Stapel, Alan States, and Bruce Williams
Norton County: Twila Dizmang
K-State Research and Extension: Rachael Boyle, Phillips-Rooks District
Prairie Dog Creek WRAPS: Lari Ann Nickell
Kirwin National Wildlife Refuge: Brad Krohn, Clay Cole, Stephen Knowles, and Tony Ifland

Kansas Department of Health and Environment Project Officer
Doug Schneweis, Watershed Field Coordinator

Additional Technical Assistance Provided by:
Josh Roe, K-State Research and Extension
Robert Wilson, K-State Research and Extension
Larry Meili, Phillips County District Conservationist, NRCS
James Molzahn, Rooks County District Conservationist, NRCS
George Carter, Norton County District Conservationist, NRCS
Brian Schulze, Graham County District Conservationist, NRCS
Matt Palmquist, Sheridan County District Conservationist, NRCS
Teresa Chrisler, Kirwin Lake WRAPS Coordinator and Smoky Solomon Resource Enhancement, Executive Director

Cover: Aerial view of Kirwin Lake

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1.0 Preface

The purpose of this Watershed Restoration and Protection Strategy (WRAPS) watershed plan, for Kirwin Lake Watershed, is to outline a plan of restoration and protection goals and actions for the surface waters of the watershed. Watershed goals are characterized as “restoration” or “protection”. Watershed restoration is for surface waters that do not meet Kansas water quality standards, and for areas of the watershed that need improvement in habitat, land management, or other attributes. Watershed protection is needed for surface waters that currently meet water quality standards, but are in need of protection from future degradation.

The WRAPS development process involves local communities and governmental agencies working together toward the common goal of a healthy environment. Local participants or stakeholders provide valuable grass roots leadership, responsibility and management of resources in the process. They have the most “at stake” in ensuring the water quality existing on their land is protected. Agencies bring science-based information, communication, and technical and financial assistance to the table. Together, several steps can be taken towards watershed restoration and protection. These steps involve building awareness and education, engaging local leadership, monitoring and evaluation of watershed conditions, in addition to assessment, planning, and implementation of the WRAPS process at the local level. Final goals for the watershed at the end of the WRAPS process are to provide a sustainable water source for drinking and domestic use while preserving food, fiber, timber and industrial production. Other crucial objectives are to maintain recreational opportunities and biodiversity while protecting the environment from flooding, and negative effects of urbanization and industrial production. The ultimate goal is watershed restoration and protection that will be “locally led and driven” in conjunction with government agencies in order to better the environment for everyone.

This report is intended to serve as an overall strategy to guide watershed restoration and protection efforts by individuals, local, state, and federal agencies and organizations. The Kirwin Lake WRAPS process and the use of this report provides the Stakeholder Leadership Team (SLT) with the capability, capacity and confidence to make decisions that will restore and protect the water quality and watershed conditions of the Kirwin Lake Watershed.

2.0 Priority Issues and Goals of the Stakeholder Leadership Team

The Kirwin Lake WRAPS SLT was formed out of concern for the health of the Kirwin Lake. At the November 2010 Waconda Lake WRAPS meeting SLT members determined that there was sufficient data to show justification for additional assessment and planning for the watershed above Kirwin Lake. The portion of the Waconda watershed above and including Kirwin Lake has been designated a separate WRAPS

project and thus began the process of developing an Environmental Protection Agency (EPA) 9 Element Watershed Plan specific to that area.

The Kansas Department of Health and Environment (KDHE) completed the first round of Total Maximum Daily Loads (TMDLs) within the Solomon Basin based on the 1998 and 2002 – 303(d) lists. There were 21 approved TMDLs within the Solomon Basin that describe the strategies and goals to reduce pollution to achieve water quality standards. The 2008 - Section 303(d) list submitted to and approved by EPA identified watersheds associated with 15 stream chemistry sampling stations as water quality impaired. KDHE develops TMDLs on a basin-by-basin approach and will revisit existing TMDLs and develop new TMDLs within the Solomon Basin in 2014.
Kirwin Lake is one of three lakes in the Solomon River Basin listed as water quality impaired. The Kirwin Lake TMDL of Eutrophication bundled with Dissolved Oxygen was approved September 30, 2003. (See full report http://www.kdheks.gov/tmdl/so/KirwinE.pdf) Each parameter causing impairment requires a TMDL.

A Rapid Watershed Assessment was completed in December of 2007 by the Natural Resources Conservation Services (NRCS), Kansas State Research and Extension (KSRE), and Kansas Center for Agriculture Resources and Environment (KCARE). ftp://ftp-fc.sc.egov.usda.gov/KS/Outgoing/Web_Files/Technical_Resources/rwa/UNF_USFSolomon_RWA.pdf

Josh Roe and Robert Wilson with the Kansas State University's Department Agricultural of Economics were asked to complete a Soil and Water Assessment Tool (SWAT) model for the Kirwin Lake watershed. In July 2012, management data was collected from County Conservation District Offices and the Natural Resources Conservation Service (NRCS) in Decatur, Graham, Norton Phillips, Rooks, Sheridan and Thomas counties to help develop this model.

An SLT meeting was held November 7, 2012 to review the SWAT modeling data and identify priority areas for Best Management Practice (BMP) implementation. At a December 4, 2012 meeting, the SLT expanded the priority areas to better meet the load reduction needs. They also chose information and education activities to include in the plan.

Goals identified by the Waconda Lake WRAPS SLT and that will be included in the plan for the Kirwin Lake WRAPS are:

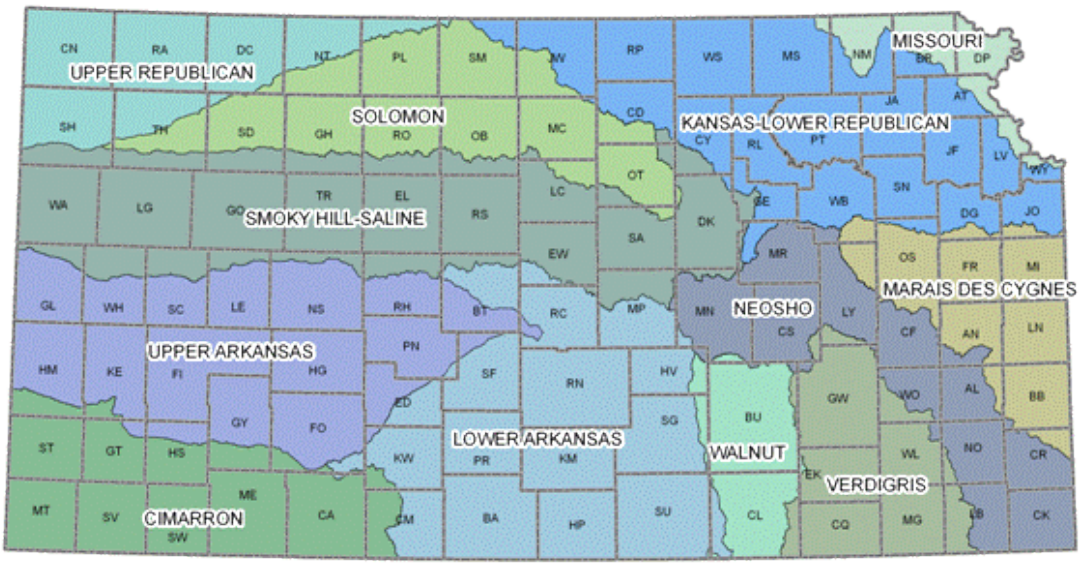
1. Protection of quality and quantity of public drinking water supplies
2. Protection of quality and quantity water supply for commercial use
3. Protection of groundwater quality and quantity
4. Restoration and protection of water quality in Kirwin Lake
5. Restoration and protection of water quality in Solomon River and tributary streams
6. Restoration and protection of riparian areas along Solomon River and tributary streams

7. Protection of productivity of agricultural lands
8. Continue (or increase) sustainability of land and wildlife conservation
9. Increase public awareness and education about watershed/water quality issues.

3.0 Watershed Review

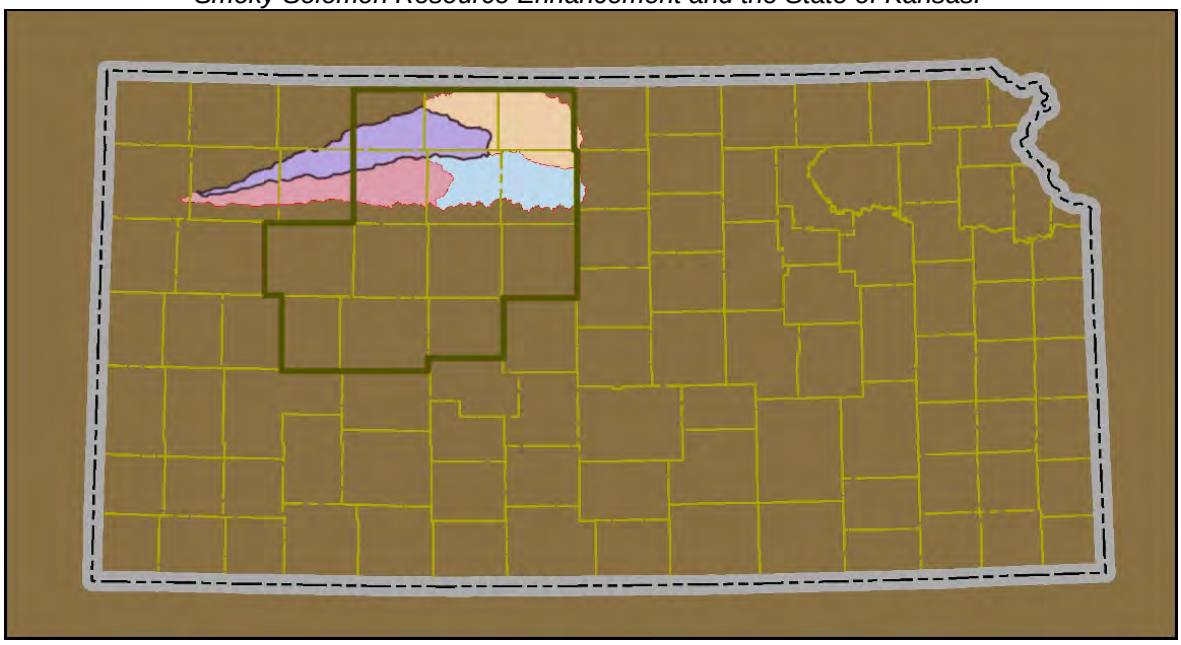
There are twelve river basins located in Kansas. The scope of this WRAPS project is a portion of the Solomon Basin in north central Kansas. The entire basin drains the Solomon River and its tributaries into the Smoky Hill River and eventually empties into the Gulf of Mexico by way of the Mississippi River. The extent of the WRAPS area is the Upper North Fork Solomon River and its tributaries upstream of and including Kirwin Lake. The Kirwin Dam at Kirwin Lake is the geographical endpoint of this WRAPS project.

Figure 1: Location of Solomon River Basin within the River Basins of Kansas
http://www.kwo.org/BACs/Basin%20Advisory%20Committees.htm



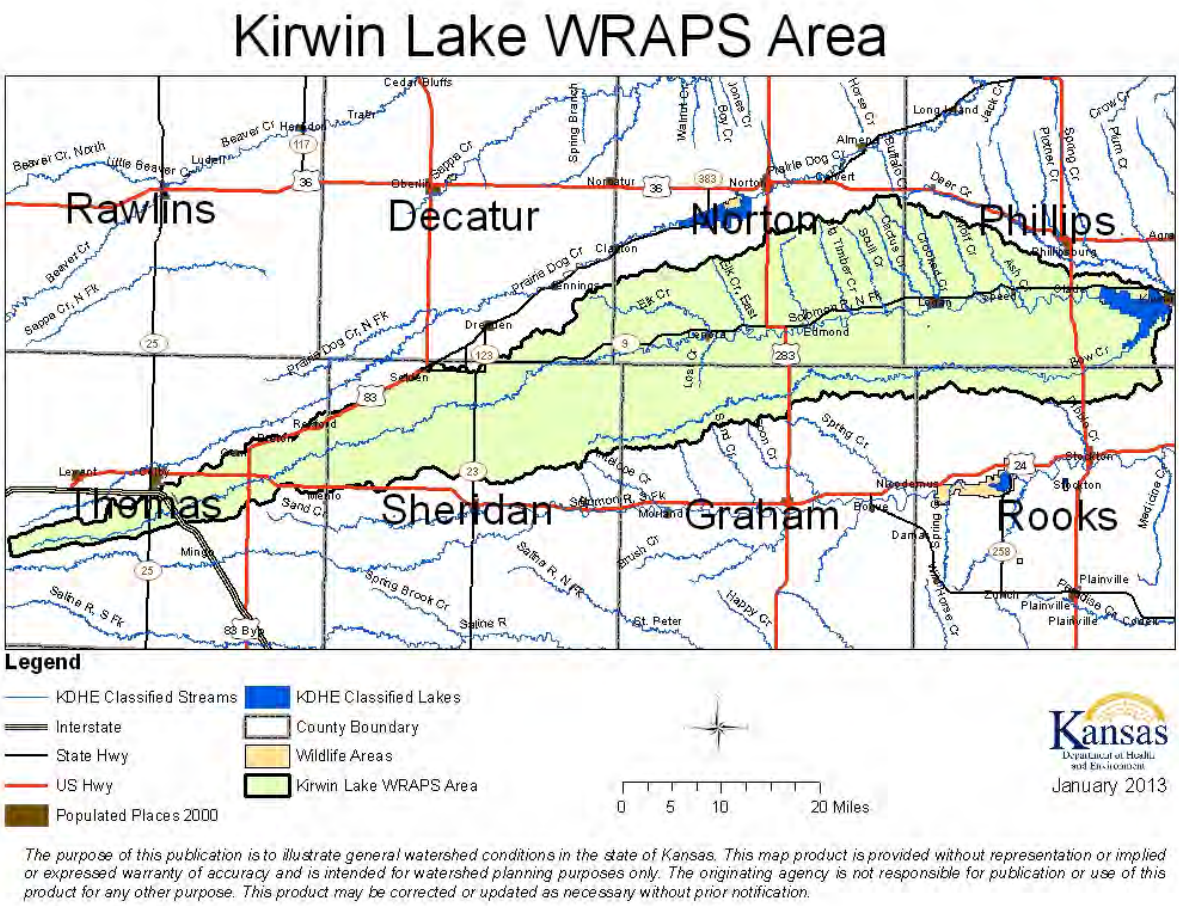
The Kirwin Lake watershed is located in north central Kansas and covers portions of Thomas, Sheridan, Decatur, Graham, Norton, Rooks, and Phillips counties for a total of approximately 1,388 square miles.

Figure 2. Location of the Kirwin Lake watershed in relation to the Waconda Lake watershed, Smoky Solomon Resource Enhancement and the State of Kansas.



The Smoky Solomon Resource Enhancement Inc. (SSRE) is a 501(c)(3) non-profit organization serving Norton, Phillips, Smith, Graham, Rooks, Osborne, Gove, Trego, Ellis, Russell, Lane, Ness, and Rush Counties in north central Kansas. The SSRE counties are outlined. The SSRE manages and administers the Waconda Lake WRAPS and the Kirwin Lake WRAPS. The four HUC 8 Units included in the Waconda Lake watershed are in color on the map. The Kirwin Lake watershed is the northwest HUC 8 Unit and is outlined and colored purple.

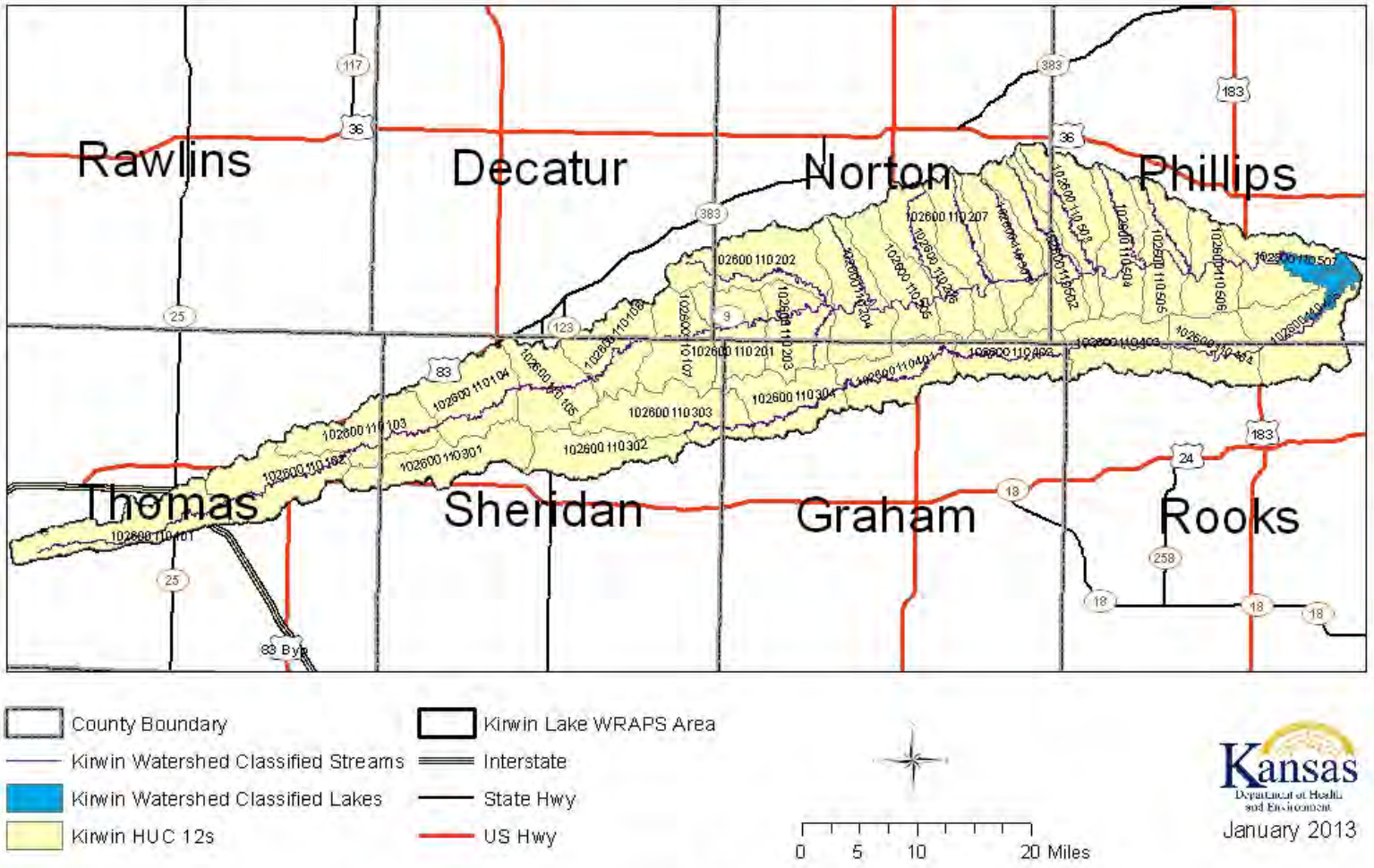
Figure 3. Kirwin Lake WRAPS Area



The purpose of this publication is to illustrate general watershed conditions in the state of Kansas. This map product is provided without representation or implied or expressed warranty of accuracy and is intended for watershed planning purposes only. The originating agency is not responsible for publication or use of this product for any other purpose. This product may be corrected or updated as necessary without prior notification.

HUC is an acronym for **H**ydrologic **U**nit **C**odes. HUCs are an identification system for watersheds. Each watershed has a unique HUC number in addition to a common name. As watersheds become smaller, the HUC number will become larger. For example, the Solomon Basin is one of twelve basins in the state of Kansas. Within the Solomon Basin are four HUC 8 classifications. HUC 8s can further be split into smaller watersheds that are given HUC 10 numbers and HUC 10 watersheds can be further divided into smaller HUC 12s.

Figure 4. Kirwin Lake Watershed with HUC 12 watersheds



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3.1 Bureau of Reclamation Dam

http://www.usbr.gov/projects/Project.jsp?proj_Name=Kirwin%20Unit

General Description

The Kirwin Unit of the Pick-Sloan Missouri Basin Program is located along the North Fork of the Solomon River in the State of Kansas. The unit features include a multiple-purpose dam and reservoir and a canal, lateral, and drainage system used to serve 11,435 irrigable acres. In addition to the irrigation benefits provided by the unit, it protects the downstream area from floods, conserves and enhances fish and wildlife, and provides recreation opportunities.

The principal features of the unit consist of Kirwin Dam and Reservoir; Kirwin Main, North, and South Canals, and a lateral system to distribute the water to the unit lands.

Facility Descriptions

Kirwin Dam

Kirwin Dam, on the North Fork of the Solomon River near Kirwin, Kansas, was completed in August 1955. The dam is a rolled earthfill structure, with a structural height of 169 feet and a crest length of 12,646 feet. About 9,537,000 cubic yards of earth and rock and 44,000 cubic yards of concrete were used in constructing the dam, spillway, and outlet works. The initial capacity of the reservoir was 314,550 acre-feet; 89,650 for irrigation, 215,115 for flood control, and the remainder for dead storage. A concrete spillway on the right abutment of the dam can discharge 96,000 cubic feet per second of water at the maximum water surface elevation 1,773 ft. Fifteen gated sluiceways, discharging through the bottom of the overflow section into the spillway chute, are used primarily to make controlled releases of floodwaters.

The outlet works through the dam acts as a canal and river outlet. Both releases are made from a stilling well located near the downstream side of the dam. The capacity of the canal outlet is 175 cubic feet per second, and the capacity of the river outlet is 100 cubic feet per second.

Canal and Drainage Systems

Kirwin Main Canal begins at the stilling well at the downstream face of the dam and extends 13.4 miles on the north side of the river, where it branches into the Kirwin North and Kirwin South Canals. The initial capacity of the main canal is 175 cubic feet per second. The Kirwin North Canal continues on the north side of the river 14.3 miles and has an initial capacity of 70 cubic feet per second. The Kirwin South Canal crosses the river in a siphon, extends along the south side of the river for 16.3 miles, and has an initial capacity of 60 cubic feet per second.

Laterals extend from all three canals to serve the project lands. These laterals consist of the Kirwin Main, Kirwin North, and Kirwin South, and total approximately 38 miles in length. In addition, there are 2.4 miles of drains.

Operating Agencies

Kirwin Dam and Reservoir are operated and maintained by the Bureau of Reclamation. Operation of the reservoir is coordinated with that of other reservoirs in the Kansas River Basin. Water in the flood control capacity is regulated in accordance with instructions furnished by the Corps of Engineers.

Operation and maintenance of the canals, laterals, and drains are the responsibility of the irrigation district.

The Bureau of Sport Fisheries and Wildlife administers the water surface and the larger portion of the Kirwin Reservoir lands as the Kirwin National Wildlife Refuge (NWR).

Development

History

In 1879, the central branch of the Union Pacific Railroad was constructed through the valley of the North Fork of the Solomon River to Kirwin and the town became the center of activity during the early days of settlement. The settlers had aspirations for a prosperous and well-developed area. However, because of the frequent droughts that occurred over the years, these hopes were not realized and many of the early homesteads were abandoned. Prolonged droughts of the 1930`s and damaging floods focused attention on flood control needs and water conservation. As a result of the investigations by the Bureau of Reclamation and the need for irrigation in the area, Kirwin Irrigation District No. I was organized officially in August 1950.

Investigations

Detailed plans for developing the water resources of the unit were initiated soon after construction was authorized by the Flood Control Act of December 1944.

After the disastrous Kansas River flood of July 1951, public demand for adequate flood control resulted in appropriations authorized by the Congress for that purpose in the Supplemental Appropriation Act of November 1951. The act directed the immediate construction of Kirwin Dam and Reservoir for flood control, but permitted further study before the irrigation aspects of the unit were begun.

The magnitude of the unprecedented flood of July 1951 demonstrated fully the necessity for further regulation and control of the water resources in the Kansas River Basin and required modification of previous plans for the dam, the most important change being that the capacity of the reservoir for flood control was more than doubled.

Authorization

The unit was authorized by the Flood Control Act of December 22, 1944, Public Law 534.

Construction

Construction of Kirwin Dam started in March 1952 and was completed in August 1955. The Kirwin Main, North, and South Canals were completed in January 1958.

Benefits

Irrigation

Lands of the unit are highly productive and the growing season is ample for field crops. A wide variety of crops can be grown in this area, but the principal crops are corn, grain sorghum, and alfalfa hay.

Recreation, Fish & Wildlife

Kirwin National Wildlife Refuge (NWR), the first national wildlife refuge in Kansas, was established in 1954 as an overlay project on a Bureau of Reclamation irrigation and flood control reservoir. The bureau owns the land and controls reservoir water levels, while the refuge staff manages all other activities on the land and water. The reservoir is fed by the North Fork of the Solomon River and Bow Creek. Both are intermittent streams, which mean they may dry up in periods of low precipitation. The refuge and reservoir are open 24 hours daily. The primary purpose of the Kirwin NWR is to provide nesting cover, food and shelter for song birds, waterfowl, upland game birds, and mammals. Wildlife oriented recreational activities such as fishing, hunting, wildlife observation, and photography can also be enjoyed at the refuge. Fishing for walleye, black crappie, largemouth and smallmouth bass, wipers, channel catfish and other species is permitted year round. Hunting for waterfowl and upland game is permitted during the appropriate season.

Flood Control

Before construction of Kirwin Dam and Reservoir, numerous floods damaged or destroyed valley crops, livestock, and property and contributed to losses far downstream along the mainstem rivers. The flood control capacity provided in Kirwin Reservoir is large enough to completely control the largest flood of record and maintain the outflow at a safe channel capacity. As a result, most of the floodwaters can now be harnessed for beneficial use.

Kirwin Reservoir has an exclusive flood control capacity of 215,115 acre-feet and a surcharge capacity of 198,470 acre-feet for a total flood control capacity of 413,585 acre-feet. As of 1998, Kirwin Reservoir has prevented $75.4 million in flood damages.

3.2 Land Cover/Land Uses

Wildlife and Habitat* (from Kansas Water Office Volume III Kansas Water Plan) (http://www.kwo.org/Kansas_Water_Plan/KWP_Docs/VolumeIII/SOL/Rpt_SOL_Basin_Description_KWP2009.pdf) and (March 2006 Darft Comprehensive Conservation Plan and Environmental Assessment for Kirwin national Wildlife Refuge)

Key wildlife habitat includes cropland, good and excellent rangeland, weedy and brushy fence rows and ungrazed areas, riparian areas, streams, and wetlands. Key wildlife species include ring-necked pheasants, greater prairie chicken, bobwhite quail, and whitetail and mule deer. Kirwin National Wildlife Refuge, located west of the town of Kirwin in Phillips County in north central Kansas, was established to provide habitat for and facilitate the management of the Nation`s migratory bird resource. The topography of the refuge is rolling with grass covered hilltops nearly 200 feet higher than the wooded creek bottoms.

Figure 5. Kirwin Lake watershed Land Cover and Land Use

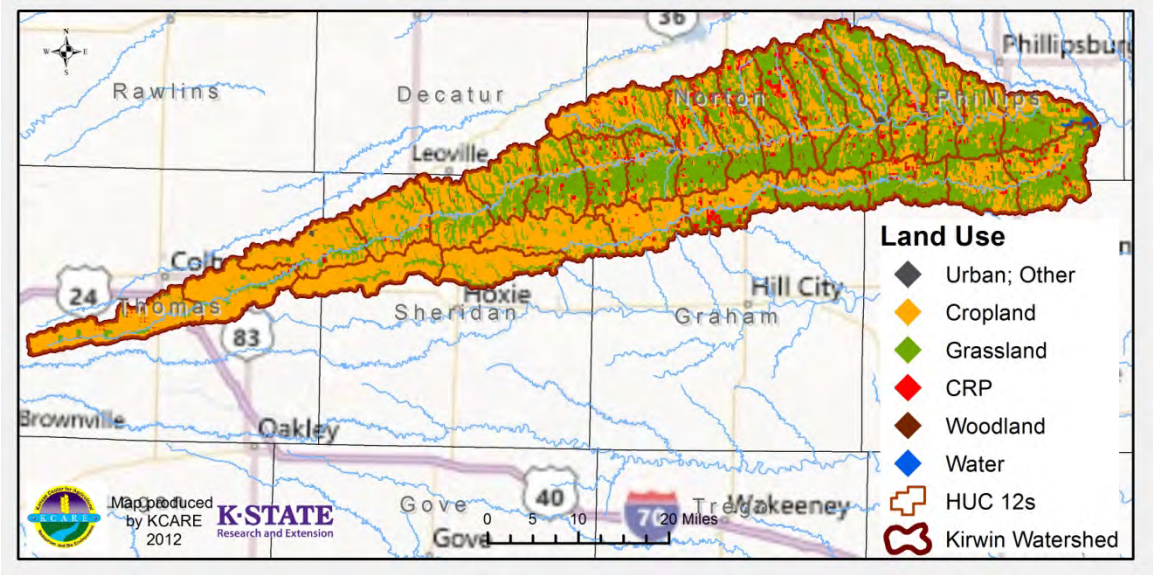


Table 1. Land Use and Land Cover Summary

Land Use	Acres	Percent
Cropland	484,394	53.9
Grassland	359,761	40.1
CRP	41,276	4.6
Woodland	9,469	1.1
Water	1,746	0.2
Residential	555	0.1
Urban Openland	504	0.1
Commercial/Industrial	273	0.0
Other	126	0.0
Urban Woodland	8	0.0
Urban Water	6	0.0
Total	**898,117**	**100.0**

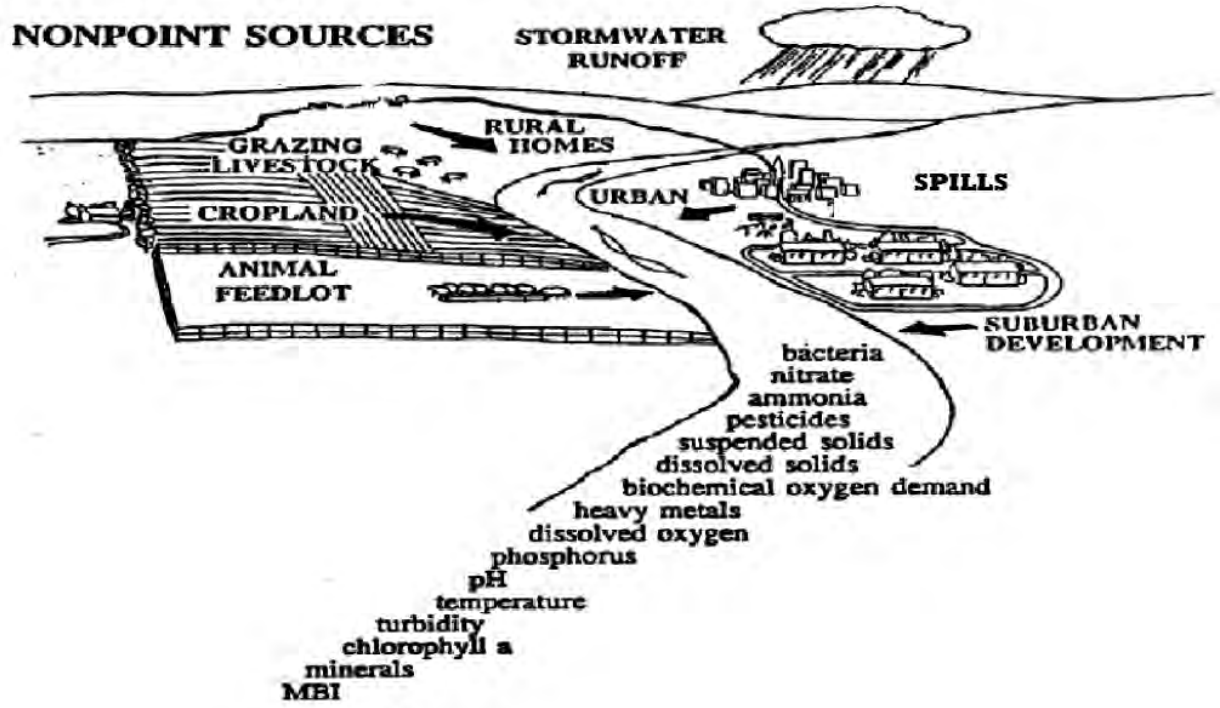
Land Use Potential Contributions to Non Point Source Pollution

Nonpoint source pollution refers to the transport of natural and man-made pollutants by rainfall or snowmelt moving over and through the land surface and entering lakes, rivers, streams, wetlands or ground water. Atmospheric deposition and hydrologic modification are also sources of nonpoint pollution (EPA, 2003). The Kansas Surface Water Quality Standards state:

> "**Nonpoint Source"** *means any activity that is not required to have a national pollutant discharge elimination system permit and that results in the release of pollutants to waters of the state. This release may result from precipitation runoff, aerial drift and deposition from the air, or the release of subsurface brine or other contaminated groundwaters to surface waters of the state." -KAR 28-16-28b(oo)*

Figure 6 shows a conceptual diagram of common sources of nonpoint pollution and potential contaminants that can be transported to surface and ground waters.

Figure 6. Common Sources of Nonpoint Water Pollution



Primary non-point source pollution concerns with cropland include excessive nutrient, pesticide, and organics in groundwater and surface water as well as suspended sediment and turbidity in surface water, streambank erosion, organic matter depletion and inefficient water use on non-irrigated land.

Land with a designated use of grassland, herbaceous cover, pasture or hay will more than likely be used to support livestock production within this watershed. The predominate livestock raised within the Waconda watershed is cattle. Whether raised in confined feeding operations or allowed to roam in fenced grassland areas, livestock animal waste, if not properly managed, can be transported over the surface of agricultural land to nearby lakes and streams. The release of waste from animal feedlots to surface water, groundwater, soil, and air may be associated with a wide range of human health and ecological impacts and contribute to the degradation the North Fork Solomon River and tributaries as well as Kirwin Lake through nutrient and bacteria loading.

Good management practices for small open feedlots and winter feeding areas can minimize the potential for nonpoint source pollution. The key factor in controlling nonpoint pollution is controlling runoff and leaching. Many of the standard practices for erosion and sediment control will reduce losses of animal waste pollutants to surface water systems.

3.3 Designated Uses

Surface waters in this watershed are generally used for aquatic life support (fish), human health purposes, domestic water supply, recreation (fishing, boating, and swimming), groundwater recharge, industrial water supply, irrigation and livestock watering. These are commonly referred to as “designated uses” as stated in the Kansas Surface Water Register, 2010, issued by KDHE. BMP implementation work noted within this document will help to restore the designated uses for Kirwin Lake as well as the Upper North Fork Solomon Rivers and noted tributaries as highlighted within the TMDLs for these respective water bodies.

Table 2. Kirwin Lake watershed Stream/River/Lake Designated Uses
Kansas Surface Water Register, 2010, KDHE

LAKE NAME	COUNTY NAME	PROJECT NAME	TYPE	CLASS	AL	CR	DS	FP	GR	IW	IR	LW
SUBBASIN: UPPER NORTH FORK SOLOMON (HUC 10260011)												
Kirwin Lake	Phillips	LM011001	L	ON	S	A	X	X	X	X	X	X
Kirwin N.W.R.	Phillips	LM072501	W	ON	S	a	X	X	X	X	X	X
Logan City Lake	Phillips	LM059301	L	GP	E	B	X	X	O	X	X	X

STREAM SEGMENT NAME	LATITUDE/LONGITUDE UPPER		LOWER		SEG	CLASS	AL	CR	DS	FP	GR	IW	IR	LW
SUBBASIN: UPPER NORTH FORK SOLOMON (HUC 10260011)														
Ash Cr	39.7758	99.4861	39.6570	99.4013	24	GP	E	b	O	O	X	O	O	X
Beaver Cr	39.8053	99.5991	39.6719	99.5615	23	GP	E	b	O	O	O	O	O	X
Big Timber Cr	39.7839	99.7912	39.6428	99.7275	8	GP	E	b	X	O	X	X	X	X
Bow Cr	39.4500	100.2266	39.6096	99.1634	15	GP	E	b	X	X	X	X	X	X
Cactus Cr	39.7997	99.7030	39.6569	99.5762	28	GP	E	b						
Crooked Cr	39.8151	99.6912	39.6624	99.5509	6	GP	E	b	X	O	X	X	X	X
Elk Cr	39.6631	100.2283	39.6136	99.9951	12	GP	E	b	X	O	X	X	X	X
Elk Cr, East	39.7253	99.9999	39.6205	99.9207	25	GP	E	b	O	O	X	O	O	X
Game Cr	39.7608	99.8373	39.6219	99.8047	10	GP	E	b	X	O	X	X	X	X
Lost Cr	39.5344	100.0158	39.6089	99.9634	20	GP	E	b	X	X	X	X	X	X
Scull Cr	39.7782	99.7445	39.6471	99.6564	21	GP	E	b	O	O	X	O	O	O
Solomon R, N Fk	39.6624	99.5509	39.6759	99.2380	5	GP	E	b	X	X	X	X	X	X
Solomon R, N Fk	39.6428	99.7275	39.6624	99.5509	7	GP	E	b	X	X	X	X	X	X
Solomon R, N Fk	39.6219	99.8047	39.6428	99.7275	9	GP	E	b	X	X	X	X	X	X
Solomon R, N Fk	39.6136	99.9951	39.6219	99.8047	11	GP	E	b	X	X	X	X	X	X
Solomon R, N Fk	39.2810	101.2812	39.6136	99.9951	13	GP	E	b	X	X	X	X	X	X
Wolf Cr	39.7947	99.5532	39.6650	99.4719	22	GP	E	b	O	O	O	O	O	X

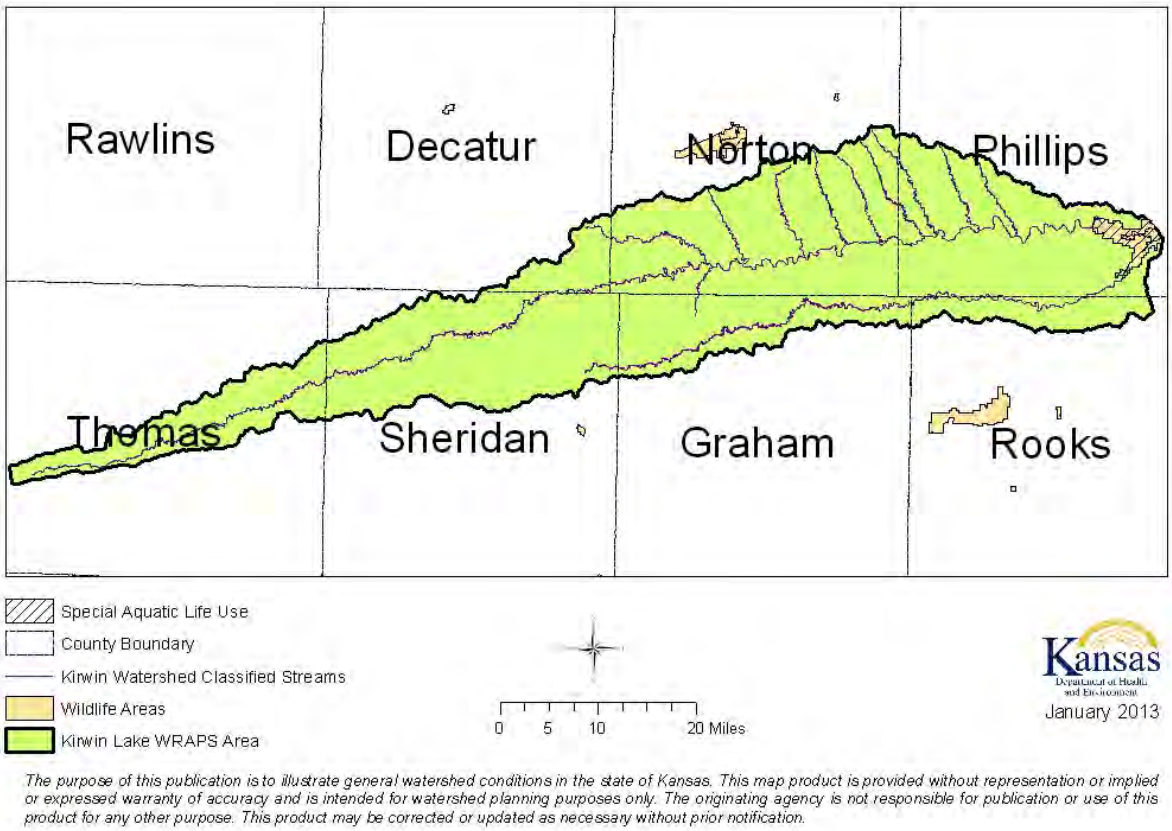
Abbreviations:

HUC	= hydrologic unit code
SEG	= stream segment
CLASS	= antidegradation category
GP	= general purpose waters
EX	= exceptional state waters
ON	= outstanding national resource waters
AL	= designated for aquatic life use
S	= special aquatic life use water
E	= expected aquatic life use water
R	= restricted aquatic life use water
CR	= designated for contact recreational use
A	= Primary contact recreation stream segment is a designated public swimming area
B	= Primary contact recreation stream segment is by law or written permission of the landowner open to and accessible by the public
C	= Primary contact recreation stream segment is not open to and accessible by the public under Kansas law
a	= Secondary contact recreation stream segment is by law or written permission of the landowner open to and accessible by the public
b	= Secondary contact recreation stream segment is not open to and accessible by the public under Kansas law
DS	= designated for domestic water supply use
FP	= designated for food procurement use
GR	= designated for ground water recharge
IW	= designated for industrial water supply use
IR	= designated for irrigation use
LW	= designated for livestock watering use
X	= referenced stream segment is assigned the indicated designated use
O	= referenced stream segment does not support the indicated designated use
blank	= capacity of the referenced stream segment to support the indicated designated use has not been determined by use attainability analysis
Br	= branch
Cr	= creek
Fk	= fork
M	= middle
R	= river

3.4 Special Aquatic Life Use Waters

Special aquatic life use waters are defined as “surface waters that contain combinations of habitat types and indigenous biota not found commonly in the state, or surface waters that contain representative populations of threatened or endangered species”. http://www.fws.gov/kirwin/index.html

Figure 7. Kirwin Lake watershed Wildlife Areas



The Kirwin National Wildlife Refuge lies in a transition zone between the tall grass prairies of the east and the short grass plains of the west. As a result, grasses and wildlife common to both areas are found on the Refuge. The water in the Refuge, along with Kirwin Lake is considered an Outstanding National Resource Water and a Special Aquatic Life Use Water. Numerous protected, threatened or endangered species have range within the basin. These include the bald eagle, snowy plover, piping plover, whooping crane, peregrine falcon and Topeka shiner (historic range).

Kirwin National Wildlife Refuge consists of 10,778 acres. The refuge was established in 1954 as an overlay project on a Bureau of Reclamation irrigation and flood control reservoir (lake). Fee title to the land is held for the United States by the Bureau of Reclamation. Water level control of the lake rests with the Kirwin Irrigation District, Reclamation, and the U.S. Army Corps of Engineers. The lake, established primarily for flood control and irrigation, covers 5,079 surface acres at conservation pool level. Primary water source for the reservoir is Bow Creek and the north fork of the Solomon River. Due to fluctuating water levels the 5,079 acres are often divided between water, mud flats, and timber/brush growth. The remainder of the refuge is composed of 1,600 acres of cropland, 3,749 acres of grassland, and 400 acres of riparian areas and shelter-belts surrounding Kirwin Lake.

Kirwin National Wildlife Refuge supports diverse wildlife habitat including grasslands, wooded riparian areas, open water, and wetlands. The refuge serves as a migration stop over for waterfowl and as a staging point for water birds including Pelicans and Cormorants. Kirwin also has a large winter population of both Bald and Golden Eagles and a large population of other species of hawks and owls. The refuge provides important nesting cover, food, and shelter for songbirds. With proper water levels the refuge provides exposed mud as feeding areas for spring and fall migrations of shorebirds.

Kirwin National Wildlife Refuge also provides food and cover for resident populations of white tailed and mule deer, pheasant, bobwhite quail, greater prairie chicken, and the Rio Grande turkey. Providing quality wildlife habitat and compatible recreation opportunities are key components to managing Kirwin NWR.

Depending on reservoir water levels, Refuge staff use a variety of wildlife habitat management practices to provide optimum habitat for wildlife. Crops such as corn, wheat, and grain sorghum are grown through a cooperative farming program. A portion of the crop is left in the field to provide food for migrating waterfowl and resident wildlife. Other habitat management tools include grazing, brush control, haying, mowing, and controlled burning.

Prohibited Activities: To minimize disturbance to wildlife and to comply with Federal laws, policies and regulations, these activities are prohibited on the Refuge

- Camping
- Fires
- Water skiing
- Personal watercraft (jet skis)
- Speed boating
- Swimming
- Collecting plants, animals (including antlers), or historical artifacts
- Fireworks
- Dogs and other pets must be on a leash or under the owner's immediate control. Free roaming pets are prohibited.
- Littering
- Disorderly conduct
- Intoxication
- Commercial use (including guiding)

This portion of the watershed is predominately cropland and grassland. Predominate sources of pollution that could potentially threaten the health of this feature would include sediment and nutrient runoff from cropland as well as bacteria and nutrient pollutants from grazing activities. The Kirwin NWR is included within the Priority Area for the Kirwin Lake WRAPS, providing the opportunity for BMP implementation to be focused close to the refuge.

3.5 Public Water Supply (PWS) and National Pollutant Discharge Elimination System (NPDES)

In the state of Kansas, a public water supply system is defined by Kansas Statutes Annotated (K.S.A.) 65-162a and Kansas Administrative Regulations (K.A.R.) 28-15a-2 as a "system for delivery to the public of piped water for human consumption that has at least 10 service connections or regularly serves at least 25 individuals daily at least 60 days out of the year." These systems are regulated by the state to assure the citizenry safe and pathogen-free drinking water and are comprised of water intakes, wells, and water treatment facilities. The KDHE oversees more than 1,080 statewide public water supply systems including municipalities, rural water districts, and privately owned systems. These systems may serve a small community of several families to a city of more than 300,000 persons.

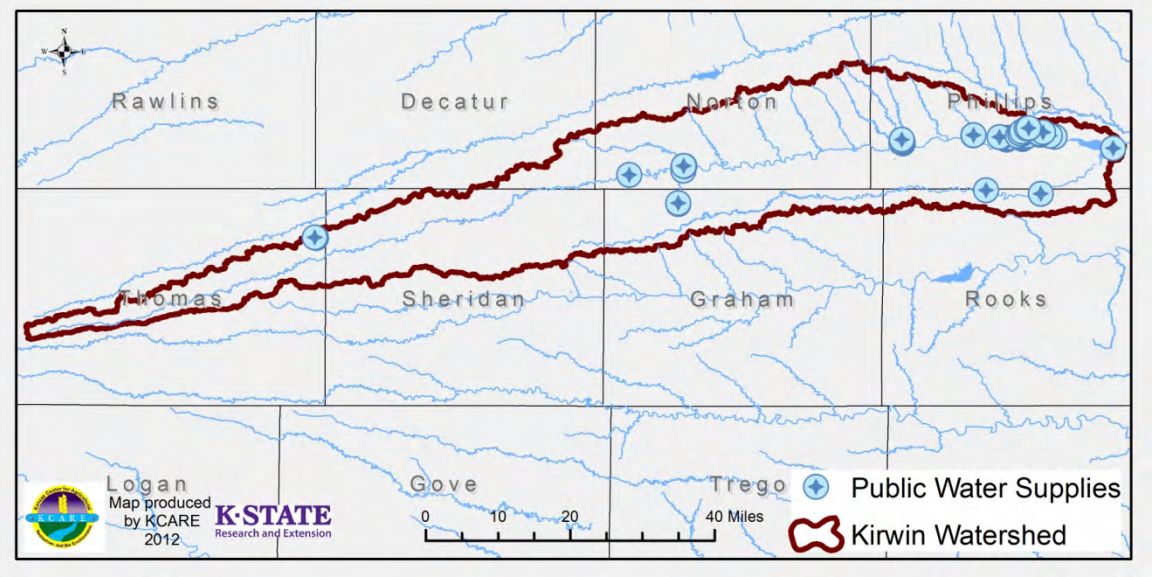
Table 3 lists the Public Water Supplies located within the Kirwin Lake watershed. Due to the lack of surface water in this watershed, all of the public water supply is pulled from groundwater.

Table 3. Public Water Supplies within the Kirwin Lake watershed

Site ID	Status	Facility Name	PWS City	County	HUC 10
00134491	Active/In Use	GLADE, CITY OF	GLADE	PHILLIPS	1026001107
00036467	Active/In Use	GLADE, CITY OF	GLADE	PHILLIPS	1026001107
00036474	Active/In Use	GLADE, CITY OF	GLADE	PHILLIPS	1026001107
00033543	Active/In Use	HANSEN BSA CAMP @ KIRWIN	SALINA	PHILLIPS	1026001109
00050036	Active/In Use	LENORA, CITY OF	LENORA	NORTON	1026001103
00050975	Active/In Use	LENORA, CITY OF	LENORA	NORTON	1026001103
00196901	Active/In Use	LENORA, CITY OF	LENORA	NORTON	1026001103
00196888	Active/In Use	LENORA, CITY OF	LENORA	NORTON	1026001103
00007728	Active/In Use	LENORA, CITY OF	LENORA	NORTON	1026001103
00035020	Active/In Use	LENORA, CITY OF	LENORA	NORTON	1026001103
00196895	Active/In Use	LENORA, CITY OF	LENORA	NORTON	1026001103
00035037	Active/In Use	LENORA, CITY OF	LENORA	NORTON	1026001103
00006855	Active/In Use	LOGAN, CITY OF	LOGAN	PHILLIPS	1026001104
00121051	Active/In Use	LOGAN, CITY OF	LOGAN	PHILLIPS	1026001104
00007025	Active/In Use	LOGAN, CITY OF	LOGAN	PHILLIPS	1026001104
00006848	Active/In Use	LOGAN, CITY OF	LOGAN	PHILLIPS	1026001104
00005111	Active/In Use	LOGAN, CITY OF	LOGAN	PHILLIPS	1026001104
00121068	Active/In Use	LOGAN, CITY OF	LOGAN	PHILLIPS	1026001104
00121075	Active/In Use	LOGAN, CITY OF	LOGAN	PHILLIPS	1026001104
00007421	Active/In Use	LOGAN, CITY OF	LOGAN	PHILLIPS	1026001104
00121082	Active/In Use	LOGAN, CITY OF	LOGAN	PHILLIPS	1026001104

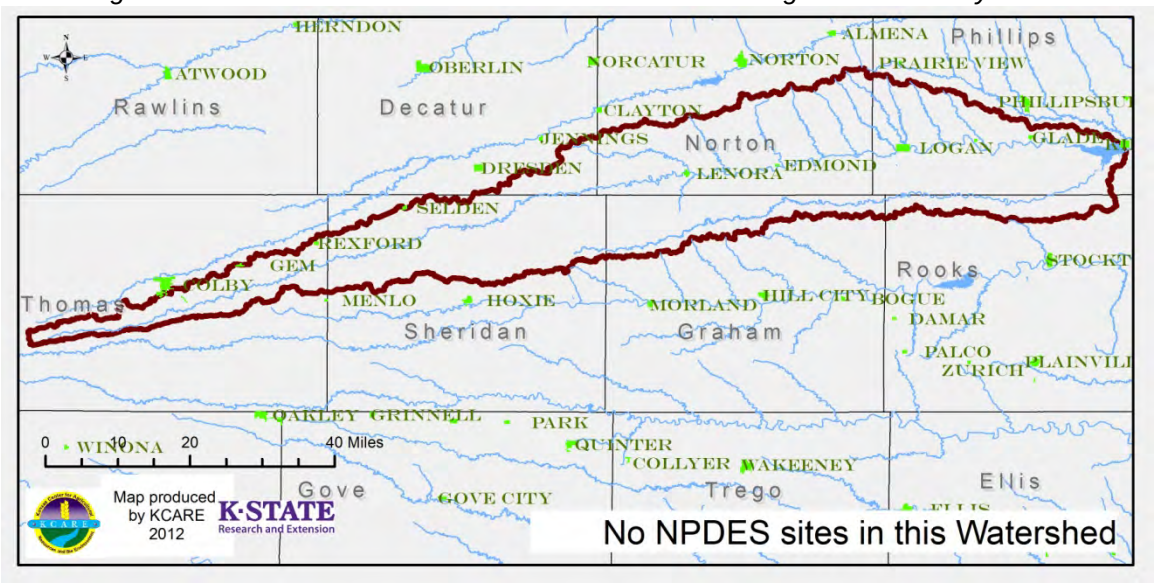
00040213	Active/In Use	NORTON CO RWD #1	NEW ALMELO	NORTON	1026001103
00022451	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001106
00021526	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001106
00041476	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001106
00022444	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001106
00022499	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001106
00022208	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001106
00022437	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001106
00021502	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00021519	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00022468	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00021984	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00022475	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00021960	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00022413	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00022291	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00022482	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00022307	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00022420	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00022222	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00022192	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00021533	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00022338	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00021977	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00021540	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00022284	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00022277	Active/In Use	PHILLIPSBURG, CITY OF	PHILLIPSBURG	PHILLIPS	1026001107
00007643	Lost Tag	PLAINVILLE, CITY OF	PLAINVILLE	ROOKS	1026001107
00130932	Active/In Use	REXFORD, CITY OF	REXFORD	THOMAS	1026001101
00007438	Active/In Use	REXFORD, CITY OF	REXFORD	THOMAS	1026001101
00007483	Abandoned	REXFORD, CITY OF	REXFORD	THOMAS	1026001101
00134484	Active/In Use	ROOKS CO RWD #1	WOODSTON	ROOKS	1026001108
00040053	Active/In Use	ROOKS CO RWD #1	WOODSTON	ROOKS	1026001108
00130109	Active/In Use	ROOKS CO RWD #3	PLAINVILLE	ROOKS	1026001108
00040220	Active/In Use	ROOKS CO RWD #3	PLAINVILLE	ROOKS	1026001108
00036573	Active/In Use	SPEED, CITY OF	PHILLIPSBURG	PHILLIPS	1026001105
00036559	Active/In Use	SPEED, CITY OF	PHILLIPSBURG	PHILLIPS	1026001105
00134309	Active/In Use	SPEED, CITY OF	PHILLIPSBURG	PHILLIPS	1026001105

Figure 8. Kirwin Lake watershed Public Water Supplies



Wastewater treatment facilities are permitted and regulated through KDHE. These facilities are considered point sources for pollutants. National Pollutant Discharge Elimination System (NPDES) permits specify the maximum amount of pollutants allowed to be discharged to surface waters. Having these point sources located on streams or rivers could potentially impact water quality within the waterways of the Waconda WRAPS Project Area. Pollutants originating from NPDES facilities within the watershed could include suspended solids, biological pollutants that reduce oxygen in the water column, and inorganic compounds or bacteria. Wastewater is treated to remove solids and organic materials, disinfected to kill bacteria and viruses, and discharged to surface waters. Any pollutant discharge from point sources that is allowed by the state is considered to be Wasteload Allocation and is reflected within TMDLs noted for the WRAPS Project Area. There are no NPDES sites located within the Kirwin Lake WRAPS.

Figure 9. Kirwin Lake watershed National Pollutant Discharge Elimination Systems

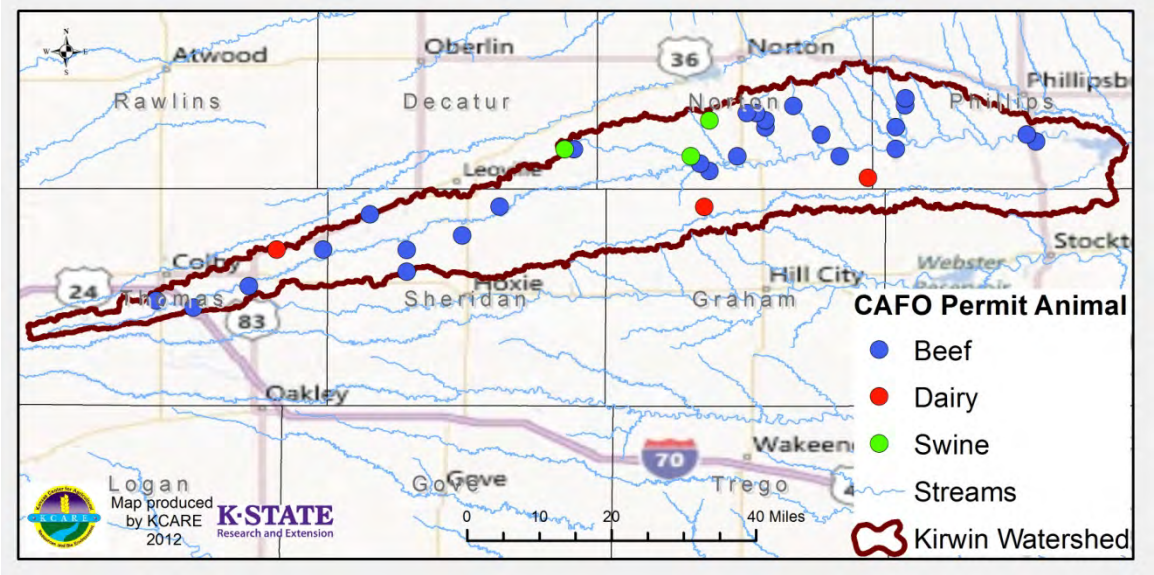


There are also numerous onsite wastewater systems (OWS) present within the watershed. It is unknown at this time the total number of systems present as well as the number which are currently failing or inadequately constructed. For systems which could be adversely effecting water quality and the surrounding environment, counties within the watershed have sanitary codes which provide authority to regulate the operation of OWSs.

3.6 Confined Animal Feeding Operations

Confined Animal Feeding Operations (CAFO), as defined by the EPA, are agricultural operations where animals are kept and raised in confined situations. These facilities have animals, feed, manure and urine, dead animals, and production operations consolidated onto small areas of land. Within Kansas, operations with greater than 300 animal units must register with KDHE. Those facilities with greater than 999 animal units are considered point sources of pollution and must be permitted by EPA. Within the Kirwin Lake WRAPS there are numerous CAFOs. Those facilities within the watershed which are not considered potential point sources of pollution could potentially benefit from increased awareness and/or BMPs to be implemented as outlined within this plan. In the event these facilities were to make upgrades to their operations, both phosphorus and bacteria reductions would be realized due to these improvements. Pollutant load reductions resulting from this type of work would help to address the excess nutrients contributing the Kirwin Lake EU TMDL.

Figure 10. Kirwin Lake watershed Active CAFOs



3.7 Water Quality Impairments

A TMDL designation sets the maximum amount of pollutant that a specific body of water can receive without violating the surface water-quality standards, resulting in failure to support their designated uses. TMDLs established by Kansas may be done on a watershed basis and may use a pollutant-by-pollutant approach or a biomonitoring approach or both as appropriate. TMDL establishment means a draft TMDL has been completed, there has been public notice and comment on the TMDL, there has been consideration of the public comment, any necessary revisions to the TMDL have been made, and the TMDL has been submitted to EPA for approval. The desired outcome of the TMDL process is indicated, using the current situation as the baseline. Deviations from the water quality standards will be documented. The TMDL will state its objective in meeting the appropriate water quality standard by quantifying the degree of pollution reduction expected over time. Interim objectives will also be defined for midpoints in the implementation process. In summary, TMDLs provide a tool to target and reduce point and nonpoint pollution sources. The goal of the WRAPS process is to address high priority TMDLs. KDHE reviews TMDLs assigned in each of the twelve basins of Kansas every five years on a rotational schedule. Table 3 includes the review schedule for the Solomon River Basin. This TMDL review schedule will be taken into consideration when determining dates in which watershed plan review and revisions will take place. Once TMDLs within the Kirwin WRAPS project area are reviewed and/or revised by KDHE, the Kirwin WRAPS SLT will evaluate the new TMDL information and make adjustments to water quality endpoints and watershed plan goal load reductions as needed. For more information on TMDLs within Kansas visit: http://www.kdheks.gov/tmdl/.

Table 4. TMDL Development Cycle for the Solomon River Basin

Year Ending in Sept.	Implementation Period	Possible TMDLs to Revise	TMDLs to Evaluate
2009	2010-2019	2003	N/A
2014	2015-2020	2003, 2004	2003, 2004, 2005
2019	2020-2029	2003, 2004, 2009	2003, 2004, 2006, 2009

NOTE:

Total Maximum Daily Loads (TMDLs) are quantitative objectives and strategies needed to achieve water quality standards. The water quality standards constitute the goals of water quality adequate to fully support designated uses of streams, lakes, and wetlands. The process of developing TMDLs determines:

1. The pollutants causing water quality impairments
2. The degree of deviation away from applicable water quality standards
3. The levels of pollution reduction or pollutant loading needed to attain achievement of water quality standards
4. Corrective actions, including load allocations, to be implemented among point and nonpoint sources in the watershed affecting the water quality limited water body
5. The monitoring and evaluation strategies needed to assess the impact of corrective actions in achieving TMDLs and water quality standards

Provisions for future revision of TMDLs based on those evaluations

Table 5. Stream and Lake TMDLs for Upper North Fork Solomon
TMDL waters directly addressed by Kirwin WRAPS Plan are highlighted in red

Waterbody	Impairment	Priority	Station	ApprovalStatus
BOW CREEK	Se	Low	SC545	1/21/04
UPPER N FK SOLOMON R	Se	Low	SC546	1/21/04
UPPER N FK SOLOMON R (SO4)	SO4	Low	SC546	1/21/04
KIRWIN LAKE	EU	Medium	LM011001	9/30/03
KIRWIN LAKE	DO	Medium	LM011001	9/30/03
LOGAN CITY LAKE	EU	Low	LM069301	9/30/03

Abbreviations

DO - Dissolved Oxygen Deficiency
EU - Eutrophication
Se – Selenium
SO4 - Sulfate

Table 6. 303(d) List for Upper North Fork Solomon

2012 303(d) List of All Impaired/Potentially Impaired Waters Solomon Basin

10260011
Upper North Fork Solomon

Cat.	Stream/Lake	Impaired Use	Impairment	Station	Counties	Body Type	Priority	Comment
5	North Fork Solomon River Near Glade	Water Supply	Arsenic	SC546	PL, NT, TH, SD	Watershed	Low	
5	Bow Creek Near Stockton	Water Supply	Sulfate	SC545	PL, RO, SD, GH	Watershed	Low	
5	Bow Creek Near Stockton	Aquatic Life	Total Phosphorus	SC545	PL, RO, SD, GH	Watershed	Low	median value: 0.241 > median flag value:0.201
5	North Fork Solomon River Near Glade	Aquatic Life	Total Phosphorus	SC546	PL, NT, TH, SD	Watershed	Low	median value: 0.21 > median flag value:0.201
4a	Kirwin Lake	Aquatic Life	Dissolved Oxygen	LM011001	PL, RO	Lake	Medium	TMDL Approved on 9/30/2003
4a	Kirwin Lake	Aquatic Life	Eutrophication	LM011001	PL, RO	Lake	Medium	TMDL Approved on 9/30/2003
4a	Logan City Lake	Aquatic Life	Eutrophication	LM069301	PL	Lake	Low	TMDL Approved on 9/30/2003
4a	Bow Creek Near Stockton	Aquatic Life	Selenium	SC545	PL, RO, SD, GH	Watershed	Low	TMDL Approved on 1/21/2004
4a	North Fork Solomon River Near Glade	Aquatic Life	Selenium	SC546	PL, NT, TH, SD	Watershed	Low	TMDL Approved on 1/21/2004
4a	North Fork Solomon River Near Glade	Water Supply	Sulfate	SC546	PL, NT, TH, SD	Watershed	Low	TMDL Approved on 1/21/2004
3	Kirwin Lake	Water Supply	Arsenic	LM011001	PL, RO	Lake		Small sample size

3.8 TMDL Load Allocations

As previously stated within this watershed plan, the Kirwin Lake WRAPS SLT has identified restoration and protection of water quality in Kirwin Lake as well as within the Solomon River and tributary systems as a goal. Both Crop and Livestock BMP work taking place within the Kirwin Lake WRAPS watershed would contribute to phosphorus reductions needed to meet the Kirwin Lake Eutrophication TMDL. The overall load

reduction goal of the Kirwin Lake WRAPS watershed plan is to reduce phosphorus entering Kirwin Lake by 94,600 lbs/yr, to directly address the Medium Priority Eutrophication and Dissolved Oxygen TMDLs.

A complicated hydrology and limited water quality monitoring data collected during high flow situations has made it difficult to determine an accurate estimate of the overland runoff loads of phosphorus that enter Kirwin Reservoir through analysis KDHE's water monitoring data. Peak high flows that are occurring once every two years are two orders of magnitude greater than typical high flow events. Therefore large nutrient loads are entering Kirwin Reservoir through overland runoff during intense, short duration storms interceded by long periods of load accumulation on the land within the watershed. The current loads expressed by the original TMDL and in more recent KDHE analysis of reservoir loadings reflect a runoff condition thus giving the appearance of much higher load reduction goals necessary to achieve the TMDL.

Based on more recent KDHE monitoring data it was determined to use the SWAT model estimate of current nutrient loads within the Kirwin Reservoir watershed and to set the initial goal at the original value of the TMDL of 48,000 lbs/yr of Phosphorus. This would be a 66% reduction in phosphorus as related to the required load reduction stated in the TMDL, this amount of reduction is not atypical of a large reservoir. This would mean that the overall load reduction goal to address the Kirwin Reservoir Eutrophication TMDL 94,600 lbs/yr of phosphorus.

Kirwin Lake Current Phosphorus Load Using SWAT model
143,000 lbs/yr

-

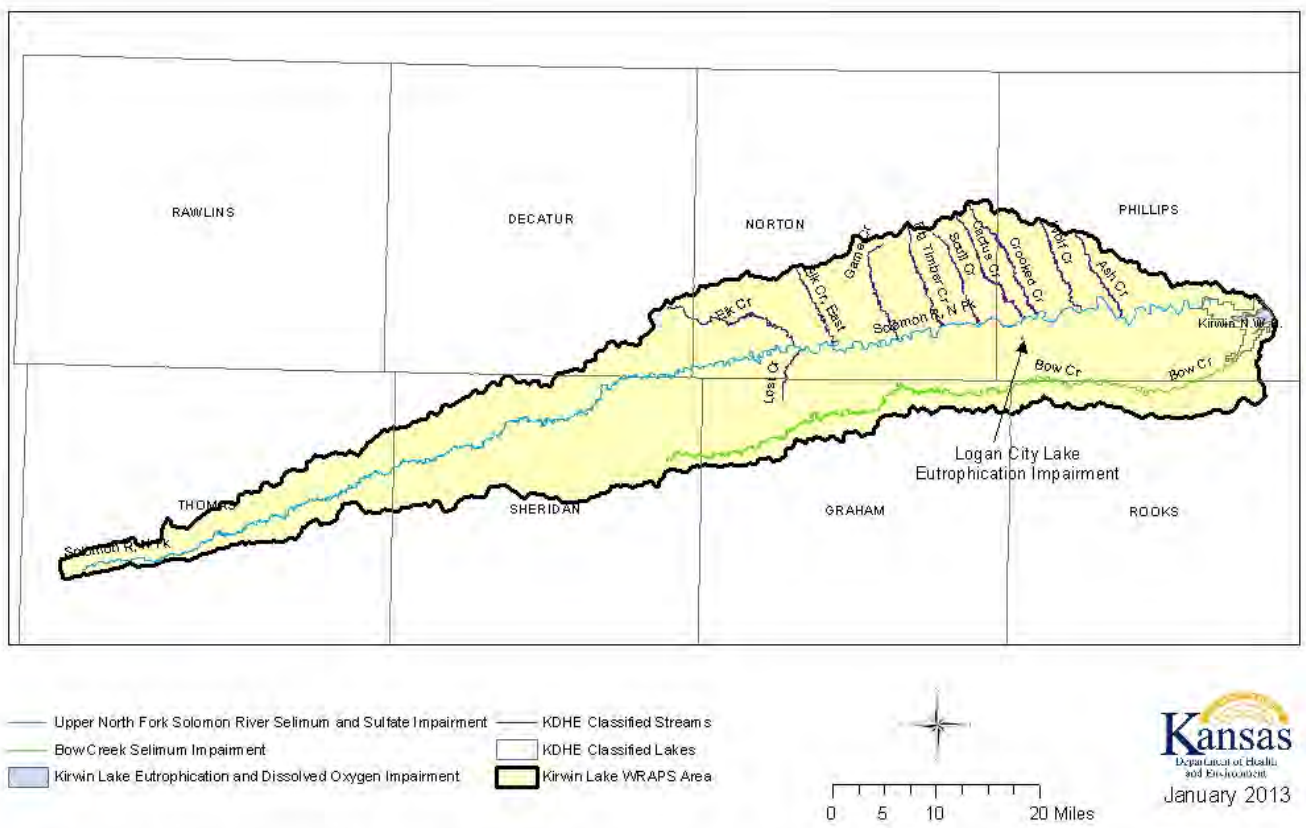
Phosphorus Load to Meet Kirwin Lake EU TMDL
48,400 lbs/yr

=

Watershed Plan Phosphorus Load Reduction Goal
94,600 lbs/yr

With these goals in mind BMP implementation schedules have been developed in consultation with the SLT and other technical advisors serving within the watershed. These BMP implementation schedules have been developed to address nutrient runoff originating from cropland as well as bacteria and nutrient pollutants originating from livestock-related sources within the watershed. BMP implementation noted within the Priority Areas will also positively benefit other TMDLs within the Kirwin Lake WRAPS Project Area. These are included in Table 4 of this plan.

Figure 11. Kirwin Lake watershed Classified Streams and Lakes



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4.0 Determination of Priority Areas and BMP Needs

4.1 Priority Areas

A component of an effective watershed plan is identification of priority areas in which to focus BMP implementation. Targeting implementation of BMPs within focused areas of a watershed helps to maximize water quality improvements noted for the receiving water bodies. For the Kirwin Lake WRAPS watershed plan, targeted BMP implementation is necessary to efficiently reduce the phosphorus loading of Kirwin Lake through inflow of the Upper North Fork Solomon Rivers and tributaries which contribute to the eutrophication impairment for Kirwin Lake. The primary non-point source contributors to phosphorus loading of Kirwin Lake are likely runoff from livestock grazing/feeding operations and cropland. With these two sources of nutrients estimated to be contributing the majority of the phosphorus load entering Kirwin Lake, BMP implementation focused on addressing livestock sources will provide 85% of the estimate reduction while cropland BMPs will contribute the balance.

Stakeholders used two tools in concert with local knowledge of the watershed to select target areas for implementation of Cropland BMPs. First, a SWAT (Soil Water Assessment Tool) model for the watershed was conducted by Kansas State University in 2012. SWAT is a river basin scale model designed to quantify the impact of land management practices on water resources in large, complex watersheds. Information collected from Phillips, Norton, and Graham County NRCS offices was used to help develop the SWAT Model. The information collected was for the area of these counties that lay within the Kirwin Lake watershed. This information is located in Table 7 of this plan.

The SWAT model identified nine HUC-12 sub-watersheds where cropland contributions to pollutant loads were the greatest. These sub-watersheds are located primarily in Phillips and Norton counties with a small area in Rooks County. See Figures 12, 13, and 14 in this plan. The initial nine HUC-12 sub-watersheds selected did not provide substantial enough load reduction to meet the SWAT model goal of 94,600 pounds of phosphorous reduction. Based on information identified in the SWAT model and local knowledge, additional priority areas were chosen. The first set of HUCs are the first tier of priority watersheds and the second set will be the second tier of priority watersheds (Figure 15 identifies the first and second tier priority areas). Cropland and livestock BMPs will be implemented in all priority areas.

Because the SWAT model generated extremely low soil erosion rate estimates, stakeholders involved in targeting decisions requested KDHE to create a cross-referencing tool using observable data to check results of the SWAT model. This method (Cropland/Slope Analysis) factored the percentage of cropland in all HUC-12 sub-watersheds with land slope to estimate soil erosion potential from cropland on a HUC- 12 sub-watershed basis.

Land slope was used along with total cropland acres because the degree of incline (slope) of soils is a significant factor in soil erosion. Generally speaking, the risk of erosion and generation of pollutant carrying runoff increases as the slope of the land increases. A land slope of 4% or greater was used as the slope factor since most fields defined as Highly Erodible Land by USDA in northwest Kansas have a slope of 4% or greater. This Cropland/Slope Analysis identified twenty-one HUC-12 sub-watersheds having a high percentage of cropland with a land slope of 4% or greater. Interestingly, the nine HUC-12 sub-watersheds identified by Kansas State University SWAT model were also identified by the Cropland/Slope Analysis, lending confidence to the results of the SWAT model. However eleven additional HUC-12 sub-watersheds in Norton, Graham and Sheridan counties that were not identified by the SWAT model were identified as being significant potential sediment contributors by the Cropland/Slope Analysis. Small areas of these sub-watersheds are also located in Decatur and Thomas counties.

Based on the SWAT hydrology model and the Cropland/Slope Analysis, stakeholders targeted twenty-one HUC-12 sub-watersheds in the Kirwin Lake watershed for implementation of cropland and livestock BMPs. See Figure 14 in this plan.

Results of the modeling helped SLT members identify priority areas for BMP implementation.

Land use calculations came from the 2007 land cover survey from the Farm Service Agency (FSA). This survey was also used to develop and calibrate the SWAT model.

As depicted in the summary tables, there is an estimated 255,070 acres of cropland within the targeted areas. BMP adoption rates are listed next to each BMP. Acres treated is calculated by multiplying the adoption rate by the cropland acreage. (i.e. 255,070 acres of cropland x 20% terrace adoption rate=51,014 acres of additional or rebuilt terraces over the life of the plan.)

Table 7. Agricultural Management Operations Survey Information for portions of Phillips, Norton, and Graham Counties within the Kirwin Lake watershed.

Cropland Operations for Phillips County				
Management Operations	Crop type			
	Corn	Soybean	Sorghum	Wheat
Tillage date	NA	NA	NA	summer
Tillage equipment	No-till	No-till	No-till	Disk
Planting date	1-May	1-Jun	1-Jun	20-Sep
Fertilizer type	Nitrogen	Phosphate	Nitrogen	Nitrogen
Fertilizer application date	15-Apr	15-May	15-May	1-Sep
Fertilizer application rate	100 lbs/acre	30 lbs/acre	85 lbs/acre	70 lbs/acre
Harvest date	1-Oct	1-Sep	1-Nov	1-Jul
Irrigation source	NA	NA	NA	NA
Irrigation schedule	NA	NA	NA	NA
Other				
Grazing Operations for Phillips County				
Grazing Operations	Grazing type			
	Beef Cattle 1 cow-calf	Beef Cattle 2 weaned calves	Dairy cattle	Swine
Grazing begin date	1-May	1-May	NA	NA
Fertilizer type	NA	NA		
Fertilizer application date	NA	NA		
Fertilizer application rate	NA	NA		
Stocking rate	8 - 10 acres/head	5 acres/head		
Grazing end date	31-Oct	31-Aug		
Number of animals	10000	500	0	0

Phillips County BMP Operations	
BMP operations	**% in wshd**
Terraces	90
Terraces/contour	
Contour	90
No-till	75
Riparian buffer	5
Grassed waterways	50
Permanent vegetation	
Off-stream watering system	10
Rotational grazing	25

Cropland Operations for Norton County				
Management Operations	Crop type			
	Corn	Soybean	Sorghum	Wheat
Tillage date	N/A	N/A	N/A	N/A
Tillage equipment	No-till	No-till	No-till	No-till
Planting date	1-May	15-Jun	1-Jun	20-Sep
Fertilizer type	Nitrogen	Phosphate	Nitrogen	Nitrogen
Fertilizer application date	15-Apr	1-Jun	15-May	1-Sep
Fertilizer application rate	100 lbs/acre	30 lbs/acre	85 lbs/acre	70 lbs/acre
Harvest date	30-Oct	30-Sep	15-Oct	1-Jul
Irrigation source	N/A	N/A	N/A	N/A
Irrigation schedule	N/A	N/A	N/A	N/A
Other				
Grazing Operations for Norton County				
Grazing Operations	Grazing type			
	Beef Cattle 1 cow-calf	Beef Cattle 2 weaned calves	Dairy cattle	Swine
Grazing begin date	1-May	15-Sep	N/A	N/A
Fertilizer type	N/A	N/A		
Fertilizer application date	N/A	N/A		
Fertilizer application rate	N/A	N/A		
Stocking rate	8 - 10 acres/head	5 acres/head		
Grazing end date	31-Oct	30-Nov		
Number of animals	20000	10000	N/A	N/A

Norton County BMP Operations	
BMP operations	**% in wshd**
Terraces	85
Terraces/contour	10
Contour	2
No-till	75
Riparian buffer	5
Grassed waterways	3
Permanent vegetation	5
Off-stream watering system	10
Rotational grazing	30

Cropland Operations for Graham County				
Management Operations	Crop type			
	Corn	Soybean	Sorghum	Wheat
Tillage date	NA	NA	NA	summer
Tillage equipment	No-till	No-till	No-till	Disk
Planting date	1-May	1-Jun	1-Jun	20-Sep
Fertilizer type	Nitrogen	Phosphate	Nitrogen	Nitrogen
Fertilizer application date	15-Apr	15-May	15-May	1-Sep
Fertilizer application rate	100 lbs/acre	30 lbs/acre	85 lbs/acre	70 lbs/acre
Harvest date	1-Oct	1-Sep	1-Nov	1-Jul
Irrigation source	NA	NA	NA	NA
Irrigation schedule	NA	NA	NA	NA
Other				

Grazing Operations for Graham County				
Grazing Operations	Grazing type			
	Beef Cattle 1 cow-calf	Beef Cattle 2 weaned calves	Dairy cattle	Swine
Grazing begin date	1-May	1-May	NA	NA
Fertilizer type	NA	NA		
Fertilizer application date	NA	NA		
Fertilizer application rate	NA	NA		
Stocking rate	8 - 10 acres/head	5 acres/head		
Grazing end date	31-Oct	31-Aug		
Number of animals	1500	750	0	0

Graham County BMP Operations	
BMP operations	**% in wshd**
Terraces	60
Terraces/contour	0
Contour	0
No-till	40
Riparian buffer	1
Grassed waterways	1
Permanent vegetation	40
Off-stream watering system	10
Rotational grazing	5

Figure 12 . Kirwin Lake WRAPS - HUC 10260011 Phosphorous Loads, lbs/acre

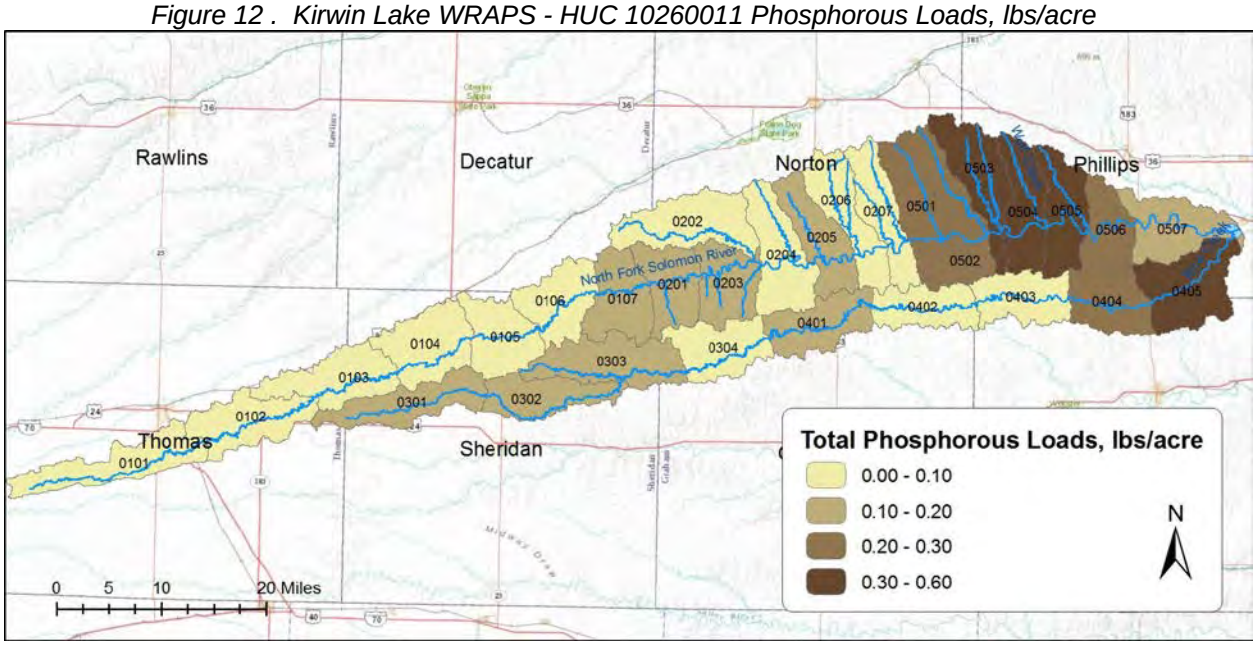


Figure 13 . Kirwin Lake WRAPS - HUC 10260011 Sediment Loads, lbs/acre

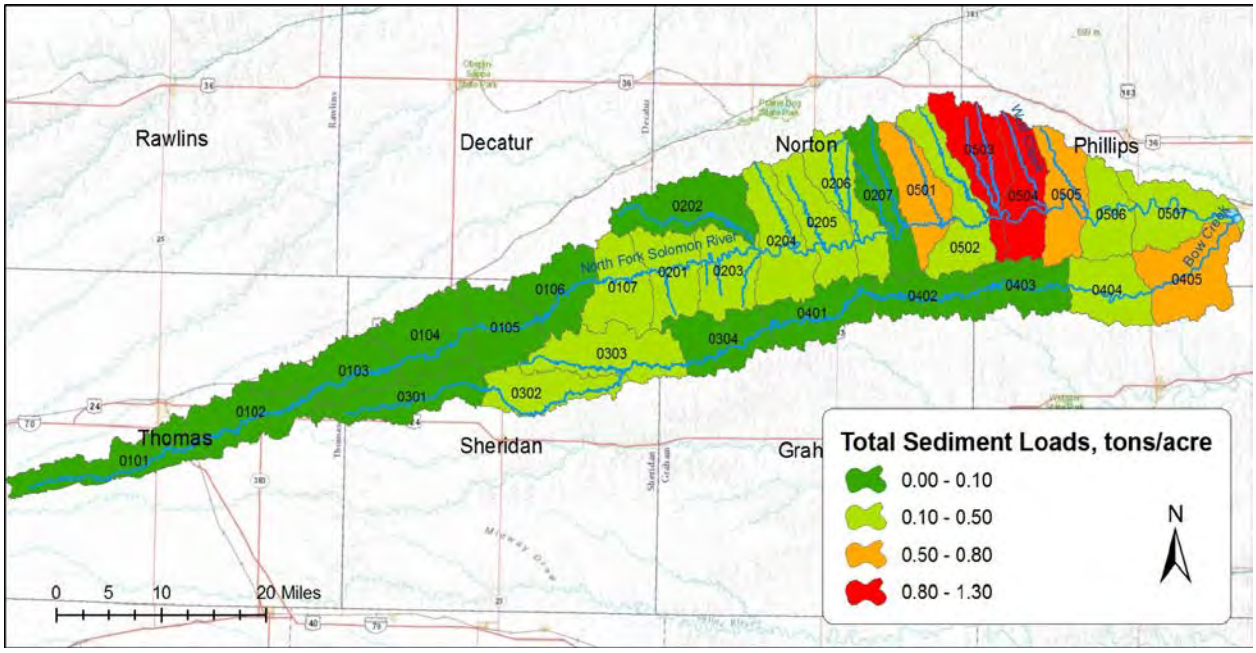


Figure 14 . Kirwin Lake WRAPS - HUC 10260011 Nitrogen Loads, lbs/acre

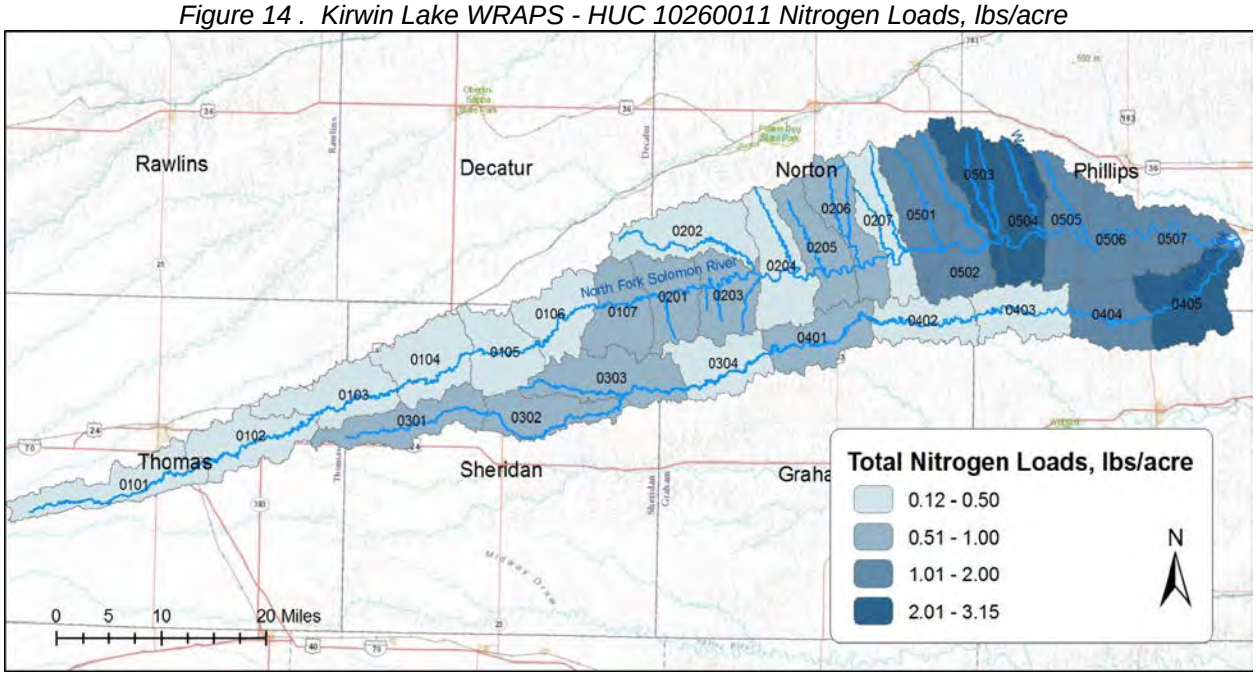
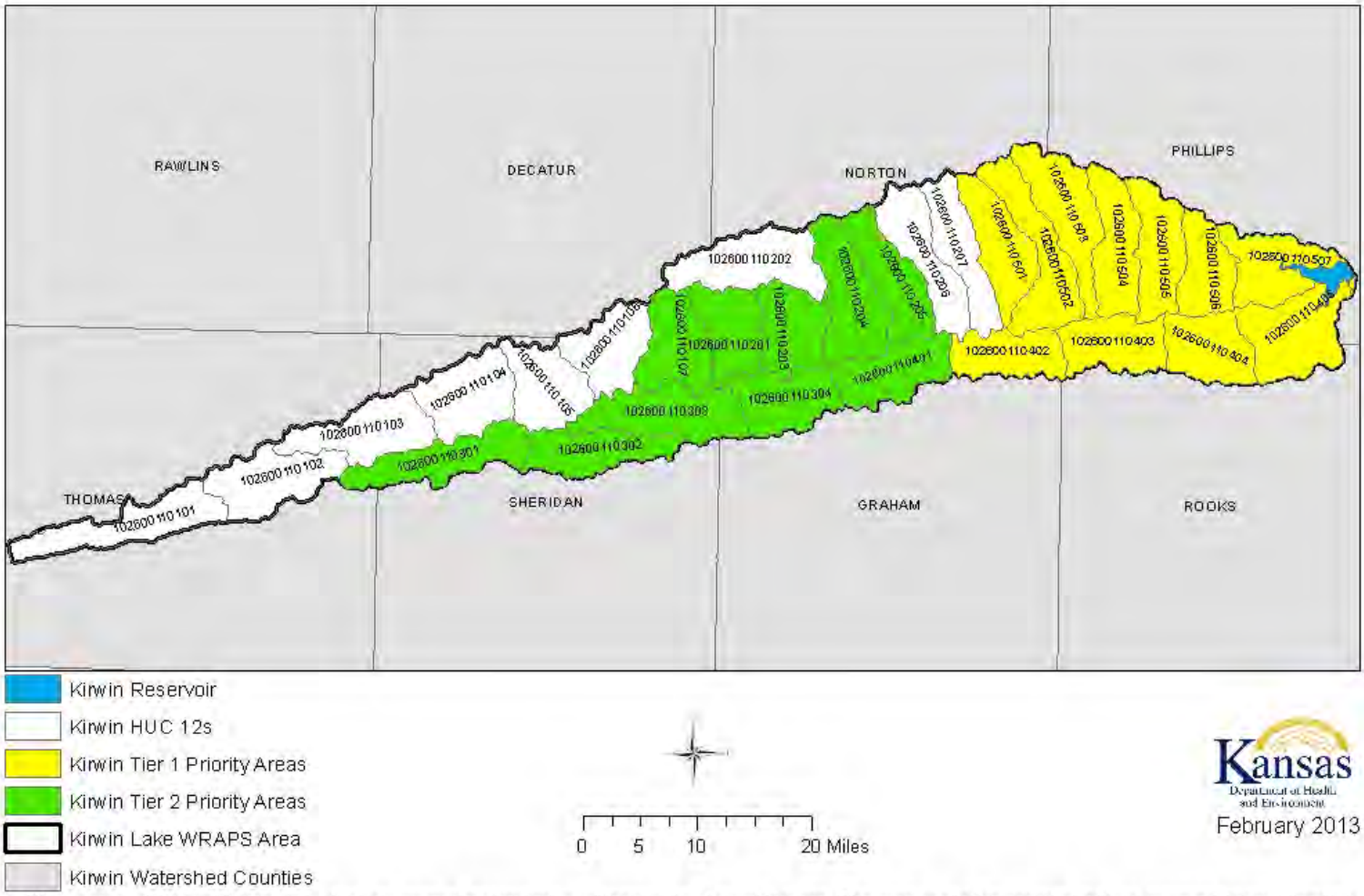


Figure 15 . Kirwin Lake WRAPS Priority areas for Cropland and Livestock BMP Implementation



The purpose of this publication is to illustrate general watershed conditions in the state of Kansas. This map product is provided without representation or implied or expressed warranty of accuracy and is intended for watershed planning purposes only. The originating agency is not responsible for publication or use of this product for any other purpose. This product may be corrected or updated as necessary without prior notification.

Upper North Fork Solomon River Priority HUC 12 Watersheds

Tier 1	Tier 2
102600110402	102600110107
102600110403	102600110201
102600110404	102600110203
102600110405	102600110204
102600110501	102600110205
102600110502	102600110301
102600110503	102600110302
102600110504	102600110303
102600110505	102600110304
102600110506	102600110401
102600110507	

4.2 BMP Needs

One of the primary mechanisms the Kirwin Lake watershed plan will utilize to generate nutrient load reductions necessary to meet the Kirwin Bluff Lake EU TMDL is implementation of both cropland and livestock BMPs. Types and quantities of BMPs to implement within the Kirwin Lake WRAPS Project Area were determined through consultation with agency representatives from County Conservation Districts as well as NRCS staff who serve on the SLT. This feedback resulted in determination of annual rates of BMP implementation for specified practices which took into consideration local adoption rates of the identified practices.

The following information on BMPs was utilized when determining the types and quantities of BMPs to implement in the area. Cropland and livestock BMP implementation schedules are included within section 5.1 and section 5.2.

Table 8: Kirwin Lake WRAPS Cropland BMPs, Cost, and Reduction Efficiencies

Kirwin WRAPS Cropland BMPs, Costs, and Reduction Efficiencies						
	Cost		**Erosion**	**Phosphorous**	**Nitrogen**	
	per Treated	**Available**	**Reduction**	**Reduction**	**Reduction**	**Cost**
Best Management Practice	**Acre**	**Cost-Share**	**Efficiency**	**Efficiency**	**Efficiency**	**per Unit**
No-Till	$78	39%	75%	40%	25%	$78
Grassed Waterways	$160	50%	40%	40%	40%	$1,600
Vegetative Buffers	$67	90%	50%	50%	25%	$1,000
Nutrient Mgmt Plans	$57	50%	25%	25%	25%	$39
Terraces	$102	50%	30%	30%	30%	$1.25
Permanent Vegetation	$150	50%	95%	95%	95%	$150
Subsurface Fertilizer App	$27	0%	0%	50%	50%	$27

Table 9. Kirwin Lake WRAPS Livestock BMPs, Cost, and Reduction Efficiencies

Kirwin Livestock BMPs, Costs, and Estimated Phosphorous Reduction.							
	Approximate P Reduction Efficiency	Unit Cost	After Cost Share*	Estimated P Reduction (Pounds)	Additional Installations	Total Estimated P Reduction	Total Estimated N Reduction
BMP							
Vegetative Filter Strip	50%	$1,428	$714	1276	15	19,136	36,043
Relocate Feeding Pens	95%	$12,000	$6,000	1595	18	28,704	54,065
Relocated Pasture Feeding Site	50-90%	$2,203	$1,102	38	62	2,356	4,438
Off-Stream Watering System	85%	$3,795	$1,898	38	62	2,356	4,438
Rotational Grazing	25%	$7,000	$3,500	173	75	12,975	24,438
Fence Out Streams and Ponds	85%	$4,106	$2,053	57	27	1,539	2,899
Grazing Mgmt Plans	25%	$1,600	$800	173	75	12,975	24,438

5.0 Load Reduction Estimate Methodology

Pollutant load reductions for BMPs included within this plan were calculated utilizing EPA's Region 5 Model. The Region 5 Model is an Excel-based workbook which KDHE utilizes to evaluate load reductions resulting from BMPs in which WRAPS projects across Kansas have helped to implement within their respective watersheds. This model can be utilized to evaluate load reductions from BMPs such as gully stabilization, streambank stabilization, agricultural-cropland practices, feedlot-livestock activities, as well as urban runoff. The primary load reductions that are obtained from the Region 5 Model are nitrogen, phosphorus, and sediment. KDHE utilizes county-level USLE factors for input information as well as applicable load reduction efficiency information from Kansas State University Extension publications as well as other information sources to calculate these pollutant load reductions. More information about the Region 5 Model can be found at http://it.tetratech-ffx.com/stepl/.

5.1 Cropland BMPs and Pollutant Load Reductions to Address Kirwin Lake EU TMDL

Sub-watershed totals are located in Appendix 12.4

Table 10. Kirwin Lake WRAPS Cropland BMPs Annual Adoption

Annual Adoption (treated acres), Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Adoption**
1	850	1,700	850	850	1,700	170	850	6,972
2	850	1,700	850	850	1,700	170	850	6,972
3	850	1,700	850	850	1,700	170	850	6,972
4	850	1,700	850	850	1,700	170	850	6,972
5	850	1,700	850	850	1,700	170	850	6,972
6	850	1,700	850	850	1,700	170	850	6,972
7	850	1,700	850	850	1,700	170	850	6,972
8	850	1,700	850	850	1,700	170	850	6,972
9	850	1,700	850	850	1,700	170	850	6,972
10	850	1,700	850	850	1,700	170	850	6,972
11	850	1,700	850	850	1,700	170	850	6,972
12	850	1,700	850	850	1,700	170	850	6,972
13	850	1,700	850	850	1,700	170	850	6,972
14	850	1,700	850	850	1,700	170	850	6,972
15	850	1,700	850	850	1,700	170	850	6,972
16	850	1,700	850	850	1,700	170	850	6,972
17	850	1,700	850	850	1,700	170	850	6,972
18	850	1,700	850	850	1,700	170	850	6,972
19	850	1,700	850	850	1,700	170	850	6,972
20	850	1,700	850	850	1,700	170	850	6,972
21	850	1,700	850	850	1,700	170	850	6,972
22	850	1,700	850	850	1,700	170	850	6,972
23	850	1,700	850	850	1,700	170	850	6,972
24	850	1,700	850	850	1,700	170	850	6,972
25	850	1,700	850	850	1,700	170	850	6,972
26	850	1,700	850	850	1,700	170	850	6,972
27	850	1,700	850	850	1,700	170	850	6,972
28	850	1,700	850	850	1,700	170	850	6,972
29	850	1,700	850	850	1,700	170	850	6,972
30	850	1,700	850	850	1,700	170	850	6,972

Table 11. Kirwin Lake WRAPS Cropland Annual Phosphorus Load Reduction to address the medium priority Eutrophication and Dissolved Oxygen TMDLs in Kirwin Lake

Annual Phosphorus Load Reduction (pounds)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	66	133	83	42	100	32	83	539
2	133	266	166	83	199	63	166	1,077
3	199	399	249	125	299	95	249	1,616
4	266	532	332	166	399	126	332	2,154
5	332	665	416	208	499	158	416	2,693
6	399	798	499	249	598	190	499	3,231
7	465	931	582	291	698	221	582	3,770
8	532	1,064	665	332	798	253	665	4,309
9	598	1,197	748	374	898	284	748	4,847
10	665	1,330	831	416	997	316	831	5,386
11	731	1,463	914	457	1,097	347	914	5,924
12	798	1,596	997	499	1,197	379	997	6,463
13	864	1,729	1,080	540	1,297	411	1,080	7,002
14	931	1,862	1,164	582	1,396	442	1,164	7,540
15	997	1,995	1,247	623	1,496	474	1,247	8,079
16	1,064	2,128	1,330	665	1,596	505	1,330	8,617
17	1,130	2,261	1,413	706	1,696	537	1,413	9,156
18	1,197	2,394	1,496	748	1,795	569	1,496	9,694
19	1,263	2,527	1,579	790	1,895	600	1,579	10,233
20	1,330	2,660	1,662	831	1,995	632	1,662	10,772
21	1,396	2,793	1,745	873	2,094	663	1,745	11,310
22	1,463	2,926	1,829	914	2,194	695	1,829	11,849
23	1,529	3,059	1,912	956	2,294	726	1,912	12,387
24	1,596	3,192	1,995	997	2,394	758	1,995	12,926
25	1,662	3,325	2,078	1,039	2,493	790	2,078	13,465
26	1,729	3,458	2,161	1,080	2,593	821	2,161	14,003
27	1,795	3,591	2,244	1,122	2,693	853	2,244	14,542
28	1,862	3,724	2,327	1,164	2,793	884	2,327	15,080
29	1,928	3,857	2,410	1,205	2,892	916	2,410	15,619
30	1,995	3,989	2,493	1,247	2,992	948	2,493	16,157

Table 12. Kirwin Lake WRAPS Cropland Annual Nitrogen Reduction

Annual Nitrogen Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	221	707	221	221	530	168	442	2,511
2	442	1,415	442	442	1,061	336	884	5,022
3	663	2,122	663	663	1,591	504	1,326	7,533
4	884	2,829	884	884	2,122	672	1,768	10,044
5	1,105	3,537	1,105	1,105	2,652	840	2,210	12,555
6	1,326	4,244	1,326	1,326	3,183	1,008	2,652	15,066
7	1,547	4,951	1,547	1,547	3,713	1,176	3,095	17,577
8	1,768	5,659	1,768	1,768	4,244	1,344	3,537	20,088
9	1,989	6,366	1,989	1,989	4,774	1,512	3,979	22,599
10	2,210	7,073	2,210	2,210	5,305	1,680	4,421	25,110
11	2,431	7,781	2,431	2,431	5,835	1,848	4,863	27,621
12	2,652	8,488	2,652	2,652	6,366	2,016	5,305	30,132
13	2,874	9,195	2,874	2,874	6,896	2,184	5,747	32,643
14	3,095	9,903	3,095	3,095	7,427	2,352	6,189	35,154
15	3,316	10,610	3,316	3,316	7,957	2,520	6,631	37,665
16	3,537	11,317	3,537	3,537	8,488	2,688	7,073	40,176
17	3,758	12,025	3,758	3,758	9,018	2,856	7,515	42,687
18	3,979	12,732	3,979	3,979	9,549	3,024	7,957	45,198
19	4,200	13,439	4,200	4,200	10,079	3,192	8,400	47,709
20	4,421	14,147	4,421	4,421	10,610	3,360	8,842	50,220
21	4,642	14,854	4,642	4,642	11,140	3,528	9,284	52,731
22	4,863	15,561	4,863	4,863	11,671	3,696	9,726	55,242
23	5,084	16,269	5,084	5,084	12,201	3,864	10,168	57,753
24	5,305	16,976	5,305	5,305	12,732	4,032	10,610	60,264
25	5,526	17,683	5,526	5,526	13,262	4,200	11,052	62,775
26	5,747	18,391	5,747	5,747	13,793	4,368	11,494	65,286
27	5,968	19,098	5,968	5,968	14,323	4,536	11,936	67,797
28	6,189	19,805	6,189	6,189	14,854	4,704	12,378	70,308
29	6,410	20,513	6,410	6,410	15,384	4,872	12,820	72,819
30	6,631	21,220	6,631	6,631	15,915	5,040	13,262	75,330

Table 13. Kirwin Lake WRAPS Cropland Annual Soil Erosion Reduction

Annual Soil Erosion Reduction (tons)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	180	192	120	60	144	46	0	741
2	359	383	240	120	288	91	0	1,481
3	539	575	359	180	431	137	0	2,222
4	719	767	479	240	575	182	0	2,962
5	899	959	599	300	719	228	0	3,703
6	1,078	1,150	719	359	863	273	0	4,443
7	1,258	1,342	839	419	1,007	319	0	5,184
8	1,438	1,534	959	479	1,150	364	0	5,924
9	1,618	1,725	1,078	539	1,294	410	0	6,665
10	1,797	1,917	1,198	599	1,438	455	0	7,405
11	1,977	2,109	1,318	659	1,582	501	0	8,146
12	2,157	2,301	1,438	719	1,725	546	0	8,886
13	2,337	2,492	1,558	779	1,869	592	0	9,627
14	2,516	2,684	1,678	839	2,013	637	0	10,367
15	2,696	2,876	1,797	899	2,157	683	0	11,108
16	2,876	3,068	1,917	959	2,301	729	0	11,848
17	3,056	3,259	2,037	1,019	2,444	774	0	12,589
18	3,235	3,451	2,157	1,078	2,588	820	0	13,329
19	3,415	3,643	2,277	1,138	2,732	865	0	14,070
20	3,595	3,834	2,397	1,198	2,876	911	0	14,810
21	3,775	4,026	2,516	1,258	3,020	956	0	15,551
22	3,954	4,218	2,636	1,318	3,163	1,002	0	16,291
23	4,134	4,410	2,756	1,378	3,307	1,047	0	17,032
24	4,314	4,601	2,876	1,438	3,451	1,093	0	17,773
25	4,493	4,793	2,996	1,498	3,595	1,138	0	18,513
26	4,673	4,985	3,115	1,558	3,739	1,184	0	19,254
27	4,853	5,176	3,235	1,618	3,882	1,229	0	19,994
28	5,033	5,368	3,355	1,678	4,026	1,275	0	20,735
29	5,212	5,560	3,475	1,737	4,170	1,320	0	21,475
30	5,392	5,752	3,595	1,797	4,314	1,366	0	22,216

Table 14. Kirwin Lake WRAPS Cropland Annual Sediment Reduction

Sediment	
Year	Cropland Reduction
1	**741**
2	**1,481**
3	**2,222**
4	**2,962**
5	**3,703**
6	**4,443**
7	**5,184**
8	**5,924**
9	**6,665**
10	**7,405**
11	**8,146**
12	**8,886**
13	**9,627**
14	**10,367**
15	**11,108**
16	**11,848**
17	**12,589**
18	**13,329**
19	**14,070**
20	**14,810**
21	**15,551**
22	**16,291**
23	**17,032**
24	**17,773**
25	**18,513**
26	**19,254**
27	**19,994**
28	**20,735**
29	**21,475**
30	**22,216**

5.2 Livestock BMPs and Pollutant Load Reductions to Address Kirwin Lake EU TMDL

Sub-watershed totals are located in Appendix 12.4

Table 15. Kirwin Lake WRAPS Livestock BMP Adoption

Kirwin WRAPS Annual Livestock BMP Adoption							
Year	**Vegetative Filter Strip**	**Relocate Feeding Pens**	**Relocate Pasture Feeding Site**	**Off Stream Watering System**	**Rotational Grazing**	**Grazing Mgmt Plans**	**Fence off Streams and Ponds**
1	1	1	2	3	3	2	1
2	0	1	3	2	2	3	1
3	1	1	2	3	3	2	1
4	0	1	3	2	2	3	1
5	1	1	2	2	3	2	0
6	0	1	2	2	2	3	1
7	1	0	2	2	3	2	1
8	0	1	2	2	2	3	1
9	1	0	2	2	3	2	1
10	0	1	2	2	2	3	0
11	1	0	2	2	3	2	1
12	0	1	2	2	2	3	1
13	1	0	2	2	3	2	1
14	0	1	2	2	2	3	1
15	1	0	2	2	3	2	0
16	0	1	2	2	2	3	1
17	1	0	2	2	3	2	1
18	0	1	2	2	2	3	1
19	1	0	2	2	3	2	1
20	0	1	2	2	2	3	1
21	1	0	2	2	3	2	1
22	0	1	2	2	2	3	1
23	1	0	2	2	3	2	1
24	0	1	2	2	2	3	1
25	1	0	2	2	3	2	1
26	0	1	2	2	2	3	1
27	1	0	2	2	3	2	1
28	0	1	2	2	2	3	1
29	1	0	2	2	3	2	1
30	0	1	2	2	2	3	1
	15	18	62	62	75	75	27

Table 16. Kirwin Lake WRAPS Livestock BMP Phosphorous Load Reduction to address the medium priority Eutrophication and Dissolved Oxygen TMDLs in Kirwin Lake

Kirwin WRAPS Annual Phosphorous Load Reduction (lbs)								
Year	**Vegetative Filter Strip**	**Relocate Feeding Pens**	**Relocate Pasture Feeding Site**	**Off Stream Watering System**	**Rotational Grazing**	**Grazing Mgmt Plans**	**Fence off Streams and Ponds**	**Annual Load Reduction**
1	1,276	1,595	76	114	519	346	57	**3,982**
2	1,276	3,189	190	190	865	865	114	**6,689**
3	2,552	4,784	266	304	1,384	1,211	171	**10,672**
4	2,552	6,379	380	380	1,730	1,730	228	**13,378**
5	3,827	7,973	456	456	2,249	2,076	228	**17,266**
6	3,827	9,568	532	532	2,595	2,595	285	**19,934**
7	5,103	9,568	608	608	3,114	2,941	342	**22,284**
8	5,103	11,163	684	684	3,460	3,460	399	**24,953**
9	6,379	11,163	760	760	3,979	3,806	456	**27,303**
10	6,379	12,758	836	836	4,325	4,325	456	**29,914**
11	7,655	12,758	912	912	4,844	4,671	513	**32,264**
12	7,655	14,352	988	988	5,190	5,190	570	**34,933**
13	8,930	14,352	1,064	1,064	5,709	5,536	627	**37,282**
14	8,930	15,947	1,140	1,140	6,055	6,055	684	**39,951**
15	10,206	15,947	1,216	1,216	6,574	6,401	684	**42,244**
16	10,206	17,542	1,292	1,292	6,920	6,920	741	**44,913**
17	11,482	17,542	1,368	1,368	7,439	7,266	798	**47,262**
18	11,482	19,136	1,444	1,444	7,785	7,785	855	**49,931**
19	12,758	19,136	1,520	1,520	8,304	8,131	912	**52,281**
20	12,758	20,731	1,596	1,596	8,650	8,650	969	**54,949**
21	14,033	20,731	1,672	1,672	9,169	8,996	1,026	**57,299**
22	14,033	22,326	1,748	1,748	9,515	9,515	1,083	**59,968**
23	15,309	22,326	1,824	1,824	10,034	9,861	1,140	**62,318**
24	15,309	23,920	1,900	1,900	10,380	10,380	1,197	**64,986**
25	16,585	23,920	1,976	1,976	10,899	10,726	1,254	**67,336**
26	16,585	25,515	2,052	2,052	11,245	11,245	1,311	**70,005**
27	17,861	25,515	2,128	2,128	11,764	11,591	1,368	**72,355**
28	17,861	27,110	2,204	2,204	12,110	12,110	1,425	**75,023**
29	19,136	27,110	2,280	2,280	12,629	12,456	1,482	**77,373**
30	19,136	28,704	2,356	2,356	12,975	12,975	1,539	**80,042**

Table 17. Kirwin Lake WRAPS Livestock BMP Nitrogen Load Reduction

Kirwin WRAPS Annual Nitrogen Load Reduction (lbs)								
Year	**Vegetative Filter Strip**	**Relocate Feeding Pens**	**Relocate Pasture Feeding Site**	**Off Stream Watering System**	**Rotational Grazing**	**Grazing Mgmt Plans**	**Fence off Streams and Ponds**	**Annual Load Reduction**
1	2,403	3,004	143	215	978	652	107	**7,501**
2	2,403	6,007	358	358	1,629	1,629	215	**12,599**
3	4,806	9,011	501	573	2,607	2,281	322	**20,100**
4	4,806	12,014	716	716	3,258	3,258	429	**25,198**
5	7,209	15,018	859	859	4,236	3,910	429	**32,520**
6	7,209	18,022	1,002	1,002	4,888	4,888	537	**37,546**
7	9,612	18,022	1,145	1,145	5,865	5,539	644	**41,972**
8	9,612	21,025	1,288	1,288	6,517	6,517	752	**46,999**
9	12,014	21,025	1,431	1,431	7,494	7,169	859	**51,424**
10	12,014	24,029	1,575	1,575	8,146	8,146	859	**56,343**
11	14,417	24,029	1,718	1,718	9,124	8,798	966	**60,769**
12	14,417	27,032	1,861	1,861	9,775	9,775	1,074	**65,796**
13	16,820	27,032	2,004	2,004	10,753	10,427	1,181	**70,221**
14	16,820	30,036	2,147	2,147	11,405	11,405	1,288	**75,248**
15	19,223	30,036	2,290	2,290	12,382	12,056	1,288	**79,566**
16	19,223	33,040	2,433	2,433	13,034	13,034	1,396	**84,593**
17	21,626	33,040	2,577	2,577	14,011	13,686	1,503	**89,019**
18	21,626	36,043	2,720	2,720	14,663	14,663	1,610	**94,045**
19	24,029	36,043	2,863	2,863	15,641	15,315	1,718	**98,471**
20	24,029	39,047	3,006	3,006	16,292	16,292	1,825	**103,497**
21	26,432	39,047	3,149	3,149	17,270	16,944	1,932	**107,923**
22	26,432	42,050	3,292	3,292	17,922	17,922	2,040	**112,949**
23	28,835	42,050	3,436	3,436	18,899	18,573	2,147	**117,375**
24	28,835	45,054	3,579	3,579	19,551	19,551	2,255	**122,402**
25	31,237	45,054	3,722	3,722	20,528	20,202	2,362	**126,827**
26	31,237	48,058	3,865	3,865	21,180	21,180	2,469	**131,854**
27	33,640	48,058	4,008	4,008	22,157	21,832	2,577	**136,280**
28	33,640	51,061	4,151	4,151	22,809	22,809	2,684	**141,306**
29	36,043	51,061	4,294	4,294	23,787	23,461	2,791	**145,732**
30	36,043	54,065	4,438	4,438	24,438	24,438	2,899	**150,758**

5.3 Total Pollutant Load Reductions to Address Kirwin Lake EU TMDL

Table 18. Kirwin Lake WRAPS Phosphorous load reduction totals to address the medium priority Eutrophication and Dissolved Oxygen TMDLs in Kirwin Lake

Phosphorous				
Year	**Cropland Reduction**	**Livestock Reduction**	**Total Reduction (lbs)**	**% of TMDL**
1	539	3,982	**4,521**	*5%*
2	1,077	6,689	**7,766**	*8%*
3	1,616	10,672	**12,287**	*13%*
4	2,154	13,378	**15,533**	*16%*
5	2,693	17,266	**19,959**	*21%*
6	3,231	19,934	**23,166**	*24%*
7	3,770	22,284	**26,054**	*28%*
8	4,309	24,953	**29,261**	*31%*
9	4,847	27,303	**32,150**	*34%*
10	5,386	29,914	**35,300**	*37%*
11	5,924	32,264	**38,188**	*40%*
12	6,463	34,933	**41,396**	*44%*
13	7,002	37,282	**44,284**	*47%*
14	7,540	39,951	**47,491**	*50%*
15	8,079	42,244	**50,323**	*53%*
16	8,617	44,913	**53,530**	*57%*
17	9,156	47,262	**56,418**	*60%*
18	9,694	49,931	**59,625**	*63%*
19	10,233	52,281	**62,514**	*66%*
20	10,772	54,949	**65,721**	*69%*
21	11,310	57,299	**68,609**	*73%*
22	11,849	59,968	**71,817**	*76%*
23	12,387	62,318	**74,705**	*79%*
24	12,926	64,986	**77,912**	*82%*
25	13,465	67,336	**80,801**	*85%*
26	14,003	70,005	**84,008**	*89%*
27	14,542	72,355	**86,896**	*92%*
28	15,080	75,023	**90,103**	*95%*
29	15,619	77,373	**92,992**	*98%*
30	16,157	80,042	**96,199**	*102%*
Phosphorous TMDL:		**94,600**	Pounds	

Table 19. Kirwin Lake WRAPS BMP % of Phosphorous totals

Kirwin Reservoir Phosphorous TMDL		
Best Management Practice Category	**Total Load Reduction (lbs)**	**% of Phosphorous TMDL**
Livestock	80,042	*85%*
Cropland	16,157	*17%*
Total	**96,199**	***102%***

Table 20. Kirwin Lake WRAPS Nitrogen Load Reduction totals

Nitrogen			
Year	**Cropland Reduction**	**Livestock Reduction**	**Total Reduction (lbs)**
1	2,511	7,501	**10,013**
2	5,022	12,599	**17,623**
3	7,533	20,100	**27,636**
4	10,044	25,198	**35,246**
5	12,555	32,520	**45,080**
6	15,066	37,546	**52,618**
7	17,577	41,972	**59,556**
8	20,088	46,999	**67,095**
9	22,599	51,424	**74,032**
10	25,110	56,343	**81,463**
11	27,621	60,769	**88,401**
12	30,132	65,796	**95,940**
13	32,643	70,221	**102,877**
14	35,154	75,248	**110,416**
15	37,665	79,566	**117,246**
16	40,176	84,593	**124,785**
17	42,687	89,019	**131,723**
18	45,198	94,045	**139,261**
19	47,709	98,471	**146,199**
20	50,220	103,497	**153,737**
21	52,731	107,923	**160,675**
22	55,242	112,949	**168,213**
23	57,753	117,375	**175,151**
24	60,264	122,402	**182,690**
25	62,775	126,827	**189,627**
26	65,286	131,854	**197,166**
27	67,797	136,280	**204,104**
28	70,308	141,306	**211,642**
29	72,819	145,732	**218,580**
30	75,330	150,758	**226,118**

6.0 BMP Implementation Milestones

Development of BMP implementation milestones provides for the opportunity to evaluate watershed plan implementation progress at given intervals over the duration of the plan. Once developed, these milestones give WRAPS projects and their respective SLTs a framework to evaluate progress of BMP implementation for the practices identified with the plan as well as insight as to whether or not BMP implementation schedules need to be adjusted to meet the overall implementation goals of the plan.

For the Kirwin Lake WRAPS Watershed Plan, BMP implementation milestones have been developed for both cropland and livestock BMPs. Short, mid, and long term BMP implementation milestones have been developed for these areas in which BMP implementation will be focused as a tool to evaluate implementation progress being made towards directly addressing the priority water quality impairments within the Project Area.

Table 21. Cropland BMP implementation milestones

	Total Cropland BMP Adoption Milestones								
	Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Adoption**
Short Term	1	850	1,700	850	850	1,700	170	850	6,972
	2	850	1,700	850	850	1,700	170	850	6,972
	3	850	1,700	850	850	1,700	170	850	6,972
	4	850	1,700	850	850	1,700	170	850	6,972
	5	850	1,700	850	850	1,700	170	850	6,972
Total		*4,251*	*8,502*	*4,251*	*4,251*	*8,502*	*850*	*4,251*	*34,860*
Medium Term	6	850	1,700	850	850	1,700	170	850	6,972
	7	850	1,700	850	850	1,700	170	850	6,972
	8	850	1,700	850	850	1,700	170	850	6,972
	9	850	1,700	850	850	1,700	170	850	6,972
	10	850	1,700	850	850	1,700	170	850	6,972
Total		*8,502*	*17,005*	*8,502*	*8,502*	*17,005*	*1,700*	*8,502*	*69,719*
Long Term	11	850	1,700	850	850	1,700	170	850	6,972
	12	850	1,700	850	850	1,700	170	850	6,972
	13	850	1,700	850	850	1,700	170	850	6,972
	14	850	1,700	850	850	1,700	170	850	6,972
	15	850	1,700	850	850	1,700	170	850	6,972
	16	850	1,700	850	850	1,700	170	850	6,972
	17	850	1,700	850	850	1,700	170	850	6,972
	18	850	1,700	850	850	1,700	170	850	6,972
	19	850	1,700	850	850	1,700	170	850	6,972
	20	850	1,700	850	850	1,700	170	850	6,972
	21	850	1,700	850	850	1,700	170	850	6,972

	22	850	1,700	850	850	1,700	170	850	6,972
	23	850	1,700	850	850	1,700	170	850	6,972
	24	850	1,700	850	850	1,700	170	850	6,972
	25	850	1,700	850	850	1,700	170	850	6,972
	26	850	1,700	850	850	1,700	170	850	6,972
	27	850	1,700	850	850	1,700	170	850	6,972
	28	850	1,700	850	850	1,700	170	850	6,972
	29	850	1,700	850	850	1,700	170	850	6,972
	30	850	1,700	850	850	1,700	170	850	6,972
Total		*25,507*	*51,014*	*25,507*	*25,507*	*51,014*	*5,101*	*25,507*	209,157

Table 22. Livestock BMP implementation milestones

Kirwin WRAPS Livestock BMP Adoption Milestones							
Year	**Vegetative Filter Strip**	**Relocate Feeding Pens**	**Relocate Pasture Feeding Site**	**Off Stream Watering System**	**Rotational Grazing**	**Grazing Mgmt Plans**	**Fence off Streams and Ponds**
1	1	1	2	3	3	2	1
2	0	1	3	2	2	3	1
3	1	1	2	3	3	2	1
4	0	1	3	2	2	3	1
5	1	1	2	2	3	2	0
Total	***3***	***5***	***12***	***12***	***13***	***12***	***4***
6	0	1	2	2	2	3	1
7	1	0	2	2	3	2	1
8	0	1	2	2	2	3	1
9	1	0	2	2	3	2	1
10	0	1	2	2	2	3	0
Total	***5***	***8***	***22***	***22***	***25***	***25***	***8***
11	1	0	2	2	3	2	1
12	0	1	2	2	2	3	1
13	1	0	2	2	3	2	1
14	0	1	2	2	2	3	1
15	1	0	2	2	3	2	0
16	0	1	2	2	2	3	1
17	1	0	2	2	3	2	1
18	0	1	2	2	2	3	1
19	1	0	2	2	3	2	1
20	0	1	2	2	2	3	1
21	1	0	2	2	3	2	1
22	0	1	2	2	2	3	1
23	1	0	2	2	3	2	1
24	0	1	2	2	2	3	1
25	1	0	2	2	3	2	1

26	0	1	2	2	2	3	1
27	1	0	2	2	3	2	1
28	0	1	2	2	2	3	1
29	1	0	2	2	3	2	1
30	0	1	2	2	2	3	1
Total	***15***	***18***	***62***	***62***	***75***	***75***	***27***

7.0 Costs of Implementing BMPs and Possible Funding Sources

7.1 Costs of Implementing Cropland BMPs

Table 23. Cropland BMP Annual Cost Before Cost-Share

Total Annual Cost Before Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	66,055	272,075	56,682	48,217	173,448	25,507	23,118	$665,101
2	68,036	280,237	58,383	49,663	178,651	26,272	23,811	$685,054
3	70,077	288,644	60,134	51,153	184,011	27,060	24,526	$705,605
4	72,180	297,303	61,938	52,688	189,531	27,872	25,261	$726,773
5	74,345	306,222	63,796	54,268	195,217	28,708	26,019	$748,577
6	76,575	315,409	65,710	55,896	201,073	29,570	26,800	$771,034
7	78,873	324,871	67,682	57,573	207,106	30,457	27,604	$794,165
8	81,239	334,618	69,712	59,300	213,319	31,370	28,432	$817,990
9	83,676	344,656	71,803	61,080	219,718	32,312	29,285	$842,530
10	86,186	354,996	73,957	62,912	226,310	33,281	30,164	$867,806
11	88,772	365,646	76,176	64,799	233,099	34,279	31,068	$893,840
12	91,435	376,615	78,461	66,743	240,092	35,308	32,001	$920,655
13	94,178	387,913	80,815	68,746	247,295	36,367	32,961	$948,275
14	97,003	399,551	83,240	70,808	254,714	37,458	33,949	$976,723
15	99,914	411,537	85,737	72,932	262,355	38,582	34,968	$1,006,024
16	102,911	423,883	88,309	75,120	270,226	39,739	36,017	$1,036,205
17	105,998	436,600	90,958	77,374	278,332	40,931	37,097	$1,067,291
18	109,178	449,698	93,687	79,695	286,682	42,159	38,210	$1,099,310
19	112,454	463,189	96,498	82,086	295,283	43,424	39,357	$1,132,289
20	115,827	477,085	99,393	84,548	304,141	44,727	40,537	$1,166,258
21	119,302	491,397	102,374	87,085	313,266	46,068	41,753	$1,201,246
22	122,881	506,139	105,446	89,697	322,664	47,451	43,006	$1,237,283
23	126,567	521,323	108,609	92,388	332,344	48,874	44,296	$1,274,402
24	130,365	536,963	111,867	95,160	342,314	50,340	45,625	$1,312,634
25	134,275	553,072	115,223	98,015	352,583	51,850	46,994	$1,352,013

26	138,304	569,664	118,680	100,955	363,161	53,406	48,404	$1,392,573
27	142,453	586,754	122,240	103,984	374,056	55,008	49,856	$1,434,350
28	146,726	604,356	125,908	107,103	385,277	56,658	51,351	$1,477,381
29	151,128	622,487	129,685	110,316	396,836	58,358	52,892	$1,521,702
30	155,662	641,162	133,575	113,626	408,741	60,109	54,479	$1,567,353

Table 24. Cropland BMP Annual Cost After Cost-Share

Total Annual Cost After Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	40,293	136,037	5,668	24,108	86,724	12,754	23,118	$328,702
2	41,502	140,118	5,838	24,832	89,326	13,136	23,811	$338,563
3	42,747	144,322	6,013	25,577	92,005	13,530	24,526	$348,720
4	44,030	148,652	6,194	26,344	94,765	13,936	25,261	$359,182
5	45,350	153,111	6,380	27,134	97,608	14,354	26,019	$369,957
6	46,711	157,705	6,571	27,948	100,537	14,785	26,800	$381,056
7	48,112	162,436	6,768	28,787	103,553	15,228	27,604	$392,488
8	49,556	167,309	6,971	29,650	106,659	15,685	28,432	$404,262
9	51,042	172,328	7,180	30,540	109,859	16,156	29,285	$416,390
10	52,574	177,498	7,396	31,456	113,155	16,640	30,164	$428,882
11	54,151	182,823	7,618	32,400	116,550	17,140	31,068	$441,749
12	55,775	188,307	7,846	33,372	120,046	17,654	32,001	$455,001
13	57,449	193,957	8,082	34,373	123,647	18,183	32,961	$468,651
14	59,172	199,775	8,324	35,404	127,357	18,729	33,949	$482,711
15	60,947	205,769	8,574	36,466	131,178	19,291	34,968	$497,192
16	62,776	211,942	8,831	37,560	135,113	19,870	36,017	$512,108
17	64,659	218,300	9,096	38,687	139,166	20,466	37,097	$527,471
18	66,599	224,849	9,369	39,847	143,341	21,080	38,210	$543,295
19	68,597	231,594	9,650	41,043	147,641	21,712	39,357	$559,594
20	70,655	238,542	9,939	42,274	152,071	22,363	40,537	$576,382
21	72,774	245,699	10,237	43,542	156,633	23,034	41,753	$593,673
22	74,957	253,070	10,545	44,849	161,332	23,725	43,006	$611,483
23	77,206	260,662	10,861	46,194	166,172	24,437	44,296	$629,828
24	79,522	268,481	11,187	47,580	171,157	25,170	45,625	$648,723
25	81,908	276,536	11,522	49,007	176,292	25,925	46,994	$668,184
26	84,365	284,832	11,868	50,478	181,580	26,703	48,404	$688,230
27	86,896	293,377	12,224	51,992	187,028	27,504	49,856	$708,877
28	89,503	302,178	12,591	53,552	192,639	28,329	51,351	$730,143
29	92,188	311,244	12,968	55,158	198,418	29,179	52,892	$752,047
30	94,954	320,581	13,358	56,813	204,370	30,054	54,479	$774,609

7.2 Costs of Implementing Livestock BMPs

Table 25. Livestock BMP Annual Cost Before Cost-Share

Kirwin WRAPS Annual Cost*Before Cost-Share of Implementing Livestock BMPs								
Year	**Vegetative Filter Strip**	**Relocate Feeding Pens**	**Relocate Pasture Feeding Site**	**Off Stream Watering System**	**Rotational Grazing**	**Grazing Mgmt Plans**	**Fence off Streams and Ponds**	**Annual Cost**
1	$1,428	$12,000	$4,406	$11,385	$21,000	$3,200	$4,106	**$57,525**
2	$0	$12,360	$6,807	$7,818	$14,420	$4,944	$4,229	**$50,578**
3	$1,515	$12,731	$4,674	$12,078	$22,279	$3,395	$4,356	**$61,028**
4	$0	$13,113	$7,222	$8,294	$15,298	$5,245	$4,487	**$53,658**
5	$1,607	$13,506	$4,959	$8,543	$23,636	$3,602	$0	**$55,852**
6	$0	$13,911	$5,108	$8,799	$16,230	$5,565	$4,760	**$54,372**
7	$1,705	$0	$5,261	$9,063	$25,075	$3,821	$4,903	**$49,828**
8	$0	$14,758	$5,419	$9,335	$17,218	$5,903	$5,050	**$57,684**
9	$1,809	$0	$5,581	$9,615	$26,602	$4,054	$5,201	**$52,862**
10	$0	$15,657	$5,749	$9,903	$18,267	$6,263	$0	**$55,839**
11	$1,919	$0	$5,921	$10,200	$28,222	$4,301	$5,518	**$56,082**
12	$0	$16,611	$6,099	$10,506	$19,379	$6,644	$5,684	**$64,923**
13	$2,036	$0	$6,282	$10,822	$29,941	$4,562	$5,854	**$59,497**
14	$0	$17,622	$6,470	$11,146	$20,559	$7,049	$6,030	**$68,877**
15	$2,160	$0	$6,664	$11,481	$31,764	$4,840	$0	**$56,910**
16	$0	$18,696	$6,864	$11,825	$21,812	$7,478	$6,397	**$73,072**
17	$2,292	$0	$7,070	$12,180	$33,699	$5,135	$6,589	**$66,964**
18	$0	$19,834	$7,282	$12,545	$23,140	$7,934	$6,787	**$77,522**
19	$2,431	$0	$7,501	$12,921	$35,751	$5,448	$6,990	**$71,043**
20	$0	$21,042	$7,726	$13,309	$24,549	$8,417	$7,200	**$82,243**
21	$2,579	$0	$7,958	$13,708	$37,928	$5,780	$7,416	**$75,369**
22	$0	$22,324	$8,196	$14,120	$26,044	$8,929	$7,638	**$87,252**
23	$2,736	$0	$8,442	$14,543	$40,238	$6,132	$7,868	**$79,959**
24	$0	$23,683	$8,696	$14,980	$27,630	$9,473	$8,104	**$92,565**
25	$2,903	$0	$8,956	$15,429	$42,689	$6,505	$8,347	**$84,828**
26	$0	$25,125	$9,225	$15,892	$29,313	$10,050	$8,597	**$98,202**
27	$3,080	$0	$9,502	$16,369	$45,288	$6,901	$8,855	**$89,995**
28	$0	$26,655	$9,787	$16,860	$31,098	$10,662	$9,121	**$104,183**
29	$3,267	$0	$10,081	$17,365	$48,046	$7,321	$9,394	**$95,475**
30	$0	$28,279	$10,383	$17,886	$32,992	$11,312	$9,676	**$110,528**
3% Annual Cost Inflation								

Table 26. Livestock BMP Annual Cost After Cost-Share

Kirwin WRAPS Annual Cost* After Cost-Share of Implementing Livestock BMPs								
Year	**Vegetative Filter Strip**	**Relocate Feeding Pens**	**Relocate Pasture Feeding Site**	**Off Stream Watering System**	**Rotational Grazing**	**Grazing Mgmt Plans**	**Fence off Streams and Ponds**	**Annual Cost**
1	$714	$6,000	$2,203	$5,693	$10,500	$1,600	$2,053	**$28,763**
2	$0	$6,180	$3,404	$3,909	$7,210	$2,472	$2,115	**$25,289**
3	$757	$6,365	$2,337	$6,039	$11,139	$1,697	$2,178	**$30,514**
4	$0	$6,556	$3,611	$4,147	$7,649	$2,623	$2,243	**$26,829**
5	$804	$6,753	$2,479	$4,271	$11,818	$1,801	$0	**$27,926**
6	$0	$6,956	$2,554	$4,399	$8,115	$2,782	$2,380	**$27,186**
7	$853	$0	$2,630	$4,531	$12,538	$1,910	$2,451	**$24,914**
8	$0	$7,379	$2,709	$4,667	$8,609	$2,952	$2,525	**$28,842**
9	$904	$0	$2,791	$4,807	$13,301	$2,027	$2,601	**$26,431**
10	$0	$7,829	$2,874	$4,952	$9,133	$3,131	$0	**$27,920**
11	$960	$0	$2,961	$5,100	$14,111	$2,150	$2,759	**$28,041**
12	$0	$8,305	$3,049	$5,253	$9,690	$3,322	$2,842	**$32,462**
13	$1,018	$0	$3,141	$5,411	$14,970	$2,281	$2,927	**$29,749**
14	$0	$8,811	$3,235	$5,573	$10,280	$3,524	$3,015	**$34,439**
15	$1,080	$0	$3,332	$5,740	$15,882	$2,420	$0	**$28,455**
16	$0	$9,348	$3,432	$5,912	$10,906	$3,739	$3,199	**$36,536**
17	$1,146	$0	$3,535	$6,090	$16,849	$2,568	$3,294	**$33,482**
18	$0	$9,917	$3,641	$6,273	$11,570	$3,967	$3,393	**$38,761**
19	$1,216	$0	$3,750	$6,461	$17,876	$2,724	$3,495	**$35,521**
20	$0	$10,521	$3,863	$6,655	$12,275	$4,208	$3,600	**$41,121**
21	$1,290	$0	$3,979	$6,854	$18,964	$2,890	$3,708	**$37,685**
22	$0	$11,162	$4,098	$7,060	$13,022	$4,465	$3,819	**$43,626**
23	$1,368	$0	$4,221	$7,272	$20,119	$3,066	$3,934	**$39,979**
24	$0	$11,842	$4,348	$7,490	$13,815	$4,737	$4,052	**$46,283**
25	$1,451	$0	$4,478	$7,714	$21,344	$3,252	$4,173	**$42,414**
26	$0	$12,563	$4,613	$7,946	$14,656	$5,025	$4,299	**$49,101**
27	$1,540	$0	$4,751	$8,184	$22,644	$3,451	$4,427	**$44,997**
28	$0	$13,328	$4,893	$8,430	$15,549	$5,331	$4,560	**$52,091**
29	$1,634	$0	$5,040	$8,683	$24,023	$3,661	$4,697	**$47,738**
30	$0	$14,139	$5,192	$8,943	$16,496	$5,656	$4,838	**$55,264**
3% Annual Cost Inflation								

7.3 Total Costs of Implementing BMPs

Table 27. BMP Annual Cost After Cost-Share by BMP Category

Total Annual WRAPS Cost after Cost-Share by BMP Category			
Year	**Cropland**	**Livestock**	**Total Annual Cost**
1	$328,702	$28,763	**$357,465**
2	$338,563	$25,289	**$363,853**
3	$348,720	$30,514	**$379,235**
4	$359,182	$26,829	**$386,011**
5	$369,957	$27,926	**$397,884**
6	$381,056	$27,186	**$408,242**
7	$392,488	$24,914	**$417,402**
8	$404,262	$28,842	**$433,104**
9	$416,390	$26,431	**$442,822**
10	$428,882	$27,920	**$456,802**
11	$441,749	$28,041	**$469,789**
12	$455,001	$32,462	**$487,463**
13	$468,651	$29,749	**$498,400**
14	$482,711	$34,439	**$517,149**
15	$497,192	$28,455	**$525,647**
16	$512,108	$36,536	**$548,644**
17	$527,471	$33,482	**$560,953**
18	$543,295	$38,761	**$582,056**
19	$559,594	$35,521	**$595,115**
20	$576,382	$41,121	**$617,503**
21	$593,673	$37,685	**$631,358**
22	$611,483	$43,626	**$655,109**
23	$629,828	$39,979	**$669,807**
24	$648,723	$46,283	**$695,005**
25	$668,184	$42,414	**$710,599**
26	$688,230	$49,101	**$737,331**
27	$708,877	$44,997	**$753,874**
28	$730,143	$52,091	**$782,234**
29	$752,047	$47,738	**$799,785**
30	$774,609	$55,264	**$829,873**
**3% Annual Inflation*			

7.4 Service Provider Needs for BMP Implementation

Table 28. Service Providers for BMP Implementation

BMP		Services Needed to Implement BMP		Service Provider
		Technical Assistance	Information and Education	
Cropland	No-Till	Design, cost share and maintenance	BMP workshops, tours, field days	Smoky Solomon Resource Enhancement NRCS Conservation District State Conservation Commission - Kansas Kansas Dept. of Wildlife and Parks U.S. Fish and Wildlife Kansas Natural Resource Foundation K-State Research and Extension Local Extension Districts Kansas Forest Service No-Till On The Plains Kansas Alliance for Wetlands and Streams Kansas Dept. of Health and Environment U.S. Environmental Protection Agency Kansas Dept. of Agriculture – Division of Conservation Kansas Rural Center
	Grassed Waterways	Design, cost share and maintenance	BMP workshops, tours, field days	
	Vegetative Buffers	Design, cost share and maintenance	BMP workshops, tours, field days	
	Nutrient Mgmt Plans	Development of management plan and cost share	BMP workshops, tours, field days	
	Terraces	Design, cost share and maintenance	BMP workshops, tours, field days	
	Permanent Vegetation	Design, cost share and maintenance	BMP workshops, tours, field days	
	Subsurface Fertilizer Application	Development of management plan and cost share	BMP workshops, tours, field days	

BMP		Services Needed to Implement BMP		Service Provider
		Technical Assistance	Information and Education	
Livestock	Vegetative Filter Strip	Design, cost share and maintenance	BMP workshops, tours, field days	North Central Prairie Weed Management Area Kansas Grazing Lands Coalition Smoky Solomon Resource Enhancement NRCS Conservation District State Conservation Commission - Kansas Kansas Dept. of Wildlife and Parks U.S. Fish and Wildlife Kansas Natural Resource Foundation K-State Research and Extension Local Extension Districts Kansas Forest Service Kansas Alliance for Wetlands and Streams Kansas Dept. of Health and Environment U.S. Environmental Protection Agency Kansas Dept. of Agriculture – Division of Conservation Kansas Rural Center
	Relocate Feeding Pens	Design, cost share and maintenance	BMP workshops, tours, field days	
	Relocate Pasture Feeding Site	Design, cost share and maintenance	BMP workshops, tours, field days	
	Off Stream Watering System	Design, cost share and maintenance	BMP workshops, tours, field days	
	Rotational Grazing	Design, cost share and maintenance	BMP workshops, tours, field days	
	Grazing Mgmt Plans	Development of management plan and cost share	BMP workshops, tours, field days	
	Fence off Streams and Ponds	Design, cost share and maintenance	BMP workshops, tours, field days	

7.5 BMP Technical Assistance Annual Cost

Table 29. BMP Technical Assistance Annual Cost

BMP		Technical Assistance	Projected Annual cost
Cropland	No-Till	WRAPS Coordinator NRCS Personnel Conservation District Personnel Extension Agent K-State Research and Extension No-Till on the Plains	WRAPS Coordinator - $30,000 Buffer Coordinator – No Charge Extension Agent – No Charge KSRE/KSU – No Charge NRCS Personnel – No Charge Conservation District Personnel – No Charge Kansas Forest Service Personnel - $15,000 No-Till On The Plains - $5,000 Kansas Alliance for Wetlands and Streams - $10,000
	Grassed Waterways	WRAPS Coordinator NRCS Personnel Conservation District Personnel	
	Vegetative Buffers	Buffer Coordinator WRAPS Coordinator NRCS Personnel Conservation District Personnel Kansas Forest Service Personnel Kansas Alliance for Wetlands and Streams	
	Nutrient Mgmt Plans	WRAPS Coordinator NRCS Personnel Conservation District Personnel Extension Agent K-State Research and Extension	
	Terraces	WRAPS Coordinator NRCS Personnel Conservation District Personnel	
	Permanent Vegetation	WRAPS Coordinator NRCS Personnel Conservation District Personnel Kansas Forest Service Personnel Kansas Alliance for Wetlands and Streams	
	Subsurface Fertilizer Application	WRAPS Coordinator NRCS Personnel Conservation District Personnel Extension Agent K-State Research and Extension	
Livestock	Vegetative Filter Strip	Watershed Specialist WRAPS Coordinator NRCS Personnel Conservation District Personnel Kansas Forest Service Personnel Extension Agent K-State Research and Extension Kansas Alliance for Wetlands and Streams	
	Relocate Feeding Pens	Watershed Specialist WRAPS Coordinator NRCS Personnel Conservation District Personnel	

		Kansas Alliance for Wetlands and Streams	WRAPS Coordinator – Included above Watershed Specialist - $20,000 Extension Agent – No Charge KSRE/KSU – No Charge NRCS Personnel – No Charge Conservation District Personnel – No Charge Kansas Forest Service Personnel – Included above Kansas Alliance for Wetlands and Streams – Included above
	Relocate Pasture Feeding Site	Watershed Specialist WRAPS Coordinator NRCS Personnel Conservation District Personnel Kansas Alliance for Wetlands and Streams	
	Off Stream Watering System	WRAPS Coordinator NRCS Personnel Conservation District Personnel Extension Agent K-State Research and Extension	
	Rotational Grazing	WRAPS Coordinator NRCS Personnel Conservation District Personnel Extension Agent K-State Research and Extension	
	Grazing Mgmt Plans	WRAPS Coordinator NRCS Personnel Conservation District Personnel	
	Fence off Streams and Ponds	WRAPS Coordinator NRCS Personnel Conservation District Personnel	
	Total Projected Annual Cost		**$80,000**

7.6 Potential BMP Funding Sources

Table 30. Potential BMP funding sources

Potential Funding Sources	Potential Funding Programs
Natural Resources Conservation Service	Environmental Quality Incentives Program (EQIP) Wetland Reserve Program (WRP) Conservation Reserve Program (CRP) Wildlife Habitat Incentive Program (WHIP) Cooperative Conservation Partnership Initiative (CCPI) State Acres for Wildlife Enhancement (SAFE) Grassland Reserve Program (GRP) Farmable Wetlands Programs (FWP)
EPA/KDHE	319 Funding Grants KDHE WRAPS Funding Clean Water Neighbor Grants
KS Dept. of Wildlife and Parks	Partnering for Wildlife
Kansas Alliance for Wetlands & Streams	

State Conservation Commission	
KDA – Division of Conservation	
No-till on the Plains	
Conservation District	
Kansas Forest Service	Forest Legacy Program (US Forest Service & Kansas Forest Service)
US Fish and Wildlife	

8.0 Water Quality Milestones to Determine Improvements

The goal of the Kirwin WRAPS plan is to restore water quality for uses supportive of aquatic life, food procurement, irrigation, and recreation for Kirwin Lake. The plan specifically addresses the high priority eutrophication TMDL for Kirwin Lake. In order to reach the load reduction goals associated with the Kirwin Lake impairment, an implementation schedule for conservation practices spanning 30 years has been developed.

The selected practices included in the plan will be implemented throughout the targeted areas within the Kirwin Lake watershed. Water quality milestones have been developed for Kirwin Lake, along with additional indicators of water quality. The purpose of the milestones and indicators is to measure water quality improvements associated with the implementation schedule contained in this plan.

In order to provide additional water quality information associated with this plan, separate water quality milestones are also included for Bow Creek and the Upper North Fork Solomon River. These water quality indicators will enable KDHE and the Kirwin WRAPS to measure water quality improvements within the watershed above Kirwin Lake, which should directly affect the water quality of the lake itself.

8.1 Water Quality Milestones for Kirwin Lake WRAPS Project Area

As previously stated, this plan estimates that it will take 30 years to implement the planned BMPs necessary to meet the load reduction goals for the impairment being addressed in the Kirwin Lake watershed. The table below includes 10-year water quality goals, as well as long term water quality goals for various parameters monitored in Kirwin Lake.

Table 31. Water Quality Milestones for Kirwin Lake

Water Quality Milestones for Kirwin Lake								
	Current Condition (1990 - 2012) Median TP	10-Year Goal		Long Term Goal		Current Condition (1990 - 2012) Secchi (Avg)	10-Year Goal	Long Term Goal
		Improved Condition (2013 - 2023) Median TP	Total Reduction Needed	Improved Condition Median TP	Total Reduction Needed		Improved Condition (2013 - 2023) Secchi (Avg)	Improved Condition Secchi (Avg)
Sampling Site	**Total Phosphorus (median of data collected at lake surface during indicated period), ppb**					**Secchi (average of data collected during indicated period), m**		
Kirwin Lake LM011001	125	94	**25%**	31	**75%**	1.5	**Secchi depth > 1.5**	**Maintain Average Secchi depth > 1.5**
	Current Condition (1990 - 2012) Median TN	**10-Year Goal**		**Long Term Goal**		**Current Condition (1990 - 2012) Chlorophyll a**	**10-Year Goal**	**Long Term Goal**
		Improved Condition (2013 - 2023) Median TN	**Total Reduction Needed**	**Improved Condition Median TN**	**Total Reduction Needed**		**Improved Condition (2013 - 2023) Chlorophyll a**	**Improved Condition Chlorophyll a**
Sampling Site	**Total Nitrogen (median of data collected at lake surface during indicated period), ppm**					**Chlorophyll a (average of data collected at lake surface during indicated period), ppb**		
Kirwin Lake LM011001	1.54	1.23	**20%**	< 0.62	**60%**	22	12	**Maintain Average Chlorophyll a < 10**

8.2 Water Quality Milestones for the Bow Creek and Upper North Fork Solomon River

While the primary focus of this plan is the high priority eutrophication TMDL for Kirwin Lake, it is anticipated that due to the implementation plan for the targeted area within the watershed, water quality improvements may also be achieved in the major lake tributaries of Bow Creek and the Upper North Fork Solomon River. The table on the following page includes water quality goals for total phosphorus (TP), total suspended solids (TSS), and Total Nitrogen (TN) in the Bow Creek and Upper North Fork Solomon River watersheds.

Table 32. Water Quality Milestones for Bow Creek & Upper North Fork Solomon River

Water Quality Milestones for Bow Creek & Upper North Fork Solomon River										
	Current Condition (1990 - 2012) Median TP	10-Year Goal		Long Term Goal		Current Condition (1990 - 2012) Median TSS	10-Year Goal		Long Term Goal	
		Improved Condition (2013 - 2023) Median TP	Total Reduction Needed	Improved Condition Median TP	Total Reduction Needed		Improved Condition (2013 - 2023) Median TSS	Total Reduction Needed	Improved Condition Median TSS	Total Reduction Needed
Sampling Site	**Total Phosphorus (median of data collected at lake surface during indicated period), ppb**					**Total Suspended Solids (TSS) (median of data collected during indicated period), ppm**				
Bow Creek SC545	282	211	**25%**	70	**75%**	59	44	**25%**	15	**75%**
Upper N. Fork Solomon River SC546	274	205	**25%**	68	**75%**	67	50	**25%**	17	**75%**

	Current Condition (1990 - 2012) Median TN	10-Year Goal		Long Term Goal	
		Improved Condition (2013 - 2023) Median TN	Total Reduction Needed	Improved Condition Median TN	Total Reduction Needed
Sampling Site	**Total Nitrogen (median of data collected at lake surface during indicated period), ppm**				
Bow Creek SC545	1.54	1.23	**20%**	< 0.62	**60%**
Upper N. Fork Solomon River SC546	1.19	0.95	**20%**	< 0.62	**48%**

8.3 Additional Water Quality Indicators

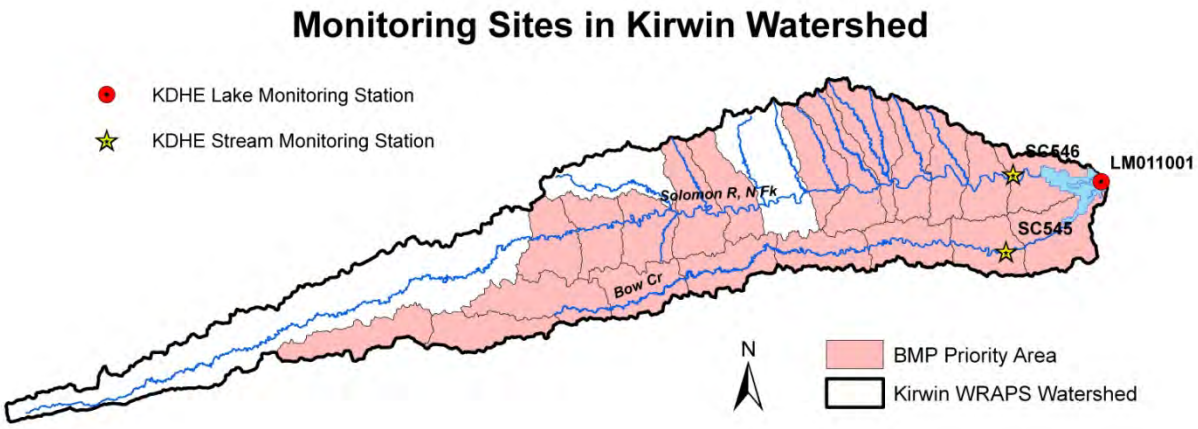
In addition to the monitoring data, other water quality indicators can be utilized by KDHE and the SLT. Such indicators may include anecdotal information from the SLT and other citizen groups within the watershed (skin rash outbreaks, fish kills, nuisance odors), which can be used to assess short-term deviations from water quality standards. These additional indicators can act as trigger-points that might initiate further revisions or modifications to the WRAPS plan by KDHE and the SLT.

- Occurrence of algal blooms in Kirwin Lake
- Visitor traffic to Kirwin Lake
- Trends of quantity and quality of fishing in Kirwin Lake
- Beach closings

8.4 Monitoring Water Quality Progress

KDHE continues to monitor water quality in the Kirwin Lake watershed by maintaining the monitoring stations located within the watershed. The map below indicates the location of the KDHE monitoring stations located within the watershed, as well as the BMP targeted areas that have been identified and discussed in previous sections of this plan.

Figure 16. Monitoring Sites in Kirwin Watershed



The map in Figure 16 shows the KDHE monitoring stations located in streams and lakes. The permanent stream monitoring sites (indicated with yellow stars) are continuously sampled. The sites are sampled for nutrients, *E. Coli* bacteria, chemicals, turbidity, alkalinity, dissolved oxygen, pH, ammonia and metals. The pollutant indicators tested for at each site may vary depending on the season at collection time and other factors. The KDHE lake monitoring sites are typically sampled every 3 years. Typically, the lake monitoring takes place between April and October.

8.5 Volunteer Water Monitoring

The Kirwin Lake WRAPS SLT has identified the need for additional monitoring of surface water at run-off events. Information and Education activities include training and supplies to equip citizen volunteers in the monitoring of rivers and streams within the Kirwin Lake watershed.

8.6 Evaluation of Monitoring Data

Monitoring data in the Kirwin Lake watershed will be used to determine water quality progress, track water quality milestones, and to determine the effectiveness of the BMP implementation outlined in the plan. The schedule of review for the monitoring data will be tied to the water quality milestones that have been developed, as well as the frequency of the sampling data.

The implementation schedule and water quality milestones for the Kirwin Lake watershed extend through a 30-year period. Throughout that period, KDHE will continue to analyze and evaluate the monitoring data collected. After the first five to ten years of monitoring and implementation of conservation practices, KDHE will evaluate the available water quality data to determine whether the water quality milestones have been achieved. If milestones are not achieved, KDHE will assist the Kirwin Lake WRAPS group to analyze and understand the context for non-achievement, as well as the need to review and/or revise the water quality milestones included in the plan. KDHE and the Stakeholder Leadership Team can address any necessary modifications or revisions to the plan based on the data analysis. At the end of the plan, a determination can be made as to whether the water quality standards have been attained.

In addition to the planned review of the monitoring data and water quality milestones, KDHE and the SLT may revisit the plan in shorter increments. This would allow KDHE and the SLT to evaluate newer available information, incorporate any revisions to applicable TMDLs, or address any potential water quality indicators that might trigger an immediate review.

9.0 Information/Education and Technical Assistance Plan

9.1 Information/Education and technical assistance schedule with cost estimates

The SLT has determined which information and education activities will be needed in the watershed. These activities are important in providing the residents of the watershed with a higher awareness of watershed issues. This will lead to an increase in adoption rates of BMPs. Additional watershed issues identified by the Kirwin WRAPS SLT will be address through information/education activities included in this plan. Listed below are the activities and events along with their costs and possible sponsoring agencies. All activities will be focused in the WRAPS high priority project areas.

Table 33. Information/Education and technical assistance schedule with cost estimates
BMP Technical Assistance from Table 28 highlighted in green

BMP	Target Audience	Activity/Event Technical Assistance	Time Frame	Estimated Costs	Sponsor/ Responsible Agency
Livestock BMP Implementation					
Relocate Pasture Feeding Sites and Relocate Feeding Pens	Livestock Producers/ Landowners	Tour/Field Day	Annual-Summer	$5,000	Kansas Rural Center K-State Research and Extension Conservation Districts Smoky Solomon Resource Enhancement
	Livestock Producers/ Landowners	Demonstration Project	Annual-Summer	$5,000	Kansas Rural Center K-State Research and Extension Conservation Districts Smoky Solomon R.E.
	Livestock Producers/ Landowners	Scholarships to Grazing Schools and Workshops	Annual-Ongoing	5 per year, $100 per scholarship: $500 total	Kansas Rural Center K-State Research and Extension KS Grazing Lands Coalition
	Livestock Producers/ Landowners	One-on-one technical assistance for producers to implement livestock BMPs in targeted areas	Annual – Ongoing	Watershed Specialist $20,000	K-State Research and Extension Conservation Districts NRCS Smoky Solomon R.E.
	Livestock Producers/ Landowners	One-on-one technical assistance to remove livestock from riparian areas	Annual – Ongoing	$5,000	Kansas Forest Service Conservation Districts
Off-stream/ Alternative Watering Systems And Fence Out Streams and Ponds	Livestock Producers/ Landowners	Tour/Field Day	Annual-Summer	Included above	Kansas Rural Center K-State Research and Extension Conservation Districts NRCS, Smoky Solomon R.E.
	Livestock Producers/ Landowners	Demonstration Project	Annual-Summer	$5,000	Kansas Rural Center K-State Research and Extension Conservation Districts NRCS, Smoky Solomon R.E.

BMP	Target Audience	Activity/Event Technical Assistance	Time Frame	Estimated Costs	Sponsor/ Responsible Agency
Livestock BMP Implementation					
Cont. Watering and Fencing	Livestock Producers/ Landowners	Scholarships to Grazing Schools and Workshops	Annual-Ongoing	Included above	Kansas Rural Center K-State Research and Extension KS Grazing Lands Coalition
	Livestock Producers/ Landowners	One-on-one technical assistance for producers to implement livestock BMPs in targeted areas	Annual, Ongoing	Included above	K-State Research and Extension Conservation Districts NRCS, Smoky Solomon R.E.
Vegetative Filter Strips	Livestock Producers/Landowners	Tour/Field Day/Workshop	Annual	$5,000	K-State Research and Extension Conservation Districts NRCS, Smoky Solomon R.E. North Central Prairie Weed Management Assoc
	Livestock Producers/Landowners	One-on-one technical assistance for producers to implement livestock BMPs in targeted areas	Annual, Ongoing	Included above	K-State Research and Extension Conservation Districts NRCS, Smoky Solomon R.E.
Rotational Grazing	Livestock Producers/ Landowners	Tour/Field Day/Workshop	Annual-Summer	$5,000	Kansas Rural Center K-State Research and Extension NRCS, Smoky Solomon R.E.
	Livestock Producers/ Landowners	One-on-one technical assistance for producers to implement livestock BMPs in targeted areas	Annual, Ongoing	Included above	K-State Research and Extension NRCS, Conservation Districts Smoky Solomon R.E.
Grazing Management Plans (critical area planting & brush management)	Livestock Producers/ Landowners	Tour/Field Day/Workshop	Annual-Summer	$5,000	Kansas Rural Center K-State Research and Extension Conservation Districts NRCS, Smoky Solomon R.E. North Central Prairie Weed Management Area
	Livestock Producers/ Landowners	One-on-one technical assistance for producers to implement livestock BMPs in targeted areas	Annual, Ongoing	Included above	K-State Research and Extension Conservation districts NRCS, Smoky Solomon R.E.
		Sub-Total of I&E	Annual	$30,500	
		Sub-Total of Technical Assistance	Annual	$25,000	
		Sub-Total of Livestock I&E/TA	**Annual**	**$55,500**	

BMP	Target Audience	Activity/Event Technical Assistance	Time Frame	Estimated Costs	Sponsor/ Responsible Agency
Cropland BMP Implementation					
Permanent Vegetation and Vegetative Buffers	Farmers/Landowners	Workshop/Field Day/Tour	Annual, Spring	$5,000	K-State Research and Extension Conservation districts NRCS, Smoky Solomon R.E.
	Farmers/Landowners	Forestry Field Day	Annual	$5,000	Kansas Forest Service Smoky Solomon R.E. North Central Prairie Weed Management Area
	Farmers/Landowners	One-on-one technical assistance for farmers/landowners to implement vegetative buffers and permanent vegetation in targeted areas	Annual	$20,000	Conservation Districts NRCS K-State Research and Extension Smoky Solomon R.E., KAWS, Kansas Forest Service
Grassed Waterways	Farmers/Landowners	One-on-one technical assistance for farmers/ landowners to implement waterways in targeted areas	Annual	Included above	Conservation Districts, NRCS K-State Research and Extension Smoky Solomon R.E.
No-Till and Subsurface Fertilizer Application	Farmers/Landowners	Scholarships for farmers/ landowners to attend No-Till on the Plains Annual Conference	Annual, Winter	5 per year, $150 per scholarship: $750	No-Till on the Plains Conservation Districts
	Farmers/Landowners	Workshop/Field Day/Tour	Annual, Spring	Included below	No-Till on the Plains Conservation Districts K-State Research and Extension Smoky Solomon R.E.
	Farmers/Landowners	One-on-one technical assistance for farmers/ landowners to implement no-till in targeted areas	Annual-Ongoing	$5,000	No-Till on the Plains K-State Research and Extension Conservation Districts, NRCS Smoky Solomon R.E.
Nutrient Management Plans	Farmers/Landowners	Workshop/Field Day	Annual, Spring	$5,000	Conservation Districts K-State Research and Extension NRCS, Smoky Solomon R.E.
	Farmers/Landowners	One-on-one technical assistance for farmers to implement NMPs in targeted areas	Annual	Included above	Conservation Districts K-State Research and Extension NRCS, Smoky Solomon R.E.
Terraces	Farmers/Landowners	Workshop/Field Day/Tour	Annual, Spring	$5,000	K-State Research and Extension Conservation districts NRCS, Smoky Solomon R.E.
		Sub-Total of I&E	Annual	$20,750	
		Sub-Total of Technical Assistance	Annual	$25,000	
		Sub-Total of Cropland I&E/TA	**Annual**	**$45,750**	

BMP	Target Audience	Activity/Event Technical Assistance	Time Frame	Estimated Costs	Sponsor/ Responsible Agency
General / Watershed Wide Information and Education					
Educational Activities Targeting Youth	Educators, K-12 Students	Envirothon	Annual	$1,000	Conservation Districts NRCS, Smoky Solomon R.E.
		Eco-Meet	Annual	$1,000	Conservation Districts NRCS, Smoky Solomon R.E.
		Range Youth Camp	Annual	5 Scholarships @$220/ea. $1,100	Conservation Districts NRCS, Producer Organizations
		WACKY Day	Annual	$500	Conservation Districts Kansas Natural Resource Foundation Smoky Solomon R.E. Local FFA Chapters
		Poster, essay, and speech contests	Annual	No Cost	Conservation Districts Smoky Solomon R.E.
		Water Festival	Annual	$5,000	Kansas Natural Resource Foundation Smoky Solomon R.E.
		EARTH	Annual	$5,000	E.A.R.T.H. program
Educational Activities Targeting Adults	Watershed residents	BMP Auction Technical Assistance (To be conducted in targeted watersheds only)	Annual	$9,000	K-State Research and Extension Conservation Districts
		Newsletters, press releases, advertisements, and producer mailings Web Sites	As needed	$1,000	K-State Research and Extension Conservation Districts KAWS, Kansas Rural Center Smoky Solomon R.E.
		Presentation at Annual meetings	Annual – Winter	No Charge	Conservation District Smoky Solomon R.E.
		Displays at community events and county fairs	Annual	$500	Conservation District K-State Research and Extension Smoky Solomon R.E. North Central Prairie Weed Management Area
		Sub-Total of General I&E	**Annual**	**$24,100**	

BMP	Target Audience	Activity/Event Technical Assistance	Time Frame	Estimated Costs	Sponsor/ Responsible Agency
Watershed Issues Information and Education					
Groundwater	Watershed residents	Newsletters, press releases, advertisements, and producer mailings Web Sites	As needed	Included above	K-State Research and Extension Conservation Districts KAWS, Kansas Rural Center Smoky Solomon R.E.
		Presentation at Annual meetings	Annual – Winter	No Charge	Conservation District Smoky Solomon R.E.
		Displays at community events and county fairs	Annual	$500	Conservation District K-State Research and Extension Smoky Solomon R.E. North Central Prairie Weed Management Area
		Water well decommissioning demonstration	Annual	$5,000	Conservation District K-State Research and Extension Smoky Solomon R.E. North Central Prairie Weed Management Area
		One-on-one technical assistance for farmers/ Landowners in targeted areas to test water wells, record data, and educate on protecting water quality	On-going	$10,000	Conservation District K-State Research and Extension Smoky Solomon R.E. North Central Prairie Weed Management Area
		Ground water quality and protection demonstrations using an Envision Groundwater model and providing written information	On-going – in conjunction with other demonstrations and meetings	$5,000	Conservation District K-State Research and Extension NRCS, Smoky Solomon R.E. North Central Prairie Weed Management Area Producer membership Organizations
Degraded Streams and Rivers	Watershed residents	Publicize and promote streambank BMPs	Annual	$500	Conservation Districts, KAWS Kansas Forest Service Smoky Solomon R.E.
	Watershed residents	Voluntary Water Quality Monitoring	Rain events/ as needed	$1,000	SLT and Community members Conservation Districts K-State Extension/4-H/FFA Smoky Solomon R.E. North Central Prairie Weed Management
Urban Areas	Watershed residents	Publicize and promote Water Quality BMPs for urban areas	Annual	$500	Conservation Districts Smoky Solomon R.E.
Flooding	City/County, Watershed Landowners	Onsite visits	As needed	$250	Conservation Districts

Biological Items of Concern	Watershed residents	Publicize and promote management practices that protect native and endangered species	Annual	$500	KDWP US Fish & Wildlife
Water Quantity	Watershed residents	Publicize and promote drought management practices	As needed	$500	Conservation Districts Smoky Solomon R.E.
		Sub-Total of Watershed I&E	**Annual**	**$23,750**	

Project Coordination & Grant Management				
Project management	WRAPS Coordinator 0.50 FTE	Annual	$30,000	Smoky Solomon R.E.
Grant management	RC&D Executive Director	Annual	$12,000	Smoky Solomon R.E.
	Sub-total of Coordination/Manage	**Annual**	**$42,000**	
Total Annual I&E from above table			**$111,100**	
Total Annual Technical Assistance from above table (Equals Table 29)			**$80,000**	
Total Annual I&E AND Technical Assistance if fully implemented			**$191,100**	

9.2 Evaluation of Information and Education Activities

All service providers conducting Information and Education (I&E) activities funded through the Kirwin WRAPS will be required to include an evaluation component in their project proposals and Project Implementation Plans. The evaluation methods will vary based on the activity. At a minimum, all I&E projects must include participant learning objectives as the basis for the overall evaluation. Depending on the scope of the project, development of a basic logic model identifying long-term, medium-term, and short-term behavior changes or other outcomes that are expected to result from the I&E activity may be required.

Specific evaluation tools or methods may include (but are not limited to):

* Feedback forms allowing participants to provide rankings of the content, presenters, useful of information, etc.
* Pre and post surveys to determine amount of knowledge gained, anticipated behavior changes, need for further learning, etc.
* Follow up interviews (one-on-one contacts, phone calls, e-mails) with selected participants to gather more in-depth input regarding the effectiveness of the I&E activity.

All service providers will be required to submit a brief written evaluation of their I&E activity, summarizing how successful the activity was in achieving the learning objectives, and how the activity contributed to achieving the long-term WRAPS goals and/or objectives for pollutant load reductions

10.0 Total Annual Cost of Kirwin Lake WRAPS Plan

Table 34. Total Annual cost of Kirwin Lake WRAPS Plan

Total Annual WRAPS Cost* after Cost-Share by Category					
Year	**Cropland**	**Livestock**	**Technical Assistance**	**Information and Education**	**Total Annual Cost**
1	$328,702	$28,763	$80,000	$111,100	**$548,565**
2	$338,563	$25,289	$82,400	$114,433	**$560,686**
3	$348,720	$30,514	$84,872	$117,866	**$581,972**
4	$359,182	$26,829	$87,418	$121,402	**$594,831**
5	$369,957	$27,926	$90,041	$125,044	**$612,968**
6	$381,056	$27,186	$92,742	$128,795	**$629,780**
7	$392,488	$24,914	$95,524	$132,659	**$645,585**
8	$404,262	$28,842	$98,390	$136,639	**$668,133**
9	$416,390	$26,431	$101,342	$140,738	**$684,901**
10	$428,882	$27,920	$104,382	$144,960	**$706,144**
11	$441,749	$28,041	$107,513	$149,309	**$726,612**
12	$455,001	$32,462	$110,739	$153,788	**$751,990**
13	$468,651	$29,749	$114,061	$158,402	**$770,862**
14	$482,711	$34,439	$117,483	$163,154	**$797,786**
15	$497,192	$28,455	$121,007	$168,049	**$814,703**
16	$512,108	$36,536	$124,637	$173,090	**$846,371**
17	$527,471	$33,482	$128,377	$178,283	**$867,612**
18	$543,295	$38,761	$132,228	$183,631	**$897,915**
19	$559,594	$35,521	$136,195	$189,140	**$920,450**
20	$576,382	$41,121	$140,280	$194,815	**$952,598**
21	$593,673	$37,685	$144,489	$200,659	**$976,505**
22	$611,483	$43,626	$148,824	$206,679	**$1,010,611**
23	$629,828	$39,979	$153,288	$212,879	**$1,035,975**
24	$648,723	$46,283	$157,887	$219,265	**$1,072,158**
25	$668,184	$42,414	$162,624	$225,843	**$1,099,065**
26	$688,230	$49,101	$167,502	$232,619	**$1,137,452**
27	$708,877	$44,997	$172,527	$239,597	**$1,165,999**
28	$730,143	$52,091	$177,703	$246,785	**$1,206,723**
29	$752,047	$47,738	$183,034	$254,189	**$1,237,008**
30	$774,609	$55,264	$188,525	$261,814	**$1,280,212**
Totals	$15,638,153	$1,072,359	$3,806,034	$5,285,626	**$25,802,172**
**3% Annual Inflation*					

11.0 Review of the Watershed Plan

In the year 2015 and 2020, the plan will be reviewed and revised according to results acquired from monitoring data. At this time, the SLT will review the following criteria in addition to any other concerns that may occur at that time:

1. The SLT will request a report from KDHE on water quality conditions in the watershed.
2. The SLT will request a report from KDHE concerning the 2014 and 2019 TMDL revisions.
3. The SLT will request reports from US Army Corps of Engineers (USACE) and Kansas Department of Wildlife and Parks concerning water quality and quantity, wildlife, and any other concerns or observations at Kirwin Lake.

4 The SLT will request reports from NRCS and the Conservation Districts concerning BMP adoption rates and any other water quality and quantity issues.

5. The SLT will use all data and assistance available to determine progress toward achieving implementation milestones in Section 6.0 of this report and progress toward achieving the water quality milestones listed in Section 8.0 of this report.
6. The SLT will discuss impairments on the 303d list and the possibility of addressing these impairments prior to them being listed as TMDLs.
7. The SLT will discuss the possible need for additional assessment data.
8. The SLT will discuss the possible need for revision of the pollution load reduction goals and BMP implementation schedule.
9. The SLT will discuss necessary adjustments and revisions needed to this plan to reach pollution load reduction goals.

12.0 Appendix

12.1 Glossary of Terms

Impairment definitions: (Dec. 2007 RWA)

Best Management Practices (BMP): Environmental protection practices used to control pollutants, such as sediment or nutrients, from common agricultural or urban land use activities.

Biological Oxygen Demand (BOD): Measure of the amount of oxygen removed from aquatic environments by aerobic microorganisms for their metabolic requirements.

Biology: Excess nutrients and organic enrichment in stream water can have a negative influence on aquatic populations. Nitrogen and phosphorus can originate from agricultural fertilizers, urban fertilizers, failing septic systems and livestock or wildlife manure in the stream

Chlorophyll a: Common pigment found in algae and other aquatic plants that is used in photosynthesis

Dissolved Oxygen (DO): Amount of oxygen dissolved in water. Oxygen available to aquatic life with the water column. State water quality standards require a stream or lake to have at least 5mg/L of dissolved oxygen.

E. coli bacteria: Bacteria indicators (either fecal coliform or *E. coli*) are found in the digestive systems of warm-blooded animals. Some strains cause diarrheal diseases. In surface waters, E. coli bacteria are an indicator of potential disease causing organisms. Potential sources of bacteria contamination in surface waters include municipal wastewater, livestock, septic systems, pets, and wildlife.

Eutrophication (E): Excess of mineral and organic nutrients that promote a proliferation of plant life in lakes and ponds. The enrichment of bodies of fresh water due to increases in inorganic plant nutrient loading (e.g. nitrate, phosphate) and low in oxygen content. It may occur naturally but can also be the result of human activity (cultural eutrophication from fertilizer runoff and sewage discharge) and is particularly evident in slow-moving rivers and shallow lakes.
Fecal coliform bacteria (FCB): Bacteria that originate in the intestines of all warm-blooded animals.
Municipal Water System: Water system that serves at least 25 people or has more than 15 service connections.
NPDES (National Pollutant Discharge Elimination System) Permit: Required by Federal law for all point source discharges into waters.
Nitrates: Final product of ammonia's biochemical oxidation. Primary source of nitrogen for plants. Originates from manure and fertilizers.
Nitrogen (N or TN): Element that is essential for plants and animals. TN or total nitrogen is a chemical measurement of all nitrogen forms in a water sample.
Nutrients: Nitrogen and phosphorus in water source.
Phosphorus (P or TP): One of the primary nutrients required for the growth of plants. Element in water that, in excess, can lead to increased biological activity in water. TP or total phosphorus is a chemical measurement of all phosphorus forms in a water sample.
Riparian Zone: Margin of vegetation within approximately 100 feet of waterway.
Secchi Disk: Circular plate 10-12" in diameter with alternating black and white quarters used to measure water clarity by measuring the depth at which it can be seen. **Sedimentation:** Deposition of slit, clay or sand in slow moving waters.
Selenium: A naturally occurring metal in marine shale that serves as a micronutrient. Excessive amounts impair aquatic life and bioaccumulation up the food chain occurs causing toxicity to birds, mammals, and humans. Kansas water quality standards are an average of 5ppb and a maximum of 20ppb.
Stakeholder Leadership Team (SLT): Organization of watershed residents, landowners, farmers, ranchers, agency personnel and all persons with an interest in water quality.
Sulfate: Sulfate is a naturally occurring mineral that can cause taste and odor problems in drinking water. Sulfates are dissolved into groundwater as the water moves through gypsum rock formations. The water quality standard for sulfate in Kansas is 250ug/L.
Suspended Solids: Solids which are not in true solution and which can be removed by filtration. Such suspended solids usually contribute directly to turbidity. Defined in waste management, these are small particles of solid pollutants that resist separation by conventional methods. Suspended solids (along with Biochemical Oxygen Demand - BOD) is a measurement of water quality and an indicator of treatment plant efficiency.
Total Maximum Daily Load (TMDL); Maximum amount of pollutant that a specific body of water can receive without violating the surface water-quality standards, resulting in failure to support their designated uses
Total Suspended Solids (TSS): Measure of the suspended organic and inorganic solids in water. Used as an indicator of sediment or silt.

12.2 BMP Definitions
(Some information from Kansas NRCS Field Office Technical Guide)

Cropland

No Till

DEFINITION
Managing the amount, orientation and distribution of crop and other plant residue on the soil surface year round, limiting soil-disturbing activities to those necessary to place nutrients, condition residue and plant crops.

PURPOSE
- Reduce sheet/rill erosion.
- Reduce wind erosion and Particulate matter less than 10 micrometers in diameter - PM 10.
- Improve soil organic matter content.
- Reduce CO_2 losses from the soil.
- Reduce energy use.
- Increase plant-available moisture.
- Provide food and escape cover for wildlife.

CONDITIONS WHERE PRACTICE APPLIES
This practice applies to all cropland and other land where crops are planted.
This practice includes planting methods commonly referred to as no-till, strip till, direct seed, zero till, slot till or zone till. Approved implements are: no-till and strip-till planters; certain drills and air seeders; strip-type fertilizer and manure injectors and applicators; in-row chisels; and similar implements that only disturb strips and slots. All others are considered to be full-width or capable of full disturbance and therefore not compatible.

Grassed Waterway

DEFINITION
A shaped or graded channel that is established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet.

Purpose
- To convey runoff from terraces, diversions, or other water concentrations without causing erosion or flooding.
- To reduce gully erosion.
- To protect/improve water quality.

Conditions where practice applies
In areas where added water conveyance capacity and vegetative protection are needed to control erosion resulting from concentrated runoff.

Vegetative Buffer

DEFINITION
A strip or area of herbaceous vegetation that removes contaminants from overland flow.

PURPOSE
- Reduce suspended solids and associated contaminants in runoff.
- Reduce dissolved contaminant loadings in runoff
- Reduce suspended solids and associated contaminants in irrigation tailwater

CONDITIONS WHERE PRACTICE APPLIES
Buffers strips are established where environmentally sensitive areas need to be protected from sediment, other suspended solids, and dissolved contaminants in runoff.

Nutrient Management Plan

DEFINITION

Managing the amount (rate), source, placement (method of application), and timing of plant nutrients and soil amendments.

PURPOSE
- To budget, supply, and conserve nutrients for plant production.
- To minimize agricultural nonpoint source pollution of surface and groundwater resources.
- To properly utilize manure or organic by-products as a plant nutrient source.
- To protect air quality by reducing odors, nitrogen emissions (ammonia, oxides of nitrogen), and the formation of atmospheric particulates.
- To maintain or improve the physical, chemical, and biological condition of soil.

CONDITIONS WHERE PRACTICE APPLIES
This practice applies to all lands where plant nutrients and soil amendments are applied. This standard does not apply to one-time nutrient applications to establish perennial crops.

Terraces

DEFINITION
An earth embankment, or a combination ridge and channel, constructed across the field slope.

PURPOSE
This practice is applied as part of a resource management system for one or more of the following purposes:

- Reduce erosion by reducing slope length
- Retain runoff for moisture conservation

CONDITIONS WHERE PRACTICE APPLIES
This practice applies where:

- Soil erosion caused by water and excessive slope length is a problem
- Excess runoff is a problem
- There is a need to conserve water
- The soils and topography are such that terraces can be constructed and reasonably farmed
- A suitable outlet can be provided

Permanent Vegetation

DEFINITION
A strip of permanent vegetation established at the edge or around the perimeter of a field.

PURPOSE
- Reduce erosion from wind and water
- Soil and water quality protection
- Manage pest populations
- Provide wildlife food and cover
- Increase carbon storage
- Improve air quality

CONDITIONS WHERE PRACTICE APPLIES
Strips are established where environmentally sensitive areas need to be protected from sediment, other suspended solids, and dissolved contaminants in runoff. Perimeter of fields and to connect other buffer practices within the field. May also apply to recreation land or other land uses where agronomic crops including forages are grown.

Subsurface Fertilizer Application

DEFINITION

Managing the amount (rate), source, placement (method of application), and timing of plant nutrients and soil amendments.

PURPOSE

- To budget, supply, and conserve nutrients for plant production.
- To minimize agricultural nonpoint source pollution of surface and groundwater resources.
- To properly utilize manure or organic by-products as a plant nutrient source.
- To protect air quality by reducing odors, nitrogen emissions (ammonia, oxides of nitrogen), and the formation of atmospheric particulates.
- To maintain or improve the physical, chemical, and biological condition of soil.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all lands where plant nutrients and soil amendments are applied. This standard does not apply to one-time nutrient applications to establish perennial crops.

Livestock

Vegetative Filter Strip

DEFINITION

A strip or area of herbaceous vegetation that removes contaminants from overland flow.

PURPOSE

- Reduce suspended solids and associated contaminants in runoff.
- Reduce dissolved contaminant loadings in runoff.
- Reduce suspended solids and associated contaminants in irrigation tailwater.

CONDITIONS WHERE PRACTICE APPLIES

Filter strips are established where environmentally-sensitive areas need to be protected from sediment, other suspended solids and dissolved contaminants in runoff.

Relocate Feeding Pens

DEFINITION

Moving feedlots or pens away from a stream, waterway, or body of water to increase filtration and waste removal of manure.

PURPOSE
- Reduce suspended solids and associated contaminants in runoff.
- Reduce dissolved contaminant loadings in runoff
- Improve or maintain water quality and quantity

CONDITIONS WHERE PRACTICE APPLIES
This practice applies to all areas where livestock are confined in location to a stream, waterway, or body of water so that during run off events waste is able to reach the water.

Relocate Pasture Feeding Site

DEFINITION
Moving the location that livestock are either encouraged to feed or naturally feed to a place that fewer pollutants can enter the rivers and streams from rainfall events**.**

PURPOSE
- Improve or maintain desired species composition and vigor of plant communities.
- Improve or maintain quantity and quality of forage for grazing and browsing animals' health and productivity.
- Improve or maintain surface and/or subsurface water quality and quantity.
- Improve or maintain riparian and watershed function.
- Reduce accelerated soil erosion, and maintain or improve soil condition.
- Improve or maintain the quantity and quality of food and/or cover available for wildlife.
- Manage fine fuel loads to achieve desired conditions.

CONDITIONS WHERE PRACTICE APPLIES
This practice applies to all lands where grazing and/or browsing animals are managed.

Alternative (Off-Stream) Watering System (which may include any or all of the following components)

Watering Facility

DEFINITION
A permanent or portable device to provide an adequate amount and quality of drinking water for livestock and or wildlife.

PURPOSE
- To provide access to drinking water for livestock and/or wildlife in order to:
- Meet daily water requirements
- Improve animal distribution

CONDITIONS WHERE PRACTICE APPLIES
This practice applies to all land uses where there is a need for new or improved watering facilities for livestock and/or wildlife.

Pumping Plant

DEFINITION
A pumping facility installed to transfer water for a conservation need.

PURPOSE
Provide a dependable water source or disposal facility for water management.

CONDITIONS WHERE PRACTICE APPLIES
Wherever water must be pumped to accomplish a conservation objective, which may include (but is not limited to) one of the following:

- To provide a water supply for such purposes as irrigation, recreation, livestock, or wildlife
- To maintain critical water levels in swamps, marshes, open water, or newly constructed wetlands and ponds
- To transfer wastewater for utilization as part of a waste management system
- To provide drainage by the removal of surface runoff water or groundwater

Pipeline

DEFINITION
A pipeline and appurtenances installed to convey water for livestock or wildlife.

Purpose
This practice may be applied as part of a resource management system to achieve one or more of the following purposes:

- Convey water to points of use for livestock or wildlife.
- Reduce energy use.
- Develop renewable energy systems.

Conditions where practice applies
This standard applies to the conveyance of water through a closed conduit, from a source of supply to a watering facility, for use by livestock or wildlife.

Rotational Grazing

DEFINITION
Managing the controlled harvest of vegetation with grazing animals by rotating livestock within a pasture to spread manure more uniformly and allow the forage to regenerate. May involve significant cross fencing and additional watering sites.

PURPOSE

- Improve or maintain the health and vigor of plant communities
- Improve or maintain quantity and quality of forage for livestock health and productivity
- Improve or maintain water quality and quantity
- Reduce accelerated soil erosion, and maintain or improve soil condition
- Improve or maintain the quantity and quality of food and/or cover available for wildlife
- Promote economic stability through grazing land sustainability

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all lands where grazing animals are managed.

Fencing – Livestock Exclusion from Streams and Ponds

DEFINITION

A constructed barrier to animals or people.

PURPOSES

• To improve water quality by reducing sediment, nutrient, organic, and inorganic loading of the stream.

• To reduce streambank and streambed erosion. .

CONDITIONS WHERE PRACTICE APPLIES

This practice may be applied on any area where management of animal or human movement is needed

Grazing Management Plans

DEFINITION

A grazing management plan is a site specific conservation plan developed for a client which addresses one or more resource concerns on land where grazing related activities or practices will be planned and applied.

PURPOSE

- Improve forage yield, quality, diversity, and persistence.
- Meet livestock nutritional needs.
- Maximize browse, forage and roughage pasture yields.
- Improve production cost efficiency.
- Maintain or improve wildlife habitat.
- Maintain or improve water quality
- Prevent or reduce erosion

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all lands where grazing and/or browsing animals are managed.

12.3 Service Providers

Organization	Programs	Purpose	Technical or Financial Assistance	Website address
Environmental Protection Agency	Clean Water State Revolving Fund Program Watershed Protection	Provides low cost loans to communities for water pollution control activities. To conduct holistic strategies for restoring and protecting aquatic resources based on hydrology rather than political boundaries.	Financial	www.epa.gov
Kansas Alliance for Wetlands and Streams	Streambank Stabilization Wetland Restoration Cost share programs	The Kansas Alliance for Wetlands and Streams (KAWS) organized in 1996 to promote the protection, enhancement, restoration and establishment wetlands and streams in Kansas.	Technical	www.kaws.org
Kansas Dept. of Agriculture	Watershed structures permitting.	Available for watershed districts and multipurpose small lakes development.	Technical and Financial	www.accesskansas.org/kda
Kansas Dept. of Health and Environment	Nonpoint Source Pollution Program Municipal and livestock waste Livestock waste Municipal waste State Revolving Loan Fund	Provide funds for projects that will reduce nonpoint source pollution. Compliance monitoring. Makes low interest loans for projects to improve and protect water quality.	Technical and Financial	www.kdheks.gov
Kansas Natural Resource Foundation	Natural resource development and protection.	Plan and implement projects and programs that improve environmental quality of life.	Technical	

Organization	Programs and Technical Assistance	Purpose	Technical or Financial Assistance	Website address
Kansas Department of Wildlife and Parks **US Fish and Wildlife**	Land and Water Conservation Funds Conservation Easements for Riparian and Wetland Areas Wildlife Habitat Improvement Program North American Waterfowl Conservation Act MARSH program in coordination with Ducks Unlimited Chickadee Checkoff Walk In Hunting Program F.I.S.H. Program	Provides funds to preserve develop and assure access to outdoor recreation. To provide easements to secure and enhance quality areas in the state. To provide limited assistance for development of wildlife habitat. To provide up to 50 percent cost share for the purchase and/or development of wetlands and wildlife habitat. May provide up to 100 percent of funding for small wetland projects. Projects help with all nongame species. Funding is an optional donation line item on the KS Income Tax form. Landowners receive a payment incentive to allow public hunting on their property. Landowners receive a payment incentive to allow public fishing access to their ponds and streams.	Technical and Financial	www.kdwp.state.ks.us/ www.fws.gov/
Kansas Forest Service	Conservation Tree Planting Program Riparian and Wetland Protection Program	Provides low cost trees and shrubs for conservation plantings. Work closely with other agencies to promote and assist with establishment of riparian forestland and manage existing stands.	Technical	www.kansasforests.org

Organization	Programs and Technical Assistance	Purpose	Technical or Financial Assistance	Website address
Kansas State Research and Extension	Water Quality Programs, Waste Management Programs Kansas Center for Agricultural Resources and Environment (KCARE) Kansas Environmental Leadership Program (KELP) Kansas Local Government Water Quality Planning and Management Rangeland and Natural Area Services (RNAS) WaterLINK Kansas Pride: Healthy Ecosystems/Healthy Communities Citizen Science	Provide programs, expertise and educational materials that relate to minimizing the impact of rural and urban activities on water quality. Educational program to develop leadership for improved water quality. Provide guidance to local governments on water protection programs. Reduce non-point source pollution emanating from Kansas grasslands. Service-learning projects available to college and university faculty and community watersheds in Kansas. Help citizens appraise their local natural resources and develop short and long term plans and activities to protect, sustain and restore their resources for the future. Education combined with volunteer soil and water testing for enhanced natural resource stewardship.	Technical	www.kcare.ksu.edu www.ksu.edu/kelp www.ksu.edu/olg www.k-state.edu/waterlink/ www.kansasprideprogram.ksu.edu/healthyecosystems/ www.ksu.edu/kswater/
Kansas Water Office	Public Information and Education	Provide information and education to the public on Kansas Water Resources	Technical and Financial	www.kwo.org
No-Till on the Plains	Field days, seasonal meetings, tours and technical consulting.	Provide information and assistance concerning continuous no-till farming practices.	Technical	www.notill.org
Smoky Solomon Resource Enhancement	Natural resource development and protection.	Plan and implement projects and programs that improve environmental quality of life.	Technical	

Organization	Programs and Technical Assistance	Purpose	Technical or Financial Assistance	Website address
State Conservation Commission and Conservation Districts	Water Resources Cost Share Nonpoint Source Pollution Control Fund Riparian and Wetland Protection Program Stream Rehabilitation Program Kansas Water Quality Buffer Initiative Watershed district and multipurpose lakes	Provide cost share assistance to landowners for establishment of water conservation practices. Provides financial assistance for nonpoint pollution control projects which help restore water quality. Funds to assist with wetland and riparian development and enhancement. Assist with streams that have been adversely altered by channel modifications. Compliments Conservation Reserve Program by offering additional financial incentives for grass filters and riparian forest buffers. Programs are available for watershed district and multipurpose small lakes.	Technical and Financial	www.accesskansas.org/kscc www.kacdnet.org
US Army Corps of Engineers	Planning Assistance to States Environmental Restoration	Assistance in development of plans for development, utilization and conservation of water and related land resources of drainage Funding assistance for aquatic ecosystem restoration.	Technical	www.usace.army.mil
US Fish and Wildlife Service	Fish and Wildlife Enhancement Program Private Lands Program	Supports field operations which include technical assistance on wetland design. Contracts to restore, enhance, or create wetlands.	Technical	www.fws.gov
US Geological Survey	National Streamflow Information Program Water Cooperative Program	Provide streamflow data Provide cooperative studies and water-quality information	Technical	ks.water.usgs.gov Nrtwq.usgs.gov

Organization	Programs and Technical Assistance	Purpose	Technical or Financial Assistance	Website address
USDA- **Natural Resources Conservation Service and Farm Service Agency**	Conservation Compliance	Primarily for the technical assistance to develop conservation plans on cropland.	Technical and Financial	www.ks.nrcs.usda.gov
	Conservation Operations	To provide technical assistance on private land for development and application of Resource Management Plans.		
	Watershed Planning and Operations	Primarily focused on high priority areas where agricultural improvements will meet water quality objectives.		
	Wetland Reserve Program	Cost share and easements to restore wetlands.		
	Wildlife Habitat Incentives Program	Cost share to establish wildlife habitat which includes wetlands and riparian areas.		
	Grassland Reserve Program, EQIP, and Conservation Reserve Program	Improve and protect rangeland resources with cost-sharing practices, rental agreements, and easement purchases.		
North Central Prairie Weed Management Area	Natural resource development and protection.	Plan and implement projects and programs that improve environmental quality of life.	Technical	
KS Grazing Lands Coalition	Regenerating Kansas grazing lands	Regenerate Kansas grazing land resources through cooperative management, economics, ecology, production, education, and technical assistance programs.	Technical	www.kglc.org
Local FFA Chapters	Youth Education Programs	Make a positive difference in the lives of students. . .through ag education	Technical	

12.4 Sub-Watershed Implementation Tables

Sub Watershed #404 Annual Adoption (treated acres), Cropland BMPs								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Adoption
1	38	76	38	38	76	8	38	313
2	38	76	38	38	76	8	38	313
3	38	76	38	38	76	8	38	313
4	38	76	38	38	76	8	38	313
5	38	76	38	38	76	8	38	313
6	38	76	38	38	76	8	38	313
7	38	76	38	38	76	8	38	313
8	38	76	38	38	76	8	38	313
9	38	76	38	38	76	8	38	313
10	38	76	38	38	76	8	38	313
11	38	76	38	38	76	8	38	313
12	38	76	38	38	76	8	38	313
13	38	76	38	38	76	8	38	313
14	38	76	38	38	76	8	38	313
15	38	76	38	38	76	8	38	313
16	38	76	38	38	76	8	38	313
17	38	76	38	38	76	8	38	313
18	38	76	38	38	76	8	38	313
19	38	76	38	38	76	8	38	313
20	38	76	38	38	76	8	38	313
21	38	76	38	38	76	8	38	313
22	38	76	38	38	76	8	38	313
23	38	76	38	38	76	8	38	313
24	38	76	38	38	76	8	38	313
25	38	76	38	38	76	8	38	313
26	38	76	38	38	76	8	38	313
27	38	76	38	38	76	8	38	313
28	38	76	38	38	76	8	38	313
29	38	76	38	38	76	8	38	313
30	38	76	38	38	76	8	38	313
Sub Watershed #405 Annual Adoption (treated acres), Cropland BMPs								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Adoption
1	41	82	41	41	82	8	41	337
2	41	82	41	41	82	8	41	337
3	41	82	41	41	82	8	41	337

4	41	82	41	41	82	8	41	337
5	41	82	41	41	82	8	41	337
6	41	82	41	41	82	8	41	337
7	41	82	41	41	82	8	41	337
8	41	82	41	41	82	8	41	337
9	41	82	41	41	82	8	41	337
10	41	82	41	41	82	8	41	337
11	41	82	41	41	82	8	41	337
12	41	82	41	41	82	8	41	337
13	41	82	41	41	82	8	41	337
14	41	82	41	41	82	8	41	337
15	41	82	41	41	82	8	41	337
16	41	82	41	41	82	8	41	337
17	41	82	41	41	82	8	41	337
18	41	82	41	41	82	8	41	337
19	41	82	41	41	82	8	41	337
20	41	82	41	41	82	8	41	337
21	41	82	41	41	82	8	41	337
22	41	82	41	41	82	8	41	337
23	41	82	41	41	82	8	41	337
24	41	82	41	41	82	8	41	337
25	41	82	41	41	82	8	41	337
26	41	82	41	41	82	8	41	337
27	41	82	41	41	82	8	41	337
28	41	82	41	41	82	8	41	337
29	41	82	41	41	82	8	41	337
30	41	82	41	41	82	8	41	337
Sub Watershed #501 Annual Adoption (treated acres), Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Adoption**
1	31	62	31	31	62	6	31	254
2	31	62	31	31	62	6	31	254
3	31	62	31	31	62	6	31	254
4	31	62	31	31	62	6	31	254
5	31	62	31	31	62	6	31	254
6	31	62	31	31	62	6	31	254
7	31	62	31	31	62	6	31	254
8	31	62	31	31	62	6	31	254
9	31	62	31	31	62	6	31	254
10	31	62	31	31	62	6	31	254
11	31	62	31	31	62	6	31	254
12	31	62	31	31	62	6	31	254
13	31	62	31	31	62	6	31	254

14	31	62	31	31	62	6	31	254
15	31	62	31	31	62	6	31	254
16	31	62	31	31	62	6	31	254
17	31	62	31	31	62	6	31	254
18	31	62	31	31	62	6	31	254
19	31	62	31	31	62	6	31	254
20	31	62	31	31	62	6	31	254
21	31	62	31	31	62	6	31	254
22	31	62	31	31	62	6	31	254
23	31	62	31	31	62	6	31	254
24	31	62	31	31	62	6	31	254
25	31	62	31	31	62	6	31	254
26	31	62	31	31	62	6	31	254
27	31	62	31	31	62	6	31	254
28	31	62	31	31	62	6	31	254
29	31	62	31	31	62	6	31	254
30	31	62	31	31	62	6	31	254
Sub Watershed #502 Annual Adoption (treated acres), Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Adoption**
1	30	60	30	30	60	6	30	245
2	30	60	30	30	60	6	30	245
3	30	60	30	30	60	6	30	245
4	30	60	30	30	60	6	30	245
5	30	60	30	30	60	6	30	245
6	30	60	30	30	60	6	30	245
7	30	60	30	30	60	6	30	245
8	30	60	30	30	60	6	30	245
9	30	60	30	30	60	6	30	245
10	30	60	30	30	60	6	30	245
11	30	60	30	30	60	6	30	245
12	30	60	30	30	60	6	30	245
13	30	60	30	30	60	6	30	245
14	30	60	30	30	60	6	30	245
15	30	60	30	30	60	6	30	245
16	30	60	30	30	60	6	30	245
17	30	60	30	30	60	6	30	245
18	30	60	30	30	60	6	30	245
19	30	60	30	30	60	6	30	245
20	30	60	30	30	60	6	30	245
21	30	60	30	30	60	6	30	245
22	30	60	30	30	60	6	30	245
23	30	60	30	30	60	6	30	245

24	30	60	30	30	60	6	30	245
25	30	60	30	30	60	6	30	245
26	30	60	30	30	60	6	30	245
27	30	60	30	30	60	6	30	245
28	30	60	30	30	60	6	30	245
29	30	60	30	30	60	6	30	245
30	30	60	30	30	60	6	30	245
Sub Watershed #503 Annual Adoption (treated acres), Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Adoption**
1	43	85	43	43	85	9	43	350
2	43	85	43	43	85	9	43	350
3	43	85	43	43	85	9	43	350
4	43	85	43	43	85	9	43	350
5	43	85	43	43	85	9	43	350
6	43	85	43	43	85	9	43	350
7	43	85	43	43	85	9	43	350
8	43	85	43	43	85	9	43	350
9	43	85	43	43	85	9	43	350
10	43	85	43	43	85	9	43	350
11	43	85	43	43	85	9	43	350
12	43	85	43	43	85	9	43	350
13	43	85	43	43	85	9	43	350
14	43	85	43	43	85	9	43	350
15	43	85	43	43	85	9	43	350
16	43	85	43	43	85	9	43	350
17	43	85	43	43	85	9	43	350
18	43	85	43	43	85	9	43	350
19	43	85	43	43	85	9	43	350
20	43	85	43	43	85	9	43	350
21	43	85	43	43	85	9	43	350
22	43	85	43	43	85	9	43	350
23	43	85	43	43	85	9	43	350
24	43	85	43	43	85	9	43	350
25	43	85	43	43	85	9	43	350
26	43	85	43	43	85	9	43	350
27	43	85	43	43	85	9	43	350
28	43	85	43	43	85	9	43	350
29	43	85	43	43	85	9	43	350
30	43	85	43	43	85	9	43	350
Sub Watershed #504 Annual Adoption (treated acres), Cropland BMPs								

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Adoption
1	34	68	34	34	68	7	34	280
2	34	68	34	34	68	7	34	280
3	34	68	34	34	68	7	34	280
4	34	68	34	34	68	7	34	280
5	34	68	34	34	68	7	34	280
6	34	68	34	34	68	7	34	280
7	34	68	34	34	68	7	34	280
8	34	68	34	34	68	7	34	280
9	34	68	34	34	68	7	34	280
10	34	68	34	34	68	7	34	280
11	34	68	34	34	68	7	34	280
12	34	68	34	34	68	7	34	280
13	34	68	34	34	68	7	34	280
14	34	68	34	34	68	7	34	280
15	34	68	34	34	68	7	34	280
16	34	68	34	34	68	7	34	280
17	34	68	34	34	68	7	34	280
18	34	68	34	34	68	7	34	280
19	34	68	34	34	68	7	34	280
20	34	68	34	34	68	7	34	280
21	34	68	34	34	68	7	34	280
22	34	68	34	34	68	7	34	280
23	34	68	34	34	68	7	34	280
24	34	68	34	34	68	7	34	280
25	34	68	34	34	68	7	34	280
26	34	68	34	34	68	7	34	280
27	34	68	34	34	68	7	34	280
28	34	68	34	34	68	7	34	280
29	34	68	34	34	68	7	34	280
30	34	68	34	34	68	7	34	280
Sub Watershed #505 Annual Adoption (treated acres), Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Adoption**
1	33	66	33	33	66	7	33	269
2	33	66	33	33	66	7	33	269
3	33	66	33	33	66	7	33	269
4	33	66	33	33	66	7	33	269
5	33	66	33	33	66	7	33	269
6	33	66	33	33	66	7	33	269
7	33	66	33	33	66	7	33	269

8	33	66	33	33	66	7	33	269
9	33	66	33	33	66	7	33	269
10	33	66	33	33	66	7	33	269
11	33	66	33	33	66	7	33	269
12	33	66	33	33	66	7	33	269
13	33	66	33	33	66	7	33	269
14	33	66	33	33	66	7	33	269
15	33	66	33	33	66	7	33	269
16	33	66	33	33	66	7	33	269
17	33	66	33	33	66	7	33	269
18	33	66	33	33	66	7	33	269
19	33	66	33	33	66	7	33	269
20	33	66	33	33	66	7	33	269
21	33	66	33	33	66	7	33	269
22	33	66	33	33	66	7	33	269
23	33	66	33	33	66	7	33	269
24	33	66	33	33	66	7	33	269
25	33	66	33	33	66	7	33	269
26	33	66	33	33	66	7	33	269
27	33	66	33	33	66	7	33	269
28	33	66	33	33	66	7	33	269
29	33	66	33	33	66	7	33	269
30	33	66	33	33	66	7	33	269

Sub Watershed #506 Annual Adoption (treated acres), Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Adoption
1	25	51	25	25	51	5	25	208
2	25	51	25	25	51	5	25	208
3	25	51	25	25	51	5	25	208
4	25	51	25	25	51	5	25	208
5	25	51	25	25	51	5	25	208
6	25	51	25	25	51	5	25	208
7	25	51	25	25	51	5	25	208
8	25	51	25	25	51	5	25	208
9	25	51	25	25	51	5	25	208
10	25	51	25	25	51	5	25	208
11	25	51	25	25	51	5	25	208
12	25	51	25	25	51	5	25	208
13	25	51	25	25	51	5	25	208
14	25	51	25	25	51	5	25	208
15	25	51	25	25	51	5	25	208
16	25	51	25	25	51	5	25	208
17	25	51	25	25	51	5	25	208

18	25	51	25	25	51	5	25	208
19	25	51	25	25	51	5	25	208
20	25	51	25	25	51	5	25	208
21	25	51	25	25	51	5	25	208
22	25	51	25	25	51	5	25	208
23	25	51	25	25	51	5	25	208
24	25	51	25	25	51	5	25	208
25	25	51	25	25	51	5	25	208
26	25	51	25	25	51	5	25	208
27	25	51	25	25	51	5	25	208
28	25	51	25	25	51	5	25	208
29	25	51	25	25	51	5	25	208
30	25	51	25	25	51	5	25	208
Sub Watershed #507 Annual Adoption (treated acres), Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Adoption**
1	32	64	32	32	64	6	32	263
2	32	64	32	32	64	6	32	263
3	32	64	32	32	64	6	32	263
4	32	64	32	32	64	6	32	263
5	32	64	32	32	64	6	32	263
6	32	64	32	32	64	6	32	263
7	32	64	32	32	64	6	32	263
8	32	64	32	32	64	6	32	263
9	32	64	32	32	64	6	32	263
10	32	64	32	32	64	6	32	263
11	32	64	32	32	64	6	32	263
12	32	64	32	32	64	6	32	263
13	32	64	32	32	64	6	32	263
14	32	64	32	32	64	6	32	263
15	32	64	32	32	64	6	32	263
16	32	64	32	32	64	6	32	263
17	32	64	32	32	64	6	32	263
18	32	64	32	32	64	6	32	263
19	32	64	32	32	64	6	32	263
20	32	64	32	32	64	6	32	263
21	32	64	32	32	64	6	32	263
22	32	64	32	32	64	6	32	263
23	32	64	32	32	64	6	32	263
24	32	64	32	32	64	6	32	263
25	32	64	32	32	64	6	32	263
26	32	64	32	32	64	6	32	263
27	32	64	32	32	64	6	32	263

28	32	64	32	32	64	6	32	263
29	32	64	32	32	64	6	32	263
30	32	64	32	32	64	6	32	263
Sub Watershed #107 Annual Adoption (treated acres), Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Adoption**
1	32	63	32	32	63	6	32	259
2	32	63	32	32	63	6	32	259
3	32	63	32	32	63	6	32	259
4	32	63	32	32	63	6	32	259
5	32	63	32	32	63	6	32	259
6	32	63	32	32	63	6	32	259
7	32	63	32	32	63	6	32	259
8	32	63	32	32	63	6	32	259
9	32	63	32	32	63	6	32	259
10	32	63	32	32	63	6	32	259
11	32	63	32	32	63	6	32	259
12	32	63	32	32	63	6	32	259
13	32	63	32	32	63	6	32	259
14	32	63	32	32	63	6	32	259
15	32	63	32	32	63	6	32	259
16	32	63	32	32	63	6	32	259
17	32	63	32	32	63	6	32	259
18	32	63	32	32	63	6	32	259
19	32	63	32	32	63	6	32	259
20	32	63	32	32	63	6	32	259
21	32	63	32	32	63	6	32	259
22	32	63	32	32	63	6	32	259
23	32	63	32	32	63	6	32	259
24	32	63	32	32	63	6	32	259
25	32	63	32	32	63	6	32	259
26	32	63	32	32	63	6	32	259
27	32	63	32	32	63	6	32	259
28	32	63	32	32	63	6	32	259
29	32	63	32	32	63	6	32	259
30	32	63	32	32	63	6	32	259
Sub Watershed #201 Annual Adoption (treated acres), Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Adoption**
1	23	47	23	23	47	5	23	192
2	23	47	23	23	47	5	23	192

3	23	47	23	23	47	5	23	192
4	23	47	23	23	47	5	23	192
5	23	47	23	23	47	5	23	192
6	23	47	23	23	47	5	23	192
7	23	47	23	23	47	5	23	192
8	23	47	23	23	47	5	23	192
9	23	47	23	23	47	5	23	192
10	23	47	23	23	47	5	23	192
11	23	47	23	23	47	5	23	192
12	23	47	23	23	47	5	23	192
13	23	47	23	23	47	5	23	192
14	23	47	23	23	47	5	23	192
15	23	47	23	23	47	5	23	192
16	23	47	23	23	47	5	23	192
17	23	47	23	23	47	5	23	192
18	23	47	23	23	47	5	23	192
19	23	47	23	23	47	5	23	192
20	23	47	23	23	47	5	23	192
21	23	47	23	23	47	5	23	192
22	23	47	23	23	47	5	23	192
23	23	47	23	23	47	5	23	192
24	23	47	23	23	47	5	23	192
25	23	47	23	23	47	5	23	192
26	23	47	23	23	47	5	23	192
27	23	47	23	23	47	5	23	192
28	23	47	23	23	47	5	23	192
29	23	47	23	23	47	5	23	192
30	23	47	23	23	47	5	23	192

Sub Watershed #203 Annual Adoption (treated acres), Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Adoption**
1	25	51	25	25	51	5	25	208
2	25	51	25	25	51	5	25	208
3	25	51	25	25	51	5	25	208
4	25	51	25	25	51	5	25	208
5	25	51	25	25	51	5	25	208
6	25	51	25	25	51	5	25	208
7	25	51	25	25	51	5	25	208
8	25	51	25	25	51	5	25	208
9	25	51	25	25	51	5	25	208
10	25	51	25	25	51	5	25	208
11	25	51	25	25	51	5	25	208
12	25	51	25	25	51	5	25	208

13	25	51	25	25	51	5	25	208
14	25	51	25	25	51	5	25	208
15	25	51	25	25	51	5	25	208
16	25	51	25	25	51	5	25	208
17	25	51	25	25	51	5	25	208
18	25	51	25	25	51	5	25	208
19	25	51	25	25	51	5	25	208
20	25	51	25	25	51	5	25	208
21	25	51	25	25	51	5	25	208
22	25	51	25	25	51	5	25	208
23	25	51	25	25	51	5	25	208
24	25	51	25	25	51	5	25	208
25	25	51	25	25	51	5	25	208
26	25	51	25	25	51	5	25	208
27	25	51	25	25	51	5	25	208
28	25	51	25	25	51	5	25	208
29	25	51	25	25	51	5	25	208
30	25	51	25	25	51	5	25	208

Sub Watershed #204 Annual Adoption (treated acres), Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Adoption
1	38	77	38	38	77	8	38	315
2	38	77	38	38	77	8	38	315
3	38	77	38	38	77	8	38	315
4	38	77	38	38	77	8	38	315
5	38	77	38	38	77	8	38	315
6	38	77	38	38	77	8	38	315
7	38	77	38	38	77	8	38	315
8	38	77	38	38	77	8	38	315
9	38	77	38	38	77	8	38	315
10	38	77	38	38	77	8	38	315
11	38	77	38	38	77	8	38	315
12	38	77	38	38	77	8	38	315
13	38	77	38	38	77	8	38	315
14	38	77	38	38	77	8	38	315
15	38	77	38	38	77	8	38	315
16	38	77	38	38	77	8	38	315
17	38	77	38	38	77	8	38	315
18	38	77	38	38	77	8	38	315
19	38	77	38	38	77	8	38	315
20	38	77	38	38	77	8	38	315
21	38	77	38	38	77	8	38	315
22	38	77	38	38	77	8	38	315

23	38	77	38	38	77	8	38	315
24	38	77	38	38	77	8	38	315
25	38	77	38	38	77	8	38	315
26	38	77	38	38	77	8	38	315
27	38	77	38	38	77	8	38	315
28	38	77	38	38	77	8	38	315
29	38	77	38	38	77	8	38	315
30	38	77	38	38	77	8	38	315
Sub Watershed #205 Annual Adoption (treated acres), Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Adoption**
1	36	72	36	36	72	7	36	294
2	36	72	36	36	72	7	36	294
3	36	72	36	36	72	7	36	294
4	36	72	36	36	72	7	36	294
5	36	72	36	36	72	7	36	294
6	36	72	36	36	72	7	36	294
7	36	72	36	36	72	7	36	294
8	36	72	36	36	72	7	36	294
9	36	72	36	36	72	7	36	294
10	36	72	36	36	72	7	36	294
11	36	72	36	36	72	7	36	294
12	36	72	36	36	72	7	36	294
13	36	72	36	36	72	7	36	294
14	36	72	36	36	72	7	36	294
15	36	72	36	36	72	7	36	294
16	36	72	36	36	72	7	36	294
17	36	72	36	36	72	7	36	294
18	36	72	36	36	72	7	36	294
19	36	72	36	36	72	7	36	294
20	36	72	36	36	72	7	36	294
21	36	72	36	36	72	7	36	294
22	36	72	36	36	72	7	36	294
23	36	72	36	36	72	7	36	294
24	36	72	36	36	72	7	36	294
25	36	72	36	36	72	7	36	294
26	36	72	36	36	72	7	36	294
27	36	72	36	36	72	7	36	294
28	36	72	36	36	72	7	36	294
29	36	72	36	36	72	7	36	294
30	36	72	36	36	72	7	36	294
Sub Watershed #301 Annual Adoption (treated acres), Cropland BMPs								

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Adoption
1	85	171	85	85	171	17	85	700
2	85	171	85	85	171	17	85	700
3	85	171	85	85	171	17	85	700
4	85	171	85	85	171	17	85	700
5	85	171	85	85	171	17	85	700
6	85	171	85	85	171	17	85	700
7	85	171	85	85	171	17	85	700
8	85	171	85	85	171	17	85	700
9	85	171	85	85	171	17	85	700
10	85	171	85	85	171	17	85	700
11	85	171	85	85	171	17	85	700
12	85	171	85	85	171	17	85	700
13	85	171	85	85	171	17	85	700
14	85	171	85	85	171	17	85	700
15	85	171	85	85	171	17	85	700
16	85	171	85	85	171	17	85	700
17	85	171	85	85	171	17	85	700
18	85	171	85	85	171	17	85	700
19	85	171	85	85	171	17	85	700
20	85	171	85	85	171	17	85	700
21	85	171	85	85	171	17	85	700
22	85	171	85	85	171	17	85	700
23	85	171	85	85	171	17	85	700
24	85	171	85	85	171	17	85	700
25	85	171	85	85	171	17	85	700
26	85	171	85	85	171	17	85	700
27	85	171	85	85	171	17	85	700
28	85	171	85	85	171	17	85	700
29	85	171	85	85	171	17	85	700
30	85	171	85	85	171	17	85	700
Sub Watershed #302 Annual Adoption (treated acres), Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Adoption**
1	68	136	68	68	136	14	68	556
2	68	136	68	68	136	14	68	556
3	68	136	68	68	136	14	68	556
4	68	136	68	68	136	14	68	556
5	68	136	68	68	136	14	68	556
6	68	136	68	68	136	14	68	556
7	68	136	68	68	136	14	68	556

8	68	136	68	68	136	14	68	556
9	68	136	68	68	136	14	68	556
10	68	136	68	68	136	14	68	556
11	68	136	68	68	136	14	68	556
12	68	136	68	68	136	14	68	556
13	68	136	68	68	136	14	68	556
14	68	136	68	68	136	14	68	556
15	68	136	68	68	136	14	68	556
16	68	136	68	68	136	14	68	556
17	68	136	68	68	136	14	68	556
18	68	136	68	68	136	14	68	556
19	68	136	68	68	136	14	68	556
20	68	136	68	68	136	14	68	556
21	68	136	68	68	136	14	68	556
22	68	136	68	68	136	14	68	556
23	68	136	68	68	136	14	68	556
24	68	136	68	68	136	14	68	556
25	68	136	68	68	136	14	68	556
26	68	136	68	68	136	14	68	556
27	68	136	68	68	136	14	68	556
28	68	136	68	68	136	14	68	556
29	68	136	68	68	136	14	68	556
30	68	136	68	68	136	14	68	556

Sub Watershed #303 Annual Adoption (treated acres), Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Adoption
1	92	184	92	92	184	18	92	753
2	92	184	92	92	184	18	92	753
3	92	184	92	92	184	18	92	753
4	92	184	92	92	184	18	92	753
5	92	184	92	92	184	18	92	753
6	92	184	92	92	184	18	92	753
7	92	184	92	92	184	18	92	753
8	92	184	92	92	184	18	92	753
9	92	184	92	92	184	18	92	753
10	92	184	92	92	184	18	92	753
11	92	184	92	92	184	18	92	753
12	92	184	92	92	184	18	92	753
13	92	184	92	92	184	18	92	753
14	92	184	92	92	184	18	92	753
15	92	184	92	92	184	18	92	753
16	92	184	92	92	184	18	92	753
17	92	184	92	92	184	18	92	753

18	92	184	92	92	184	18	92	753
19	92	184	92	92	184	18	92	753
20	92	184	92	92	184	18	92	753
21	92	184	92	92	184	18	92	753
22	92	184	92	92	184	18	92	753
23	92	184	92	92	184	18	92	753
24	92	184	92	92	184	18	92	753
25	92	184	92	92	184	18	92	753
26	92	184	92	92	184	18	92	753
27	92	184	92	92	184	18	92	753
28	92	184	92	92	184	18	92	753
29	92	184	92	92	184	18	92	753
30	92	184	92	92	184	18	92	753

Sub Watershed #304 Annual Adoption (treated acres), Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Adoption
1	38	77	38	38	77	8	38	315
2	38	77	38	38	77	8	38	315
3	38	77	38	38	77	8	38	315
4	38	77	38	38	77	8	38	315
5	38	77	38	38	77	8	38	315
6	38	77	38	38	77	8	38	315
7	38	77	38	38	77	8	38	315
8	38	77	38	38	77	8	38	315
9	38	77	38	38	77	8	38	315
10	38	77	38	38	77	8	38	315
11	38	77	38	38	77	8	38	315
12	38	77	38	38	77	8	38	315
13	38	77	38	38	77	8	38	315
14	38	77	38	38	77	8	38	315
15	38	77	38	38	77	8	38	315
16	38	77	38	38	77	8	38	315
17	38	77	38	38	77	8	38	315
18	38	77	38	38	77	8	38	315
19	38	77	38	38	77	8	38	315
20	38	77	38	38	77	8	38	315
21	38	77	38	38	77	8	38	315
22	38	77	38	38	77	8	38	315
23	38	77	38	38	77	8	38	315
24	38	77	38	38	77	8	38	315
25	38	77	38	38	77	8	38	315
26	38	77	38	38	77	8	38	315
27	38	77	38	38	77	8	38	315

28	38	77	38	38	77	8	38	315
29	38	77	38	38	77	8	38	315
30	38	77	38	38	77	8	38	315
Sub Watershed #401 Annual Adoption (treated acres), Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Adoption**
1	53	105	53	53	105	11	53	432
2	53	105	53	53	105	11	53	432
3	53	105	53	53	105	11	53	432
4	53	105	53	53	105	11	53	432
5	53	105	53	53	105	11	53	432
6	53	105	53	53	105	11	53	432
7	53	105	53	53	105	11	53	432
8	53	105	53	53	105	11	53	432
9	53	105	53	53	105	11	53	432
10	53	105	53	53	105	11	53	432
11	53	105	53	53	105	11	53	432
12	53	105	53	53	105	11	53	432
13	53	105	53	53	105	11	53	432
14	53	105	53	53	105	11	53	432
15	53	105	53	53	105	11	53	432
16	53	105	53	53	105	11	53	432
17	53	105	53	53	105	11	53	432
18	53	105	53	53	105	11	53	432
19	53	105	53	53	105	11	53	432
20	53	105	53	53	105	11	53	432
21	53	105	53	53	105	11	53	432
22	53	105	53	53	105	11	53	432
23	53	105	53	53	105	11	53	432
24	53	105	53	53	105	11	53	432
25	53	105	53	53	105	11	53	432
26	53	105	53	53	105	11	53	432
27	53	105	53	53	105	11	53	432
28	53	105	53	53	105	11	53	432
29	53	105	53	53	105	11	53	432
30	53	105	53	53	105	11	53	432
Sub Watershed #402 Annual Adoption (treated acres), Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Adoption**
1	31	62	31	31	62	6	31	254
2	31	62	31	31	62	6	31	254

3	31	62	31	31	62	6	31	254
4	31	62	31	31	62	6	31	254
5	31	62	31	31	62	6	31	254
6	31	62	31	31	62	6	31	254
7	31	62	31	31	62	6	31	254
8	31	62	31	31	62	6	31	254
9	31	62	31	31	62	6	31	254
10	31	62	31	31	62	6	31	254
11	31	62	31	31	62	6	31	254
12	31	62	31	31	62	6	31	254
13	31	62	31	31	62	6	31	254
14	31	62	31	31	62	6	31	254
15	31	62	31	31	62	6	31	254
16	31	62	31	31	62	6	31	254
17	31	62	31	31	62	6	31	254
18	31	62	31	31	62	6	31	254
19	31	62	31	31	62	6	31	254
20	31	62	31	31	62	6	31	254
21	31	62	31	31	62	6	31	254
22	31	62	31	31	62	6	31	254
23	31	62	31	31	62	6	31	254
24	31	62	31	31	62	6	31	254
25	31	62	31	31	62	6	31	254
26	31	62	31	31	62	6	31	254
27	31	62	31	31	62	6	31	254
28	31	62	31	31	62	6	31	254
29	31	62	31	31	62	6	31	254
30	31	62	31	31	62	6	31	254

Sub Watershed #403 Annual Adoption (treated acres), Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Adoption
1	21	42	21	21	42	4	21	174
2	21	42	21	21	42	4	21	174
3	21	42	21	21	42	4	21	174
4	21	42	21	21	42	4	21	174
5	21	42	21	21	42	4	21	174
6	21	42	21	21	42	4	21	174
7	21	42	21	21	42	4	21	174
8	21	42	21	21	42	4	21	174
9	21	42	21	21	42	4	21	174
10	21	42	21	21	42	4	21	174
11	21	42	21	21	42	4	21	174
12	21	42	21	21	42	4	21	174

13	21	42	21	21	42	4	21	174
14	21	42	21	21	42	4	21	174
15	21	42	21	21	42	4	21	174
16	21	42	21	21	42	4	21	174
17	21	42	21	21	42	4	21	174
18	21	42	21	21	42	4	21	174
19	21	42	21	21	42	4	21	174
20	21	42	21	21	42	4	21	174
21	21	42	21	21	42	4	21	174
22	21	42	21	21	42	4	21	174
23	21	42	21	21	42	4	21	174
24	21	42	21	21	42	4	21	174
25	21	42	21	21	42	4	21	174
26	21	42	21	21	42	4	21	174
27	21	42	21	21	42	4	21	174
28	21	42	21	21	42	4	21	174
29	21	42	21	21	42	4	21	174
30	21	42	21	21	42	4	21	174

Sub Watershed #404 Annual Soil Erosion Reduction (tons)

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	7	7	5	2	6	2	0	29
2	14	15	9	5	11	4	0	58
3	21	22	14	7	17	5	0	86
4	28	30	19	9	22	7	0	115
5	35	37	23	12	28	9	0	144
6	42	45	28	14	34	11	0	173
7	49	52	33	16	39	12	0	202
8	56	60	37	19	45	14	0	230
9	63	67	42	21	50	16	0	259
10	70	75	47	23	56	18	0	288
11	77	82	51	26	62	19	0	317
12	84	89	56	28	67	21	0	346
13	91	97	61	30	73	23	0	374
14	98	104	65	33	78	25	0	403
15	105	112	70	35	84	27	0	432
16	112	119	75	37	89	28	0	461
17	119	127	79	40	95	30	0	490
18	126	134	84	42	101	32	0	519
19	133	142	89	44	106	34	0	547
20	140	149	93	47	112	35	0	576
21	147	157	98	49	117	37	0	605
22	154	164	103	51	123	39	0	634

23	161	172	107	54	129	41	0	663
24	168	179	112	56	134	43	0	691
25	175	186	117	58	140	44	0	720
26	182	194	121	61	145	46	0	749
27	189	201	126	63	151	48	0	778
28	196	209	131	65	157	50	0	807
29	203	216	135	68	162	51	0	835
30	210	224	140	70	168	53	0	864
Sub Watershed #405 Annual Soil Erosion Reduction (tons)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	20	21	13	7	16	5	0	82
2	40	43	27	13	32	10	0	165
3	60	64	40	20	48	15	0	247
4	80	85	53	27	64	20	0	329
5	100	106	67	33	80	25	0	411
6	120	128	80	40	96	30	0	494
7	140	149	93	47	112	35	0	576
8	160	170	106	53	128	40	0	658
9	180	192	120	60	144	46	0	740
10	200	213	133	67	160	51	0	823
11	220	234	146	73	176	56	0	905
12	240	256	160	80	192	61	0	987
13	260	277	173	87	208	66	0	1,069
14	280	298	186	93	224	71	0	1,152
15	299	319	200	100	240	76	0	1,234
16	319	341	213	106	256	81	0	1,316
17	339	362	226	113	272	86	0	1,398
18	359	383	240	120	288	91	0	1,481
19	379	405	253	126	303	96	0	1,563
20	399	426	266	133	319	101	0	1,645
21	419	447	280	140	335	106	0	1,727
22	439	469	293	146	351	111	0	1,810
23	459	490	306	153	367	116	0	1,892
24	479	511	319	160	383	121	0	1,974
25	499	532	333	166	399	126	0	2,057
26	519	554	346	173	415	132	0	2,139
27	539	575	359	180	431	137	0	2,221
28	559	596	373	186	447	142	0	2,303
29	579	618	386	193	463	147	0	2,386
30	599	639	399	200	479	152	0	2,468

Sub Watershed #501 Annual Soil Erosion Reduction (tons)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	14	15	9	5	11	4	0	57
2	28	29	18	9	22	7	0	114
3	41	44	28	14	33	11	0	171
4	55	59	37	18	44	14	0	228
5	69	74	46	23	55	18	0	285
6	83	88	55	28	66	21	0	342
7	97	103	65	32	77	25	0	399
8	111	118	74	37	88	28	0	456
9	124	133	83	41	100	32	0	513
10	138	147	92	46	111	35	0	570
11	152	162	101	51	122	39	0	627
12	166	177	111	55	133	42	0	684
13	180	192	120	60	144	46	0	741
14	194	206	129	65	155	49	0	798
15	207	221	138	69	166	53	0	855
16	221	236	147	74	177	56	0	912
17	235	251	157	78	188	60	0	968
18	249	265	166	83	199	63	0	1,025
19	263	280	175	88	210	67	0	1,082
20	277	295	184	92	221	70	0	1,139
21	290	310	194	97	232	74	0	1,196
22	304	324	203	101	243	77	0	1,253
23	318	339	212	106	254	81	0	1,310
24	332	354	221	111	265	84	0	1,367
25	346	369	230	115	277	88	0	1,424
26	360	383	240	120	288	91	0	1,481
27	373	398	249	124	299	95	0	1,538
28	387	413	258	129	310	98	0	1,595
29	401	428	267	134	321	102	0	1,652
30	415	442	277	138	332	105	0	1,709
Sub Watershed #502 Annual Soil Erosion Reduction (tons)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	9	10	6	3	8	2	0	39
2	19	20	13	6	15	5	0	77
3	28	30	19	9	23	7	0	116
4	38	40	25	13	30	10	0	155

5	47	50	31	16	38	12	0	193
6	56	60	38	19	45	14	0	232
7	66	70	44	22	53	17	0	271
8	75	80	50	25	60	19	0	310
9	85	90	56	28	68	21	0	348
10	94	100	63	31	75	24	0	387
11	103	110	69	34	83	26	0	426
12	113	120	75	38	90	29	0	464
13	122	130	81	41	98	31	0	503
14	131	140	88	44	105	33	0	542
15	141	150	94	47	113	36	0	580
16	150	160	100	50	120	38	0	619
17	160	170	106	53	128	40	0	658
18	169	180	113	56	135	43	0	697
19	178	190	119	59	143	45	0	735
20	188	200	125	63	150	48	0	774
21	197	210	131	66	158	50	0	813
22	207	220	138	69	165	52	0	851
23	216	230	144	72	173	55	0	890
24	225	240	150	75	180	57	0	929
25	235	250	157	78	188	59	0	967
26	244	260	163	81	195	62	0	1,006
27	254	271	169	85	203	64	0	1,045
28	263	281	175	88	210	67	0	1,084
29	272	291	182	91	218	69	0	1,122
30	282	301	188	94	225	71	0	1,161
Sub Watershed #503 Annual Soil Erosion Reduction (tons)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	27	29	18	9	22	7	0	112
2	55	58	36	18	44	14	0	225
3	82	87	55	27	66	21	0	337
4	109	116	73	36	87	28	0	450
5	136	146	91	45	109	35	0	562
6	164	175	109	55	131	41	0	675
7	191	204	127	64	153	48	0	787
8	218	233	146	73	175	55	0	900
9	246	262	164	82	197	62	0	1,012
10	273	291	182	91	218	69	0	1,125
11	300	320	200	100	240	76	0	1,237
12	328	349	218	109	262	83	0	1,350
13	355	379	237	118	284	90	0	1,462

14	382	408	255	127	306	97	0	1,575
15	409	437	273	136	328	104	0	1,687
16	437	466	291	146	349	111	0	1,799
17	464	495	309	155	371	118	0	1,912
18	491	524	328	164	393	124	0	2,024
19	519	553	346	173	415	131	0	2,137
20	546	582	364	182	437	138	0	2,249
21	573	611	382	191	459	145	0	2,362
22	601	641	400	200	480	152	0	2,474
23	628	670	419	209	502	159	0	2,587
24	655	699	437	218	524	166	0	2,699
25	682	728	455	227	546	173	0	2,812
26	710	757	473	237	568	180	0	2,924
27	737	786	491	246	590	187	0	3,037
28	764	815	510	255	611	194	0	3,149
29	792	844	528	264	633	201	0	3,262
30	819	874	546	273	655	207	0	3,374
Sub Watershed #504 Annual Soil Erosion Reduction (tons)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	33	35	22	11	26	8	0	134
2	65	70	43	22	52	17	0	269
3	98	104	65	33	78	25	0	403
4	130	139	87	43	104	33	0	538
5	163	174	109	54	130	41	0	672
6	196	209	130	65	157	50	0	806
7	228	244	152	76	183	58	0	941
8	261	278	174	87	209	66	0	1,075
9	294	313	196	98	235	74	0	1,210
10	326	348	217	109	261	83	0	1,344
11	359	383	239	120	287	91	0	1,478
12	391	418	261	130	313	99	0	1,613
13	424	452	283	141	339	107	0	1,747
14	457	487	304	152	365	116	0	1,881
15	489	522	326	163	391	124	0	2,016
16	522	557	348	174	418	132	0	2,150
17	555	591	370	185	444	140	0	2,285
18	587	626	391	196	470	149	0	2,419
19	620	661	413	207	496	157	0	2,553
20	652	696	435	217	522	165	0	2,688
21	685	731	457	228	548	174	0	2,822
22	718	765	478	239	574	182	0	2,957

23	750	800	500	250	600	190	0	3,091
24	783	835	522	261	626	198	0	3,225
25	815	870	544	272	652	207	0	3,360
26	848	905	565	283	678	215	0	3,494
27	881	939	587	294	705	223	0	3,629
28	913	974	609	304	731	231	0	3,763
29	946	1,009	631	315	757	240	0	3,897
30	979	1,044	652	326	783	248	0	4,032
Sub Watershed #505 Annual Soil Erosion Reduction (tons)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	19	20	13	6	15	5	0	79
2	38	41	26	13	31	10	0	158
3	57	61	38	19	46	15	0	237
4	77	82	51	26	61	19	0	316
5	96	102	64	32	77	24	0	395
6	115	123	77	38	92	29	0	474
7	134	143	89	45	107	34	0	552
8	153	163	102	51	123	39	0	631
9	172	184	115	57	138	44	0	710
10	192	204	128	64	153	49	0	789
11	211	225	140	70	169	53	0	868
12	230	245	153	77	184	58	0	947
13	249	266	166	83	199	63	0	1,026
14	268	286	179	89	215	68	0	1,105
15	287	307	192	96	230	73	0	1,184
16	307	327	204	102	245	78	0	1,263
17	326	347	217	109	261	83	0	1,342
18	345	368	230	115	276	87	0	1,421
19	364	388	243	121	291	92	0	1,500
20	383	409	255	128	307	97	0	1,578
21	402	429	268	134	322	102	0	1,657
22	421	450	281	140	337	107	0	1,736
23	441	470	294	147	352	112	0	1,815
24	460	490	307	153	368	116	0	1,894
25	479	511	319	160	383	121	0	1,973
26	498	531	332	166	398	126	0	2,052
27	517	552	345	172	414	131	0	2,131
28	536	572	358	179	429	136	0	2,210
29	556	593	370	185	444	141	0	2,289
30	575	613	383	192	460	146	0	2,368

Sub Watershed #506 Annual Soil Erosion Reduction (tons)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	4	4	3	1	3	1	0	16
2	8	8	5	3	6	2	0	32
3	12	13	8	4	9	3	0	49
4	16	17	11	5	13	4	0	65
5	20	21	13	7	16	5	0	81
6	24	25	16	8	19	6	0	97
7	28	29	18	9	22	7	0	114
8	32	34	21	11	25	8	0	130
9	35	38	24	12	28	9	0	146
10	39	42	26	13	32	10	0	162
11	43	46	29	14	35	11	0	179
12	47	50	32	16	38	12	0	195
13	51	55	34	17	41	13	0	211
14	55	59	37	18	44	14	0	227
15	59	63	39	20	47	15	0	244
16	63	67	42	21	50	16	0	260
17	67	72	45	22	54	17	0	276
18	71	76	47	24	57	18	0	292
19	75	80	50	25	60	19	0	309
20	79	84	53	26	63	20	0	325
21	83	88	55	28	66	21	0	341
22	87	93	58	29	69	22	0	357
23	91	97	60	30	73	23	0	374
24	95	101	63	32	76	24	0	390
25	99	105	66	33	79	25	0	406
26	103	109	68	34	82	26	0	422
27	106	114	71	35	85	27	0	439
28	110	118	74	37	88	28	0	455
29	114	122	76	38	91	29	0	471
30	118	126	79	39	95	30	0	487
Sub Watershed #507 Annual Soil Erosion Reduction (tons)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	4	4	3	1	3	1	0	16
2	8	8	5	3	6	2	0	32
3	12	13	8	4	9	3	0	49
4	16	17	10	5	13	4	0	65

5	20	21	13	7	16	5	0	81
6	24	25	16	8	19	6	0	97
7	28	29	18	9	22	7	0	114
8	31	34	21	10	25	8	0	130
9	35	38	24	12	28	9	0	146
10	39	42	26	13	31	10	0	162
11	43	46	29	14	35	11	0	178
12	47	50	31	16	38	12	0	195
13	51	55	34	17	41	13	0	211
14	55	59	37	18	44	14	0	227
15	59	63	39	20	47	15	0	243
16	63	67	42	21	50	16	0	260
17	67	71	45	22	54	17	0	276
18	71	76	47	24	57	18	0	292
19	75	80	50	25	60	19	0	308
20	79	84	52	26	63	20	0	324
21	83	88	55	28	66	21	0	341
22	87	92	58	29	69	22	0	357
23	91	97	60	30	72	23	0	373
24	94	101	63	31	76	24	0	389
25	98	105	66	33	79	25	0	405
26	102	109	68	34	82	26	0	422
27	106	113	71	35	85	27	0	438
28	110	118	73	37	88	28	0	454
29	114	122	76	38	91	29	0	470
30	118	126	79	39	94	30	0	487

Sub Watershed #107 Annual Soil Erosion Reduction (tons)

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	4	4	3	1	3	1	0	17
2	8	9	6	3	7	2	0	34
3	12	13	8	4	10	3	0	51
4	17	18	11	6	13	4	0	68
5	21	22	14	7	17	5	0	85
6	25	27	17	8	20	6	0	102
7	29	31	19	10	23	7	0	119
8	33	35	22	11	27	8	0	137
9	37	40	25	12	30	9	0	154
10	41	44	28	14	33	10	0	171
11	46	49	30	15	36	12	0	188
12	50	53	33	17	40	13	0	205
13	54	57	36	18	43	14	0	222

14	58	62	39	19	46	15	0	239
15	62	66	41	21	50	16	0	256
16	66	71	44	22	53	17	0	273
17	70	75	47	23	56	18	0	290
18	75	80	50	25	60	19	0	307
19	79	84	52	26	63	20	0	324
20	83	88	55	28	66	21	0	341
21	87	93	58	29	70	22	0	358
22	91	97	61	30	73	23	0	376
23	95	102	64	32	76	24	0	393
24	99	106	66	33	80	25	0	410
25	104	110	69	35	83	26	0	427
26	108	115	72	36	86	27	0	444
27	112	119	75	37	89	28	0	461
28	116	124	77	39	93	29	0	478
29	120	128	80	40	96	30	0	495
30	124	133	83	41	99	31	0	512
Sub Watershed #201 Annual Soil Erosion Reduction (tons)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	2	3	2	1	2	1	0	10
2	5	5	3	2	4	1	0	21
3	7	8	5	2	6	2	0	31
4	10	11	7	3	8	3	0	41
5	12	13	8	4	10	3	0	51
6	15	16	10	5	12	4	0	62
7	17	19	12	6	14	4	0	72
8	20	21	13	7	16	5	0	82
9	22	24	15	7	18	6	0	92
10	25	27	17	8	20	6	0	103
11	27	29	18	9	22	7	0	113
12	30	32	20	10	24	8	0	123
13	32	35	22	11	26	8	0	133
14	35	37	23	12	28	9	0	144
15	37	40	25	12	30	9	0	154
16	40	42	27	13	32	10	0	164
17	42	45	28	14	34	11	0	174
18	45	48	30	15	36	11	0	185
19	47	50	32	16	38	12	0	195
20	50	53	33	17	40	13	0	205
21	52	56	35	17	42	13	0	215
22	55	58	37	18	44	14	0	226

23	57	61	38	19	46	15	0	236
24	60	64	40	20	48	15	0	246
25	62	66	41	21	50	16	0	256
26	65	69	43	22	52	16	0	267
27	67	72	45	22	54	17	0	277
28	70	74	46	23	56	18	0	287
29	72	77	48	24	58	18	0	297
30	75	80	50	25	60	19	0	308
Sub Watershed #203 Annual Soil Erosion Reduction (tons)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	3	3	2	1	2	1	0	12
2	6	6	4	2	5	1	0	24
3	9	9	6	3	7	2	0	36
4	12	12	8	4	9	3	0	48
5	14	15	10	5	12	4	0	60
6	17	18	12	6	14	4	0	71
7	20	22	13	7	16	5	0	83
8	23	25	15	8	18	6	0	95
9	26	28	17	9	21	7	0	107
10	29	31	19	10	23	7	0	119
11	32	34	21	11	25	8	0	131
12	35	37	23	12	28	9	0	143
13	38	40	25	13	30	10	0	155
14	40	43	27	13	32	10	0	167
15	43	46	29	14	35	11	0	179
16	46	49	31	15	37	12	0	190
17	49	52	33	16	39	12	0	202
18	52	55	35	17	42	13	0	214
19	55	59	37	18	44	14	0	226
20	58	62	39	19	46	15	0	238
21	61	65	40	20	49	15	0	250
22	64	68	42	21	51	16	0	262
23	66	71	44	22	53	17	0	274
24	69	74	46	23	55	18	0	286
25	72	77	48	24	58	18	0	298
26	75	80	50	25	60	19	0	310
27	78	83	52	26	62	20	0	321
28	81	86	54	27	65	20	0	333
29	84	89	56	28	67	21	0	345
30	87	92	58	29	69	22	0	357

Sub Watershed #204 Annual Soil Erosion Reduction (tons)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	3	3	2	1	2	1	0	12
2	6	6	4	2	5	1	0	24
3	9	9	6	3	7	2	0	37
4	12	13	8	4	9	3	0	49
5	15	16	10	5	12	4	0	61
6	18	19	12	6	14	4	0	73
7	21	22	14	7	17	5	0	85
8	24	25	16	8	19	6	0	97
9	27	28	18	9	21	7	0	110
10	30	32	20	10	24	7	0	122
11	32	35	22	11	26	8	0	134
12	35	38	24	12	28	9	0	146
13	38	41	26	13	31	10	0	158
14	41	44	28	14	33	10	0	170
15	44	47	30	15	35	11	0	183
16	47	50	32	16	38	12	0	195
17	50	54	33	17	40	13	0	207
18	53	57	35	18	43	13	0	219
19	56	60	37	19	45	14	0	231
20	59	63	39	20	47	15	0	243
21	62	66	41	21	50	16	0	256
22	65	69	43	22	52	16	0	268
23	68	72	45	23	54	17	0	280
24	71	76	47	24	57	18	0	292
25	74	79	49	25	59	19	0	304
26	77	82	51	26	61	19	0	316
27	80	85	53	27	64	20	0	329
28	83	88	55	28	66	21	0	341
29	86	91	57	29	69	22	0	353
30	89	95	59	30	71	22	0	365
Sub Watershed #205 Annual Soil Erosion Reduction (tons)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	3	3	2	1	3	1	0	13
2	6	7	4	2	5	2	0	26
3	10	10	6	3	8	2	0	39
4	13	14	8	4	10	3	0	52

5	16	17	11	5	13	4	0	66
6	19	20	13	6	15	5	0	79
7	22	24	15	7	18	6	0	92
8	25	27	17	8	20	6	0	105
9	29	31	19	10	23	7	0	118
10	32	34	21	11	25	8	0	131
11	35	37	23	12	28	9	0	144
12	38	41	25	13	31	10	0	157
13	41	44	28	14	33	10	0	171
14	45	48	30	15	36	11	0	184
15	48	51	32	16	38	12	0	197
16	51	54	34	17	41	13	0	210
17	54	58	36	18	43	14	0	223
18	57	61	38	19	46	15	0	236
19	61	65	40	20	48	15	0	249
20	64	68	42	21	51	16	0	262
21	67	71	45	22	54	17	0	276
22	70	75	47	23	56	18	0	289
23	73	78	49	24	59	19	0	302
24	76	82	51	25	61	19	0	315
25	80	85	53	27	64	20	0	328
26	83	88	55	28	66	21	0	341
27	86	92	57	29	69	22	0	354
28	89	95	59	30	71	23	0	367
29	92	99	62	31	74	23	0	380
30	96	102	64	32	76	24	0	394
Sub Watershed #301 Annual Soil Erosion Reduction (tons)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	6	6	4	2	5	1	0	24
2	12	12	8	4	9	3	0	48
3	17	19	12	6	14	4	0	72
4	23	25	16	8	19	6	0	96
5	29	31	19	10	23	7	0	120
6	35	37	23	12	28	9	0	144
7	41	44	27	14	33	10	0	168
8	47	50	31	16	37	12	0	192
9	52	56	35	17	42	13	0	216
10	58	62	39	19	47	15	0	240
11	64	68	43	21	51	16	0	264
12	70	75	47	23	56	18	0	288
13	76	81	50	25	61	19	0	312

14	82	87	54	27	65	21	0	336
15	87	93	58	29	70	22	0	360
16	93	99	62	31	75	24	0	384
17	99	106	66	33	79	25	0	408
18	105	112	70	35	84	27	0	432
19	111	118	74	37	89	28	0	456
20	117	124	78	39	93	30	0	480
21	122	131	82	41	98	31	0	504
22	128	137	85	43	103	32	0	528
23	134	143	89	45	107	34	0	552
24	140	149	93	47	112	35	0	576
25	146	155	97	49	117	37	0	600
26	151	162	101	50	121	38	0	624
27	157	168	105	52	126	40	0	648
28	163	174	109	54	131	41	0	672
29	169	180	113	56	135	43	0	696
30	175	186	117	58	140	44	0	720
Sub Watershed #302 Annual Soil Erosion Reduction (tons)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	5	6	4	2	4	1	0	23
2	11	12	7	4	9	3	0	45
3	16	18	11	5	13	4	0	68
4	22	23	15	7	18	6	0	90
5	27	29	18	9	22	7	0	113
6	33	35	22	11	26	8	0	135
7	38	41	26	13	31	10	0	158
8	44	47	29	15	35	11	0	181
9	49	53	33	16	39	12	0	203
10	55	58	37	18	44	14	0	226
11	60	64	40	20	48	15	0	248
12	66	70	44	22	53	17	0	271
13	71	76	47	24	57	18	0	293
14	77	82	51	26	61	19	0	316
15	82	88	55	27	66	21	0	338
16	88	93	58	29	70	22	0	361
17	93	99	62	31	74	24	0	384
18	99	105	66	33	79	25	0	406
19	104	111	69	35	83	26	0	429
20	110	117	73	37	88	28	0	451
21	115	123	77	38	92	29	0	474
22	120	129	80	40	96	31	0	496

23	126	134	84	42	101	32	0	519
24	131	140	88	44	105	33	0	542
25	137	146	91	46	110	35	0	564
26	142	152	95	47	114	36	0	587
27	148	158	99	49	118	37	0	609
28	153	164	102	51	123	39	0	632
29	159	169	106	53	127	40	0	654
30	164	175	110	55	131	42	0	677

Sub Watershed #303 Annual Soil Erosion Reduction (tons)

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	9	10	6	3	7	2	0	37
2	18	19	12	6	14	5	0	74
3	27	29	18	9	21	7	0	111
4	36	38	24	12	29	9	0	147
5	45	48	30	15	36	11	0	184
6	54	57	36	18	43	14	0	221
7	63	67	42	21	50	16	0	258
8	72	76	48	24	57	18	0	295
9	80	86	54	27	64	20	0	332
10	89	95	60	30	72	23	0	368
11	98	105	66	33	79	25	0	405
12	107	114	72	36	86	27	0	442
13	116	124	78	39	93	29	0	479
14	125	134	83	42	100	32	0	516
15	134	143	89	45	107	34	0	553
16	143	153	95	48	114	36	0	590
17	152	162	101	51	122	39	0	626
18	161	172	107	54	129	41	0	663
19	170	181	113	57	136	43	0	700
20	179	191	119	60	143	45	0	737
21	188	200	125	63	150	48	0	774
22	197	210	131	66	157	50	0	811
23	206	219	137	69	165	52	0	848
24	215	229	143	72	172	54	0	884
25	224	239	149	75	179	57	0	921
26	233	248	155	78	186	59	0	958
27	241	258	161	80	193	61	0	995
28	250	267	167	83	200	63	0	1,032
29	259	277	173	86	207	66	0	1,069
30	268	286	179	89	215	68	0	1,105

Sub Watershed #304 Annual Soil Erosion Reduction (tons)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	1	1	1	0	1	0	0	5
2	2	2	2	1	2	1	0	10
3	3	4	2	1	3	1	0	14
4	5	5	3	2	4	1	0	19
5	6	6	4	2	5	1	0	24
6	7	7	5	2	6	2	0	29
7	8	9	5	3	6	2	0	33
8	9	10	6	3	7	2	0	38
9	10	11	7	3	8	3	0	43
10	12	12	8	4	9	3	0	48
11	13	14	8	4	10	3	0	52
12	14	15	9	5	11	4	0	57
13	15	16	10	5	12	4	0	62
14	16	17	11	5	13	4	0	67
15	17	19	12	6	14	4	0	72
16	19	20	12	6	15	5	0	76
17	20	21	13	7	16	5	0	81
18	21	22	14	7	17	5	0	86
19	22	23	15	7	18	6	0	91
20	23	25	15	8	19	6	0	95
21	24	26	16	8	19	6	0	100
22	25	27	17	8	20	6	0	105
23	27	28	18	9	21	7	0	110
24	28	30	19	9	22	7	0	114
25	29	31	19	10	23	7	0	119
26	30	32	20	10	24	8	0	124
27	31	33	21	10	25	8	0	129
28	32	35	22	11	26	8	0	133
29	34	36	22	11	27	8	0	138
30	35	37	23	12	28	9	0	143
Sub Watershed #401 Annual Soil Erosion Reduction (tons)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	3	4	2	1	3	1	0	14
2	7	7	5	2	5	2	0	28
3	10	11	7	3	8	3	0	42
4	14	15	9	5	11	3	0	56

5	17	18	11	6	14	4	0	70
6	20	22	14	7	16	5	0	84
7	24	25	16	8	19	6	0	98
8	27	29	18	9	22	7	0	112
9	31	33	20	10	25	8	0	126
10	34	36	23	11	27	9	0	140
11	37	40	25	12	30	9	0	154
12	41	44	27	14	33	10	0	168
13	44	47	30	15	35	11	0	182
14	48	51	32	16	38	12	0	196
15	51	54	34	17	41	13	0	210
16	54	58	36	18	44	14	0	224
17	58	62	39	19	46	15	0	238
18	61	65	41	20	49	16	0	252
19	65	69	43	22	52	16	0	267
20	68	73	45	23	54	17	0	281
21	71	76	48	24	57	18	0	295
22	75	80	50	25	60	19	0	309
23	78	84	52	26	63	20	0	323
24	82	87	54	27	65	21	0	337
25	85	91	57	28	68	22	0	351
26	89	94	59	30	71	22	0	365
27	92	98	61	31	74	23	0	379
28	95	102	64	32	76	24	0	393
29	99	105	66	33	79	25	0	407
30	102	109	68	34	82	26	0	421

Sub Watershed #402 Annual Soil Erosion Reduction (tons)

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	1	1	1	0	1	0	0	5
2	2	3	2	1	2	1	0	10
3	4	4	2	1	3	1	0	15
4	5	5	3	2	4	1	0	20
5	6	7	4	2	5	2	0	26
6	7	8	5	2	6	2	0	31
7	9	9	6	3	7	2	0	36
8	10	11	7	3	8	3	0	41
9	11	12	7	4	9	3	0	46
10	12	13	8	4	10	3	0	51
11	14	15	9	5	11	3	0	56
12	15	16	10	5	12	4	0	61
13	16	17	11	5	13	4	0	67

14	17	19	12	6	14	4	0	72
15	19	20	12	6	15	5	0	77
16	20	21	13	7	16	5	0	82
17	21	23	14	7	17	5	0	87
18	22	24	15	7	18	6	0	92
19	24	25	16	8	19	6	0	97
20	25	27	17	8	20	6	0	102
21	26	28	17	9	21	7	0	108
22	27	29	18	9	22	7	0	113
23	29	30	19	10	23	7	0	118
24	30	32	20	10	24	8	0	123
25	31	33	21	10	25	8	0	128
26	32	34	22	11	26	8	0	133
27	34	36	22	11	27	8	0	138
28	35	37	23	12	28	9	0	143
29	36	38	24	12	29	9	0	148
30	37	40	25	12	30	9	0	154

Sub Watershed #403 Annual Soil Erosion Reduction (tons)

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	1	1	1	0	1	0	0	4
2	2	2	1	1	1	0	0	7
3	3	3	2	1	2	1	0	11
4	4	4	2	1	3	1	0	15
5	4	5	3	1	4	1	0	18
6	5	6	4	2	4	1	0	22
7	6	7	4	2	5	2	0	26
8	7	8	5	2	6	2	0	29
9	8	9	5	3	6	2	0	33
10	9	10	6	3	7	2	0	37
11	10	10	7	3	8	2	0	40
12	11	11	7	4	9	3	0	44
13	12	12	8	4	9	3	0	48
14	13	13	8	4	10	3	0	52
15	13	14	9	4	11	3	0	55
16	14	15	10	5	11	4	0	59
17	15	16	10	5	12	4	0	63
18	16	17	11	5	13	4	0	66
19	17	18	11	6	14	4	0	70
20	18	19	12	6	14	5	0	74
21	19	20	13	6	15	5	0	77
22	20	21	13	7	16	5	0	81

23	21	22	14	7	16	5	0	85
24	21	23	14	7	17	5	0	88
25	22	24	15	7	18	6	0	92
26	23	25	15	8	19	6	0	96
27	24	26	16	8	19	6	0	99
28	25	27	17	8	20	6	0	103
29	26	28	17	9	21	7	0	107
30	27	29	18	9	21	7	0	110
Sub Watershed #404 Annual Phosphorus Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	4	8	5	2	6	2	5	32
2	8	16	10	5	12	4	10	64
3	12	24	15	7	18	6	15	96
4	16	31	20	10	24	7	20	127
5	20	39	25	12	30	9	25	159
6	24	47	30	15	35	11	30	191
7	28	55	34	17	41	13	34	223
8	31	63	39	20	47	15	39	255
9	35	71	44	22	53	17	44	287
10	39	79	49	25	59	19	49	319
11	43	87	54	27	65	21	54	350
12	47	94	59	30	71	22	59	382
13	51	102	64	32	77	24	64	414
14	55	110	69	34	83	26	69	446
15	59	118	74	37	89	28	74	478
16	63	126	79	39	94	30	79	510
17	67	134	84	42	100	32	84	542
18	71	142	89	44	106	34	89	574
19	75	149	93	47	112	36	93	605
20	79	157	98	49	118	37	98	637
21	83	165	103	52	124	39	103	669
22	87	173	108	54	130	41	108	701
23	90	181	113	57	136	43	113	733
24	94	189	118	59	142	45	118	765
25	98	197	123	61	148	47	123	797
26	102	205	128	64	153	49	128	828
27	106	212	133	66	159	50	133	860
28	110	220	138	69	165	52	138	892
29	114	228	143	71	171	54	143	924
30	118	236	148	74	177	56	148	956
Sub Watershed #405 Annual Phosphorus Reduction (pounds)								

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	10	19	12	6	14	5	12	78
2	19	39	24	12	29	9	24	157
3	29	58	36	18	43	14	36	235
4	39	77	48	24	58	18	48	313
5	48	97	60	30	72	23	60	391
6	58	116	72	36	87	28	72	470
7	68	135	85	42	101	32	85	548
8	77	155	97	48	116	37	97	626
9	87	174	109	54	130	41	109	704
10	97	193	121	60	145	46	121	783
11	106	213	133	66	159	50	133	861
12	116	232	145	72	174	55	145	939
13	126	251	157	78	188	60	157	1,017
14	135	270	169	85	203	64	169	1,096
15	145	290	181	91	217	69	181	1,174
16	155	309	193	97	232	73	193	1,252
17	164	328	205	103	246	78	205	1,330
18	174	348	217	109	261	83	217	1,409
19	184	367	229	115	275	87	229	1,487
20	193	386	242	121	290	92	242	1,565
21	203	406	254	127	304	96	254	1,643
22	213	425	266	133	319	101	266	1,722
23	222	444	278	139	333	106	278	1,800
24	232	464	290	145	348	110	290	1,878
25	242	483	302	151	362	115	302	1,956
26	251	502	314	157	377	119	314	2,035
27	261	522	326	163	391	124	326	2,113
28	270	541	338	169	406	128	338	2,191
29	280	560	350	175	420	133	350	2,269
30	290	580	362	181	435	138	362	2,348
Sub Watershed #501 Annual Phosphorus Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	3	6	4	2	4	1	4	24
2	6	12	7	4	9	3	7	47
3	9	18	11	5	13	4	11	71
4	12	23	15	7	18	6	15	95
5	15	29	18	9	22	7	18	118

6	18	35	22	11	26	8	22	142
7	20	41	26	13	31	10	26	166
8	23	47	29	15	35	11	29	189
9	26	53	33	16	39	12	33	213
10	29	58	37	18	44	14	37	237
11	32	64	40	20	48	15	40	260
12	35	70	44	22	53	17	44	284
13	38	76	47	24	57	18	47	308
14	41	82	51	26	61	19	51	331
15	44	88	55	27	66	21	55	355
16	47	94	58	29	70	22	58	379
17	50	99	62	31	75	24	62	402
18	53	105	66	33	79	25	66	426
19	56	111	69	35	83	26	69	450
20	58	117	73	37	88	28	73	473
21	61	123	77	38	92	29	77	497
22	64	129	80	40	96	31	80	521
23	67	134	84	42	101	32	84	544
24	70	140	88	44	105	33	88	568
25	73	146	91	46	110	35	91	592
26	76	152	95	47	114	36	95	615
27	79	158	99	49	118	37	99	639
28	82	164	102	51	123	39	102	663
29	85	169	106	53	127	40	106	686
30	88	175	110	55	131	42	110	710

Sub Watershed #502 Annual Phosphorus Reduction (pounds)

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	3	5	3	2	4	1	3	21
2	5	11	7	3	8	3	7	43
3	8	16	10	5	12	4	10	64
4	11	21	13	7	16	5	13	86
5	13	26	17	8	20	6	17	107
6	16	32	20	10	24	8	20	129
7	19	37	23	12	28	9	23	150
8	21	42	26	13	32	10	26	171
9	24	48	30	15	36	11	30	193
10	26	53	33	17	40	13	33	214
11	29	58	36	18	44	14	36	236
12	32	64	40	20	48	15	40	257
13	34	69	43	22	52	16	43	279
14	37	74	46	23	56	18	46	300

15	40	79	50	25	60	19	50	322
16	42	85	53	26	64	20	53	343
17	45	90	56	28	67	21	56	364
18	48	95	60	30	71	23	60	386
19	50	101	63	31	75	24	63	407
20	53	106	66	33	79	25	66	429
21	56	111	69	35	83	26	69	450
22	58	116	73	36	87	28	73	472
23	61	122	76	38	91	29	76	493
24	64	127	79	40	95	30	79	514
25	66	132	83	41	99	31	83	536
26	69	138	86	43	103	33	86	557
27	71	143	89	45	107	34	89	579
28	74	148	93	46	111	35	93	600
29	77	153	96	48	115	36	96	622
30	79	159	99	50	119	38	99	643
Sub Watershed #503 Annual Phosphorus Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	7	14	9	4	10	3	9	56
2	14	28	17	9	21	7	17	112
3	21	41	26	13	31	10	26	167
4	28	55	34	17	41	13	34	223
5	34	69	43	22	52	16	43	279
6	41	83	52	26	62	20	52	335
7	48	96	60	30	72	23	60	391
8	55	110	69	34	83	26	69	446
9	62	124	77	39	93	29	77	502
10	69	138	86	43	103	33	86	558
11	76	152	95	47	114	36	95	614
12	83	165	103	52	124	39	103	670
13	90	179	112	56	134	43	112	725
14	96	193	121	60	145	46	121	781
15	103	207	129	65	155	49	129	837
16	110	220	138	69	165	52	138	893
17	117	234	146	73	176	56	146	949
18	124	248	155	77	186	59	155	1,004
19	131	262	164	82	196	62	164	1,060
20	138	276	172	86	207	65	172	1,116
21	145	289	181	90	217	69	181	1,172
22	152	303	189	95	227	72	189	1,228
23	158	317	198	99	238	75	198	1,283

24	165	331	207	103	248	79	207	1,339
25	172	344	215	108	258	82	215	1,395
26	179	358	224	112	269	85	224	1,451
27	186	372	232	116	279	88	232	1,507
28	193	386	241	121	289	92	241	1,562
29	200	400	250	125	300	95	250	1,618
30	207	413	258	129	310	98	258	1,674
Sub Watershed #504 Annual Phosphorus Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	7	13	8	4	10	3	8	54
2	13	26	17	8	20	6	17	107
3	20	40	25	12	30	9	25	161
4	26	53	33	17	40	13	33	214
5	33	66	41	21	50	16	41	268
6	40	79	50	25	59	19	50	321
7	46	92	58	29	69	22	58	375
8	53	106	66	33	79	25	66	428
9	59	119	74	37	89	28	74	482
10	66	132	83	41	99	31	83	535
11	73	145	91	45	109	35	91	589
12	79	159	99	50	119	38	99	642
13	86	172	107	54	129	41	107	696
14	92	185	116	58	139	44	116	749
15	99	198	124	62	149	47	124	803
16	106	211	132	66	159	50	132	856
17	112	225	140	70	168	53	140	910
18	119	238	149	74	178	56	149	963
19	126	251	157	78	188	60	157	1,017
20	132	264	165	83	198	63	165	1,070
21	139	277	173	87	208	66	173	1,124
22	145	291	182	91	218	69	182	1,177
23	152	304	190	95	228	72	190	1,231
24	159	317	198	99	238	75	198	1,284
25	165	330	206	103	248	78	206	1,338
26	172	343	215	107	258	82	215	1,391
27	178	357	223	111	268	85	223	1,445
28	185	370	231	116	277	88	231	1,498
29	192	383	239	120	287	91	239	1,552
30	198	396	248	124	297	94	248	1,605
Sub Watershed #505 Annual Phosphorus Reduction (pounds)								

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	4	8	5	3	6	2	5	34
2	8	17	10	5	13	4	10	68
3	13	25	16	8	19	6	16	102
4	17	33	21	10	25	8	21	136
5	21	42	26	13	31	10	26	169
6	25	50	31	16	38	12	31	203
7	29	59	37	18	44	14	37	237
8	33	67	42	21	50	16	42	271
9	38	75	47	24	56	18	47	305
10	42	84	52	26	63	20	52	339
11	46	92	58	29	69	22	58	373
12	50	100	63	31	75	24	63	407
13	54	109	68	34	82	26	68	441
14	59	117	73	37	88	28	73	475
15	63	126	78	39	94	30	78	508
16	67	134	84	42	100	32	84	542
17	71	142	89	44	107	34	89	576
18	75	151	94	47	113	36	94	610
19	80	159	99	50	119	38	99	644
20	84	167	105	52	126	40	105	678
21	88	176	110	55	132	42	110	712
22	92	184	115	58	138	44	115	746
23	96	192	120	60	144	46	120	780
24	100	201	126	63	151	48	126	813
25	105	209	131	65	157	50	131	847
26	109	218	136	68	163	52	136	881
27	113	226	141	71	169	54	141	915
28	117	234	146	73	176	56	146	949
29	121	243	152	76	182	58	152	983
30	126	251	157	78	188	60	157	1,017
Sub Watershed #506 Annual Phosphorus Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	2	5	3	2	4	1	3	20
2	5	10	6	3	7	2	6	39
3	7	15	9	5	11	3	9	59
4	10	19	12	6	15	5	12	79
5	12	24	15	8	18	6	15	98

6	15	29	18	9	22	7	18	118
7	17	34	21	11	26	8	21	138
8	19	39	24	12	29	9	24	158
9	22	44	27	14	33	10	27	177
10	24	49	30	15	36	12	30	197
11	27	54	33	17	40	13	33	217
12	29	58	36	18	44	14	36	236
13	32	63	40	20	47	15	40	256
14	34	68	43	21	51	16	43	276
15	36	73	46	23	55	17	46	295
16	39	78	49	24	58	18	49	315
17	41	83	52	26	62	20	52	335
18	44	88	55	27	66	21	55	355
19	46	92	58	29	69	22	58	374
20	49	97	61	30	73	23	61	394
21	51	102	64	32	77	24	64	414
22	54	107	67	33	80	25	67	433
23	56	112	70	35	84	27	70	453
24	58	117	73	36	88	28	73	473
25	61	122	76	38	91	29	76	492
26	63	126	79	40	95	30	79	512
27	66	131	82	41	98	31	82	532
28	68	136	85	43	102	32	85	552
29	71	141	88	44	106	33	88	571
30	73	146	91	46	109	35	91	591

Sub Watershed #507 Annual Phosphorus Reduction (pounds)

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	3	5	3	2	4	1	3	21
2	5	10	6	3	8	2	6	41
3	8	15	10	5	11	4	10	62
4	10	20	13	6	15	5	13	83
5	13	25	16	8	19	6	16	103
6	15	31	19	10	23	7	19	124
7	18	36	22	11	27	8	22	145
8	20	41	25	13	31	10	25	165
9	23	46	29	14	34	11	29	186
10	25	51	32	16	38	12	32	206
11	28	56	35	18	42	13	35	227
12	31	61	38	19	46	15	38	248
13	33	66	41	21	50	16	41	268
14	36	71	45	22	54	17	45	289

15	38	76	48	24	57	18	48	310
16	41	82	51	25	61	19	51	330
17	43	87	54	27	65	21	54	351
18	46	92	57	29	69	22	57	372
19	48	97	61	30	73	23	61	392
20	51	102	64	32	76	24	64	413
21	54	107	67	33	80	25	67	434
22	56	112	70	35	84	27	70	454
23	59	117	73	37	88	28	73	475
24	61	122	76	38	92	29	76	495
25	64	127	80	40	96	30	80	516
26	66	133	83	41	99	31	83	537
27	69	138	86	43	103	33	86	557
28	71	143	89	45	107	34	89	578
29	74	148	92	46	111	35	92	599
30	76	153	96	48	115	36	96	619
Sub Watershed #107 Annual Phosphorus Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	2	4	2	1	3	1	2	15
2	4	7	5	2	5	2	5	29
3	5	11	7	3	8	3	7	44
4	7	14	9	5	11	3	9	58
5	9	18	11	6	14	4	11	73
6	11	22	14	7	16	5	14	88
7	13	25	16	8	19	6	16	102
8	14	29	18	9	22	7	18	117
9	16	32	20	10	24	8	20	132
10	18	36	23	11	27	9	23	146
11	20	40	25	12	30	9	25	161
12	22	43	27	14	32	10	27	175
13	23	47	29	15	35	11	29	190
14	25	51	32	16	38	12	32	205
15	27	54	34	17	41	13	34	219
16	29	58	36	18	43	14	36	234
17	31	61	38	19	46	15	38	248
18	32	65	41	20	49	15	41	263
19	34	69	43	21	51	16	43	278
20	36	72	45	23	54	17	45	292
21	38	76	47	24	57	18	47	307
22	40	79	50	25	60	19	50	322
23	41	83	52	26	62	20	52	336

24	43	87	54	27	65	21	54	351
25	45	90	56	28	68	21	56	365
26	47	94	59	29	70	22	59	380
27	49	97	61	30	73	23	61	395
28	51	101	63	32	76	24	63	409
29	52	105	65	33	78	25	65	424
30	54	108	68	34	81	26	68	438
Sub Watershed #201 Annual Phosphorus Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	1	3	2	1	2	1	2	10
2	3	5	3	2	4	1	3	20
3	4	8	5	2	6	2	5	30
4	5	10	6	3	8	2	6	41
5	6	13	8	4	9	3	8	51
6	8	15	9	5	11	4	9	61
7	9	18	11	5	13	4	11	71
8	10	20	13	6	15	5	13	81
9	11	23	14	7	17	5	14	91
10	13	25	16	8	19	6	16	102
11	14	28	17	9	21	7	17	112
12	15	30	19	9	23	7	19	122
13	16	33	20	10	24	8	20	132
14	18	35	22	11	26	8	22	142
15	19	38	24	12	28	9	24	152
16	20	40	25	13	30	10	25	163
17	21	43	27	13	32	10	27	173
18	23	45	28	14	34	11	28	183
19	24	48	30	15	36	11	30	193
20	25	50	31	16	38	12	31	203
21	26	53	33	16	40	13	33	213
22	28	55	35	17	41	13	35	224
23	29	58	36	18	43	14	36	234
24	30	60	38	19	45	14	38	244
25	31	63	39	20	47	15	39	254
26	33	65	41	20	49	15	41	264
27	34	68	42	21	51	16	42	274
28	35	70	44	22	53	17	44	285
29	36	73	45	23	55	17	45	295
30	38	75	47	24	56	18	47	305
Sub Watershed #203 Annual Phosphorus Reduction (pounds)								

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	1	3	2	1	2	1	2	11
2	3	5	3	2	4	1	3	21
3	4	8	5	2	6	2	5	32
4	5	10	7	3	8	2	7	42
5	7	13	8	4	10	3	8	53
6	8	16	10	5	12	4	10	63
7	9	18	11	6	14	4	11	74
8	10	21	13	7	16	5	13	85
9	12	23	15	7	18	6	15	95
10	13	26	16	8	20	6	16	106
11	14	29	18	9	22	7	18	116
12	16	31	20	10	23	7	20	127
13	17	34	21	11	25	8	21	137
14	18	37	23	11	27	9	23	148
15	20	39	24	12	29	9	24	159
16	21	42	26	13	31	10	26	169
17	22	44	28	14	33	11	28	180
18	23	47	29	15	35	11	29	190
19	25	50	31	15	37	12	31	201
20	26	52	33	16	39	12	33	211
21	27	55	34	17	41	13	34	222
22	29	57	36	18	43	14	36	233
23	30	60	38	19	45	14	38	243
24	31	63	39	20	47	15	39	254
25	33	65	41	20	49	15	41	264
26	34	68	42	21	51	16	42	275
27	35	70	44	22	53	17	44	285
28	37	73	46	23	55	17	46	296
29	38	76	47	24	57	18	47	306
30	39	78	49	24	59	19	49	317
Sub Watershed #204 Annual Phosphorus Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	1	3	2	1	2	1	2	12
2	3	6	4	2	4	1	4	23
3	4	9	5	3	6	2	5	35
4	6	11	7	4	9	3	7	46
5	7	14	9	4	11	3	9	58

6	9	17	11	5	13	4	11	69
7	10	20	12	6	15	5	12	81
8	11	23	14	7	17	5	14	93
9	13	26	16	8	19	6	16	104
10	14	29	18	9	21	7	18	116
11	16	31	20	10	24	7	20	127
12	17	34	21	11	26	8	21	139
13	19	37	23	12	28	9	23	150
14	20	40	25	12	30	9	25	162
15	21	43	27	13	32	10	27	174
16	23	46	29	14	34	11	29	185
17	24	49	30	15	36	12	30	197
18	26	51	32	16	39	12	32	208
19	27	54	34	17	41	13	34	220
20	29	57	36	18	43	14	36	231
21	30	60	37	19	45	14	37	243
22	31	63	39	20	47	15	39	254
23	33	66	41	21	49	16	41	266
24	34	69	43	21	51	16	43	278
25	36	71	45	22	54	17	45	289
26	37	74	46	23	56	18	46	301
27	39	77	48	24	58	18	48	312
28	40	80	50	25	60	19	50	324
29	41	83	52	26	62	20	52	335
30	43	86	54	27	64	20	54	347

Sub Watershed #205 Annual Phosphorus Reduction (pounds)

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	1	3	2	1	2	1	2	12
2	3	6	4	2	4	1	4	24
3	4	9	6	3	7	2	6	36
4	6	12	7	4	9	3	7	48
5	7	15	9	5	11	3	9	60
6	9	18	11	6	13	4	11	71
7	10	21	13	6	15	5	13	83
8	12	24	15	7	18	6	15	95
9	13	26	17	8	20	6	17	107
10	15	29	18	9	22	7	18	119
11	16	32	20	10	24	8	20	131
12	18	35	22	11	26	8	22	143
13	19	38	24	12	29	9	24	155
14	21	41	26	13	31	10	26	167

15	22	44	28	14	33	10	28	179
16	24	47	29	15	35	11	29	190
17	25	50	31	16	37	12	31	202
18	26	53	33	17	40	13	33	214
19	28	56	35	17	42	13	35	226
20	29	59	37	18	44	14	37	238
21	31	62	39	19	46	15	39	250
22	32	65	40	20	48	15	40	262
23	34	68	42	21	51	16	42	274
24	35	71	44	22	53	17	44	286
25	37	73	46	23	55	17	46	298
26	38	76	48	24	57	18	48	310
27	40	79	50	25	60	19	50	321
28	41	82	51	26	62	20	51	333
29	43	85	53	27	64	20	53	345
30	44	88	55	28	66	21	55	357
Sub Watershed #301 Annual Phosphorus Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	4	8	5	2	6	2	5	32
2	8	16	10	5	12	4	10	64
3	12	24	15	7	18	6	15	96
4	16	32	20	10	24	8	20	128
5	20	40	25	12	30	9	25	160
6	24	47	30	15	36	11	30	192
7	28	55	35	17	42	13	35	224
8	32	63	40	20	47	15	40	256
9	36	71	45	22	53	17	45	289
10	40	79	49	25	59	19	49	321
11	44	87	54	27	65	21	54	353
12	47	95	59	30	71	23	59	385
13	51	103	64	32	77	24	64	417
14	55	111	69	35	83	26	69	449
15	59	119	74	37	89	28	74	481
16	63	127	79	40	95	30	79	513
17	67	135	84	42	101	32	84	545
18	71	142	89	45	107	34	89	577
19	75	150	94	47	113	36	94	609
20	79	158	99	49	119	38	99	641
21	83	166	104	52	125	39	104	673
22	87	174	109	54	131	41	109	705
23	91	182	114	57	137	43	114	737

24	95	190	119	59	142	45	119	769
25	99	198	124	62	148	47	124	801
26	103	206	129	64	154	49	129	834
27	107	214	134	67	160	51	134	866
28	111	222	139	69	166	53	139	898
29	115	230	143	72	172	55	143	930
30	119	237	148	74	178	56	148	962
Sub Watershed #302 Annual Phosphorus Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	4	7	4	2	5	2	4	29
2	7	14	9	4	11	3	9	58
3	11	21	13	7	16	5	13	87
4	14	29	18	9	21	7	18	116
5	18	36	22	11	27	9	22	145
6	21	43	27	13	32	10	27	174
7	25	50	31	16	38	12	31	203
8	29	57	36	18	43	14	36	232
9	32	64	40	20	48	15	40	261
10	36	72	45	22	54	17	45	290
11	39	79	49	25	59	19	49	319
12	43	86	54	27	64	20	54	348
13	47	93	58	29	70	22	58	377
14	50	100	63	31	75	24	63	406
15	54	107	67	34	81	26	67	435
16	57	115	72	36	86	27	72	464
17	61	122	76	38	91	29	76	493
18	64	129	81	40	97	31	81	522
19	68	136	85	43	102	32	85	551
20	72	143	90	45	107	34	90	580
21	75	150	94	47	113	36	94	609
22	79	158	99	49	118	37	99	638
23	82	165	103	52	124	39	103	667
24	86	172	107	54	129	41	107	697
25	90	179	112	56	134	43	112	726
26	93	186	116	58	140	44	116	755
27	97	193	121	60	145	46	121	784
28	100	201	125	63	150	48	125	813
29	104	208	130	65	156	49	130	842
30	107	215	134	67	161	51	134	871
Sub Watershed #303 Annual Phosphorus Reduction (pounds)								

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	5	11	7	3	8	3	7	43
2	11	21	13	7	16	5	13	87
3	16	32	20	10	24	8	20	130
4	21	43	27	13	32	10	27	173
5	27	53	33	17	40	13	33	216
6	32	64	40	20	48	15	40	260
7	37	75	47	23	56	18	47	303
8	43	85	53	27	64	20	53	346
9	48	96	60	30	72	23	60	389
10	53	107	67	33	80	25	67	433
11	59	117	73	37	88	28	73	476
12	64	128	80	40	96	30	80	519
13	69	139	87	43	104	33	87	562
14	75	150	93	47	112	36	93	606
15	80	160	100	50	120	38	100	649
16	85	171	107	53	128	41	107	692
17	91	182	113	57	136	43	113	735
18	96	192	120	60	144	46	120	779
19	101	203	127	63	152	48	127	822
20	107	214	134	67	160	51	134	865
21	112	224	140	70	168	53	140	908
22	117	235	147	73	176	56	147	952
23	123	246	154	77	184	58	154	995
24	128	256	160	80	192	61	160	1,038
25	134	267	167	83	200	63	167	1,081
26	139	278	174	87	208	66	174	1,125
27	144	288	180	90	216	68	180	1,168
28	150	299	187	93	224	71	187	1,211
29	155	310	194	97	232	74	194	1,254
30	160	320	200	100	240	76	200	1,298
Sub Watershed #304 Annual Phosphorus Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	1	2	1	0	1	0	1	6
2	2	3	2	1	2	1	2	13
3	2	5	3	1	4	1	3	19
4	3	6	4	2	5	1	4	25
5	4	8	5	2	6	2	5	32

6	5	9	6	3	7	2	6	38
7	5	11	7	3	8	3	7	44
8	6	13	8	4	9	3	8	51
9	7	14	9	4	11	3	9	57
10	8	16	10	5	12	4	10	63
11	9	17	11	5	13	4	11	70
12	9	19	12	6	14	4	12	76
13	10	20	13	6	15	5	13	82
14	11	22	14	7	16	5	14	89
15	12	23	15	7	18	6	15	95
16	13	25	16	8	19	6	16	102
17	13	27	17	8	20	6	17	108
18	14	28	18	9	21	7	18	114
19	15	30	19	9	22	7	19	121
20	16	31	20	10	23	7	20	127
21	16	33	21	10	25	8	21	133
22	17	34	22	11	26	8	22	140
23	18	36	23	11	27	9	23	146
24	19	38	23	12	28	9	23	152
25	20	39	24	12	29	9	24	159
26	20	41	25	13	31	10	25	165
27	21	42	26	13	32	10	26	171
28	22	44	27	14	33	10	27	178
29	23	45	28	14	34	11	28	184
30	23	47	29	15	35	11	29	190

Sub Watershed #401 Annual Phosphorus Reduction (pounds)

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	2	4	3	1	3	1	3	17
2	4	8	5	3	6	2	5	34
3	6	13	8	4	10	3	8	52
4	8	17	11	5	13	4	11	69
5	11	21	13	7	16	5	13	86
6	13	25	16	8	19	6	16	103
7	15	30	19	9	22	7	19	120
8	17	34	21	11	25	8	21	138
9	19	38	24	12	29	9	24	155
10	21	42	27	13	32	10	27	172
11	23	47	29	15	35	11	29	189
12	25	51	32	16	38	12	32	206
13	28	55	35	17	41	13	35	224
14	30	59	37	19	45	14	37	241

15	32	64	40	20	48	15	40	258
16	34	68	42	21	51	16	42	275
17	36	72	45	23	54	17	45	292
18	38	76	48	24	57	18	48	310
19	40	81	50	25	61	19	50	327
20	42	85	53	27	64	20	53	344
21	45	89	56	28	67	21	56	361
22	47	93	58	29	70	22	58	378
23	49	98	61	31	73	23	61	396
24	51	102	64	32	76	24	64	413
25	53	106	66	33	80	25	66	430
26	55	110	69	35	83	26	69	447
27	57	115	72	36	86	27	72	464
28	59	119	74	37	89	28	74	482
29	62	123	77	38	92	29	77	499
30	64	127	80	40	96	30	80	516

Sub Watershed #402 Annual Phosphorus Reduction (pounds)

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	1	2	1	1	1	0	1	8
2	2	4	2	1	3	1	2	15
3	3	6	4	2	4	1	4	23
4	4	8	5	2	6	2	5	30
5	5	9	6	3	7	2	6	38
6	6	11	7	4	8	3	7	46
7	7	13	8	4	10	3	8	53
8	8	15	9	5	11	4	9	61
9	8	17	11	5	13	4	11	69
10	9	19	12	6	14	4	12	76
11	10	21	13	6	16	5	13	84
12	11	23	14	7	17	5	14	91
13	12	24	15	8	18	6	15	99
14	13	26	16	8	20	6	16	107
15	14	28	18	9	21	7	18	114
16	15	30	19	9	23	7	19	122
17	16	32	20	10	24	8	20	130
18	17	34	21	11	25	8	21	137
19	18	36	22	11	27	8	22	145
20	19	38	24	12	28	9	24	152
21	20	40	25	12	30	9	25	160
22	21	41	26	13	31	10	26	168
23	22	43	27	14	32	10	27	175

24	23	45	28	14	34	11	28	183
25	24	47	29	15	35	11	29	190
26	24	49	31	15	37	12	31	198
27	25	51	32	16	38	12	32	206
28	26	53	33	16	40	13	33	213
29	27	55	34	17	41	13	34	221
30	28	56	35	18	42	13	35	229
Sub Watershed #403 Annual Phosphorus Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	1	1	1	0	1	0	1	6
2	1	3	2	1	2	1	2	11
3	2	4	3	1	3	1	3	17
4	3	5	3	2	4	1	3	22
5	3	7	4	2	5	2	4	28
6	4	8	5	3	6	2	5	33
7	5	10	6	3	7	2	6	39
8	5	11	7	3	8	3	7	44
9	6	12	8	4	9	3	8	50
10	7	14	8	4	10	3	8	55
11	7	15	9	5	11	4	9	61
12	8	16	10	5	12	4	10	66
13	9	18	11	6	13	4	11	72
14	10	19	12	6	14	5	12	77
15	10	20	13	6	15	5	13	83
16	11	22	14	7	16	5	14	88
17	12	23	14	7	17	5	14	94
18	12	24	15	8	18	6	15	99
19	13	26	16	8	19	6	16	105
20	14	27	17	8	20	6	17	110
21	14	29	18	9	21	7	18	116
22	15	30	19	9	22	7	19	121
23	16	31	20	10	23	7	20	127
24	16	33	20	10	24	8	20	132
25	17	34	21	11	25	8	21	138
26	18	35	22	11	27	8	22	143
27	18	37	23	11	28	9	23	149
28	19	38	24	12	29	9	24	154
29	20	39	25	12	30	9	25	160
30	20	41	25	13	31	10	25	165

Sub Watershed #404 Annual Nitrogen Reduction (pounds)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	14	44	14	14	33	10	27	155
2	27	87	27	27	65	21	55	310
3	41	131	41	41	98	31	82	465
4	55	175	55	55	131	41	109	620
5	68	218	68	68	164	52	136	775
6	82	262	82	82	196	62	164	930
7	96	306	96	96	229	73	191	1,085
8	109	349	109	109	262	83	218	1,240
9	123	393	123	123	295	93	246	1,395
10	136	437	136	136	327	104	273	1,550
11	150	480	150	150	360	114	300	1,705
12	164	524	164	164	393	124	327	1,860
13	177	568	177	177	426	135	355	2,015
14	191	611	191	191	458	145	382	2,170
15	205	655	205	205	491	156	409	2,325
16	218	699	218	218	524	166	437	2,480
17	232	742	232	232	557	176	464	2,635
18	246	786	246	246	589	187	491	2,790
19	259	830	259	259	622	197	519	2,945
20	273	873	273	273	655	207	546	3,100
21	287	917	287	287	688	218	573	3,255
22	300	961	300	300	720	228	600	3,410
23	314	1,004	314	314	753	239	628	3,565
24	327	1,048	327	327	786	249	655	3,720
25	341	1,092	341	341	819	259	682	3,875
26	355	1,135	355	355	851	270	710	4,030
27	368	1,179	368	368	884	280	737	4,185
28	382	1,223	382	382	917	290	764	4,340
29	396	1,266	396	396	950	301	791	4,495
30	409	1,310	409	409	982	311	819	4,650
Sub Watershed #405 Annual Nitrogen Reduction (pounds)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	32	104	32	32	78	25	65	368
2	65	207	65	65	155	49	129	736
3	97	311	97	97	233	74	194	1,103
4	129	414	129	129	311	98	259	1,471

5	162	518	162	162	388	123	324	1,839
6	194	622	194	194	466	148	388	2,207
7	227	725	227	227	544	172	453	2,574
8	259	829	259	259	622	197	518	2,942
9	291	932	291	291	699	221	583	3,310
10	324	1,036	324	324	777	246	647	3,678
11	356	1,140	356	356	855	271	712	4,045
12	388	1,243	388	388	932	295	777	4,413
13	421	1,347	421	421	1,010	320	842	4,781
14	453	1,450	453	453	1,088	344	906	5,149
15	486	1,554	486	486	1,165	369	971	5,516
16	518	1,658	518	518	1,243	394	1,036	5,884
17	550	1,761	550	550	1,321	418	1,101	6,252
18	583	1,865	583	583	1,399	443	1,165	6,620
19	615	1,968	615	615	1,476	467	1,230	6,987
20	647	2,072	647	647	1,554	492	1,295	7,355
21	680	2,175	680	680	1,632	517	1,360	7,723
22	712	2,279	712	712	1,709	541	1,424	8,091
23	745	2,383	745	745	1,787	566	1,489	8,458
24	777	2,486	777	777	1,865	590	1,554	8,826
25	809	2,590	809	809	1,942	615	1,619	9,194
26	842	2,693	842	842	2,020	640	1,683	9,562
27	874	2,797	874	874	2,098	664	1,748	9,929
28	906	2,901	906	906	2,175	689	1,813	10,297
29	939	3,004	939	939	2,253	714	1,878	10,665
30	971	3,108	971	971	2,331	738	1,942	11,033
Sub Watershed #501 Annual Nitrogen Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	10	30	10	10	23	7	19	108
2	19	61	19	19	46	14	38	216
3	29	91	29	29	69	22	57	325
4	38	122	38	38	91	29	76	433
5	48	152	48	48	114	36	95	541
6	57	183	57	57	137	43	114	649
7	67	213	67	67	160	51	133	757
8	76	244	76	76	183	58	152	866
9	86	274	86	86	206	65	171	974
10	95	305	95	95	229	72	191	1,082
11	105	335	105	105	251	80	210	1,190
12	114	366	114	114	274	87	229	1,298
13	124	396	124	124	297	94	248	1,407

14	133	427	133	133	320	101	267	1,515
15	143	457	143	143	343	109	286	1,623
16	152	488	152	152	366	116	305	1,731
17	162	518	162	162	389	123	324	1,840
18	171	549	171	171	411	130	343	1,948
19	181	579	181	181	434	138	362	2,056
20	191	610	191	191	457	145	381	2,164
21	200	640	200	200	480	152	400	2,272
22	210	671	210	210	503	159	419	2,381
23	219	701	219	219	526	167	438	2,489
24	229	732	229	229	549	174	457	2,597
25	238	762	238	238	572	181	476	2,705
26	248	792	248	248	594	188	495	2,813
27	257	823	257	257	617	195	514	2,922
28	267	853	267	267	640	203	533	3,030
29	276	884	276	276	663	210	552	3,138
30	286	914	286	286	686	217	572	3,246
Sub Watershed #502 Annual Nitrogen Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	9	28	9	9	21	7	17	99
2	17	56	17	17	42	13	35	199
3	26	84	26	26	63	20	52	298
4	35	112	35	35	84	27	70	398
5	44	140	44	44	105	33	87	497
6	52	168	52	52	126	40	105	596
7	61	196	61	61	147	47	122	696
8	70	224	70	70	168	53	140	795
9	79	252	79	79	189	60	157	895
10	87	280	87	87	210	66	175	994
11	96	308	96	96	231	73	192	1,093
12	105	336	105	105	252	80	210	1,193
13	114	364	114	114	273	86	227	1,292
14	122	392	122	122	294	93	245	1,392
15	131	420	131	131	315	100	262	1,491
16	140	448	140	140	336	106	280	1,590
17	149	476	149	149	357	113	297	1,690
18	157	504	157	157	378	120	315	1,789
19	166	532	166	166	399	126	332	1,889
20	175	560	175	175	420	133	350	1,988
21	184	588	184	184	441	140	367	2,087
22	192	616	192	192	462	146	385	2,187

23	201	644	201	201	483	153	402	2,286
24	210	672	210	210	504	160	420	2,386
25	219	700	219	219	525	166	437	2,485
26	227	728	227	227	546	173	455	2,584
27	236	756	236	236	567	180	472	2,684
28	245	784	245	245	588	186	490	2,783
29	254	812	254	254	609	193	507	2,883
30	262	840	262	262	630	199	525	2,982

Sub Watershed #503 Annual Nitrogen Reduction (pounds)

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	23	74	23	23	56	18	47	264
2	47	149	47	47	112	35	93	529
3	70	223	70	70	168	53	140	793
4	93	298	93	93	223	71	186	1,058
5	116	372	116	116	279	88	233	1,322
6	140	447	140	140	335	106	279	1,587
7	163	521	163	163	391	124	326	1,851
8	186	596	186	186	447	142	372	2,116
9	210	670	210	210	503	159	419	2,380
10	233	745	233	233	559	177	466	2,645
11	256	819	256	256	615	195	512	2,909
12	279	894	279	279	670	212	559	3,174
13	303	968	303	303	726	230	605	3,438
14	326	1,043	326	326	782	248	652	3,703
15	349	1,117	349	349	838	265	698	3,967
16	372	1,192	372	372	894	283	745	4,231
17	396	1,266	396	396	950	301	792	4,496
18	419	1,341	419	419	1,006	318	838	4,760
19	442	1,415	442	442	1,062	336	885	5,025
20	466	1,490	466	466	1,117	354	931	5,289
21	489	1,564	489	489	1,173	372	978	5,554
22	512	1,639	512	512	1,229	389	1,024	5,818
23	535	1,713	535	535	1,285	407	1,071	6,083
24	559	1,788	559	559	1,341	425	1,117	6,347
25	582	1,862	582	582	1,397	442	1,164	6,612
26	605	1,937	605	605	1,453	460	1,211	6,876
27	629	2,011	629	629	1,509	478	1,257	7,141
28	652	2,086	652	652	1,564	495	1,304	7,405
29	675	2,160	675	675	1,620	513	1,350	7,669
30	698	2,235	698	698	1,676	531	1,397	7,934

Sub Watershed #504 Annual Nitrogen Reduction (pounds)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	22	72	22	22	54	17	45	255
2	45	144	45	45	108	34	90	510
3	67	216	67	67	162	51	135	766
4	90	288	90	90	216	68	180	1,021
5	112	359	112	112	270	85	225	1,276
6	135	431	135	135	323	102	270	1,531
7	157	503	157	157	377	120	314	1,786
8	180	575	180	180	431	137	359	2,041
9	202	647	202	202	485	154	404	2,297
10	225	719	225	225	539	171	449	2,552
11	247	791	247	247	593	188	494	2,807
12	270	863	270	270	647	205	539	3,062
13	292	934	292	292	701	222	584	3,317
14	314	1,006	314	314	755	239	629	3,572
15	337	1,078	337	337	809	256	674	3,828
16	359	1,150	359	359	863	273	719	4,083
17	382	1,222	382	382	916	290	764	4,338
18	404	1,294	404	404	970	307	809	4,593
19	427	1,366	427	427	1,024	324	854	4,848
20	449	1,438	449	449	1,078	341	898	5,103
21	472	1,509	472	472	1,132	359	943	5,359
22	494	1,581	494	494	1,186	376	988	5,614
23	517	1,653	517	517	1,240	393	1,033	5,869
24	539	1,725	539	539	1,294	410	1,078	6,124
25	562	1,797	562	562	1,348	427	1,123	6,379
26	584	1,869	584	584	1,402	444	1,168	6,635
27	606	1,941	606	606	1,456	461	1,213	6,890
28	629	2,013	629	629	1,509	478	1,258	7,145
29	651	2,085	651	651	1,563	495	1,303	7,400
30	674	2,156	674	674	1,617	512	1,348	7,655
Sub Watershed #505 Annual Nitrogen Reduction (pounds)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	14	45	14	14	34	11	28	160
2	28	90	28	28	68	21	56	320
3	42	135	42	42	102	32	85	481
4	56	180	56	56	135	43	113	641

5	70	226	70	70	169	54	141	801
6	85	271	85	85	203	64	169	961
7	99	316	99	99	237	75	197	1,121
8	113	361	113	113	271	86	226	1,281
9	127	406	127	127	305	96	254	1,442
10	141	451	141	141	338	107	282	1,602
11	155	496	155	155	372	118	310	1,762
12	169	541	169	169	406	129	338	1,922
13	183	587	183	183	440	139	367	2,082
14	197	632	197	197	474	150	395	2,242
15	211	677	211	211	508	161	423	2,403
16	226	722	226	226	541	171	451	2,563
17	240	767	240	240	575	182	479	2,723
18	254	812	254	254	609	193	508	2,883
19	268	857	268	268	643	204	536	3,043
20	282	902	282	282	677	214	564	3,203
21	296	947	296	296	711	225	592	3,364
22	310	993	310	310	744	236	620	3,524
23	324	1,038	324	324	778	246	649	3,684
24	338	1,083	338	338	812	257	677	3,844
25	352	1,128	352	352	846	268	705	4,004
26	367	1,173	367	367	880	279	733	4,164
27	381	1,218	381	381	914	289	761	4,325
28	395	1,263	395	395	947	300	790	4,485
29	409	1,308	409	409	981	311	818	4,645
30	423	1,354	423	423	1,015	321	846	4,805
Sub Watershed #506 Annual Nitrogen Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	8	26	8	8	20	6	16	93
2	16	52	16	16	39	12	33	186
3	25	79	25	25	59	19	49	279
4	33	105	33	33	79	25	66	372
5	41	131	41	41	98	31	82	465
6	49	157	49	49	118	37	98	558
7	57	183	57	57	138	44	115	651
8	66	210	66	66	157	50	131	744
9	74	236	74	74	177	56	147	837
10	82	262	82	82	197	62	164	930
11	90	288	90	90	216	68	180	1,023
12	98	314	98	98	236	75	197	1,116
13	106	341	106	106	256	81	213	1,209

14	115	367	115	115	275	87	229	1,302
15	123	393	123	123	295	93	246	1,395
16	131	419	131	131	314	100	262	1,488
17	139	445	139	139	334	106	278	1,582
18	147	472	147	147	354	112	295	1,675
19	156	498	156	156	373	118	311	1,768
20	164	524	164	164	393	124	328	1,861
21	172	550	172	172	413	131	344	1,954
22	180	577	180	180	432	137	360	2,047
23	188	603	188	188	452	143	377	2,140
24	197	629	197	197	472	149	393	2,233
25	205	655	205	205	491	156	409	2,326
26	213	681	213	213	511	162	426	2,419
27	221	708	221	221	531	168	442	2,512
28	229	734	229	229	550	174	459	2,605
29	237	760	237	237	570	180	475	2,698
30	246	786	246	246	590	187	491	2,791

Sub Watershed #507 Annual Nitrogen Reduction (pounds)

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	8	27	8	8	20	6	17	95
2	17	54	17	17	40	13	34	191
3	25	81	25	25	60	19	50	286
4	34	107	34	34	81	26	67	381
5	42	134	42	42	101	32	84	477
6	50	161	50	50	121	38	101	572
7	59	188	59	59	141	45	118	667
8	67	215	67	67	161	51	134	763
9	76	242	76	76	181	57	151	858
10	84	269	84	84	201	64	168	953
11	92	295	92	92	222	70	185	1,049
12	101	322	101	101	242	77	201	1,144
13	109	349	109	109	262	83	218	1,240
14	118	376	118	118	282	89	235	1,335
15	126	403	126	126	302	96	252	1,430
16	134	430	134	134	322	102	269	1,526
17	143	457	143	143	342	108	285	1,621
18	151	483	151	151	363	115	302	1,716
19	159	510	159	159	383	121	319	1,812
20	168	537	168	168	403	128	336	1,907
21	176	564	176	176	423	134	353	2,002
22	185	591	185	185	443	140	369	2,098

23	193	618	193	193	463	147	386	2,193
24	201	645	201	201	483	153	403	2,288
25	210	671	210	210	504	159	420	2,384
26	218	698	218	218	524	166	436	2,479
27	227	725	227	227	544	172	453	2,574
28	235	752	235	235	564	179	470	2,670
29	243	779	243	243	584	185	487	2,765
30	252	806	252	252	604	191	504	2,860
Sub Watershed #107 Annual Nitrogen Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	6	18	6	6	14	4	11	65
2	11	37	11	11	28	9	23	130
3	17	55	17	17	41	13	34	195
4	23	73	23	23	55	17	46	260
5	29	92	29	29	69	22	57	325
6	34	110	34	34	83	26	69	391
7	40	128	40	40	96	30	80	456
8	46	147	46	46	110	35	92	521
9	52	165	52	52	124	39	103	586
10	57	183	57	57	138	44	115	651
11	63	202	63	63	151	48	126	716
12	69	220	69	69	165	52	138	781
13	74	238	74	74	179	57	149	846
14	80	257	80	80	193	61	160	911
15	86	275	86	86	206	65	172	976
16	92	293	92	92	220	70	183	1,042
17	97	312	97	97	234	74	195	1,107
18	103	330	103	103	248	78	206	1,172
19	109	348	109	109	261	83	218	1,237
20	115	367	115	115	275	87	229	1,302
21	120	385	120	120	289	91	241	1,367
22	126	403	126	126	303	96	252	1,432
23	132	422	132	132	316	100	264	1,497
24	138	440	138	138	330	105	275	1,562
25	143	458	143	143	344	109	287	1,627
26	149	477	149	149	358	113	298	1,692
27	155	495	155	155	371	118	309	1,758
28	160	513	160	160	385	122	321	1,823
29	166	532	166	166	399	126	332	1,888
30	172	550	172	172	413	131	344	1,953

Sub Watershed #201 Annual Nitrogen Reduction (pounds)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	4	13	4	4	10	3	8	46
2	8	26	8	8	19	6	16	92
3	12	39	12	12	29	9	24	138
4	16	52	16	16	39	12	32	184
5	20	65	20	20	49	15	40	230
6	24	78	24	24	58	18	49	276
7	28	91	28	28	68	22	57	322
8	32	104	32	32	78	25	65	368
9	36	117	36	36	87	28	73	414
10	40	129	40	40	97	31	81	460
11	45	142	45	45	107	34	89	506
12	49	155	49	49	117	37	97	552
13	53	168	53	53	126	40	105	598
14	57	181	57	57	136	43	113	643
15	61	194	61	61	146	46	121	689
16	65	207	65	65	155	49	129	735
17	69	220	69	69	165	52	138	781
18	73	233	73	73	175	55	146	827
19	77	246	77	77	184	58	154	873
20	81	259	81	81	194	61	162	919
21	85	272	85	85	204	65	170	965
22	89	285	89	89	214	68	178	1,011
23	93	298	93	93	223	71	186	1,057
24	97	311	97	97	233	74	194	1,103
25	101	324	101	101	243	77	202	1,149
26	105	337	105	105	252	80	210	1,195
27	109	350	109	109	262	83	218	1,241
28	113	363	113	113	272	86	227	1,287
29	117	375	117	117	282	89	235	1,333
30	121	388	121	121	291	92	243	1,379
Sub Watershed #203 Annual Nitrogen Reduction (pounds)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	4	13	4	4	10	3	8	47
2	8	26	8	8	20	6	17	94
3	12	40	12	12	30	9	25	141
4	17	53	17	17	40	13	33	188

5	21	66	21	21	50	16	41	234
6	25	79	25	25	59	19	50	281
7	29	92	29	29	69	22	58	328
8	33	106	33	33	79	25	66	375
9	37	119	37	37	89	28	74	422
10	41	132	41	41	99	31	83	469
11	45	145	45	45	109	35	91	516
12	50	159	50	50	119	38	99	563
13	54	172	54	54	129	41	107	610
14	58	185	58	58	139	44	116	657
15	62	198	62	62	149	47	124	703
16	66	211	66	66	159	50	132	750
17	70	225	70	70	168	53	140	797
18	74	238	74	74	178	56	149	844
19	78	251	78	78	188	60	157	891
20	83	264	83	83	198	63	165	938
21	87	277	87	87	208	66	173	985
22	91	291	91	91	218	69	182	1,032
23	95	304	95	95	228	72	190	1,079
24	99	317	99	99	238	75	198	1,126
25	103	330	103	103	248	78	206	1,172
26	107	343	107	107	258	82	215	1,219
27	111	357	111	111	268	85	223	1,266
28	116	370	116	116	277	88	231	1,313
29	120	383	120	120	287	91	239	1,360
30	124	396	124	124	297	94	248	1,407

Sub Watershed #204 Annual Nitrogen Reduction (pounds)

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	5	15	5	5	11	3	9	52
2	9	29	9	9	22	7	18	104
3	14	44	14	14	33	10	27	156
4	18	58	18	18	44	14	37	207
5	23	73	23	23	55	17	46	259
6	27	88	27	27	66	21	55	311
7	32	102	32	32	77	24	64	363
8	37	117	37	37	88	28	73	415
9	41	131	41	41	99	31	82	467
10	46	146	46	46	110	35	91	519
11	50	161	50	50	121	38	100	570
12	55	175	55	55	131	42	110	622
13	59	190	59	59	142	45	119	674

14	64	204	64	64	153	49	128	726
15	68	219	68	68	164	52	137	778
16	73	234	73	73	175	56	146	830
17	78	248	78	78	186	59	155	881
18	82	263	82	82	197	62	164	933
19	87	278	87	87	208	66	173	985
20	91	292	91	91	219	69	183	1,037
21	96	307	96	96	230	73	192	1,089
22	100	321	100	100	241	76	201	1,141
23	105	336	105	105	252	80	210	1,193
24	110	351	110	110	263	83	219	1,244
25	114	365	114	114	274	87	228	1,296
26	119	380	119	119	285	90	237	1,348
27	123	394	123	123	296	94	246	1,400
28	128	409	128	128	307	97	256	1,452
29	132	424	132	132	318	101	265	1,504
30	137	438	137	137	329	104	274	1,556
Sub Watershed #205 Annual Nitrogen Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	5	15	5	5	11	4	9	54
2	9	30	9	9	23	7	19	107
3	14	45	14	14	34	11	28	161
4	19	60	19	19	45	14	38	214
5	24	76	24	24	57	18	47	268
6	28	91	28	28	68	22	57	322
7	33	106	33	33	79	25	66	375
8	38	121	38	38	91	29	76	429
9	42	136	42	42	102	32	85	483
10	47	151	47	47	113	36	94	536
11	52	166	52	52	125	39	104	590
12	57	181	57	57	136	43	113	643
13	61	196	61	61	147	47	123	697
14	66	211	66	66	159	50	132	751
15	71	227	71	71	170	54	142	804
16	76	242	76	76	181	57	151	858
17	80	257	80	80	193	61	160	912
18	85	272	85	85	204	65	170	965
19	90	287	90	90	215	68	179	1,019
20	94	302	94	94	227	72	189	1,072
21	99	317	99	99	238	75	198	1,126
22	104	332	104	104	249	79	208	1,180

23	109	347	109	109	261	83	217	1,233
24	113	363	113	113	272	86	227	1,287
25	118	378	118	118	283	90	236	1,341
26	123	393	123	123	295	93	245	1,394
27	127	408	127	127	306	97	255	1,448
28	132	423	132	132	317	100	264	1,501
29	137	438	137	137	329	104	274	1,555
30	142	453	142	142	340	108	283	1,609
Sub Watershed #301 Annual Nitrogen Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	13	42	13	13	32	10	26	150
2	26	85	26	26	64	20	53	301
3	40	127	40	40	95	30	79	451
4	53	170	53	53	127	40	106	602
5	66	212	66	66	159	50	132	752
6	79	254	79	79	191	60	159	903
7	93	297	93	93	222	70	185	1,053
8	106	339	106	106	254	81	212	1,204
9	119	381	119	119	286	91	238	1,354
10	132	424	132	132	318	101	265	1,505
11	146	466	146	146	350	111	291	1,655
12	159	509	159	159	381	121	318	1,805
13	172	551	172	172	413	131	344	1,956
14	185	593	185	185	445	141	371	2,106
15	199	636	199	199	477	151	397	2,257
16	212	678	212	212	509	161	424	2,407
17	225	720	225	225	540	171	450	2,558
18	238	763	238	238	572	181	477	2,708
19	252	805	252	252	604	191	503	2,859
20	265	848	265	265	636	201	530	3,009
21	278	890	278	278	667	211	556	3,159
22	291	932	291	291	699	221	583	3,310
23	305	975	305	305	731	232	609	3,460
24	318	1,017	318	318	763	242	636	3,611
25	331	1,060	331	331	795	252	662	3,761
26	344	1,102	344	344	826	262	689	3,912
27	358	1,144	358	358	858	272	715	4,062
28	371	1,187	371	371	890	282	742	4,213
29	384	1,229	384	384	922	292	768	4,363
30	397	1,271	397	397	954	302	795	4,514

Sub Watershed #302 Annual Nitrogen Reduction (pounds)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	12	38	12	12	28	9	24	134
2	24	75	24	24	56	18	47	267
3	35	113	35	35	85	27	71	401
4	47	150	47	47	113	36	94	534
5	59	188	59	59	141	45	118	668
6	71	226	71	71	169	54	141	801
7	82	263	82	82	198	63	165	935
8	94	301	94	94	226	71	188	1,068
9	106	339	106	106	254	80	212	1,202
10	118	376	118	118	282	89	235	1,336
11	129	414	129	129	310	98	259	1,469
12	141	451	141	141	339	107	282	1,603
13	153	489	153	153	367	116	306	1,736
14	165	527	165	165	395	125	329	1,870
15	176	564	176	176	423	134	353	2,003
16	188	602	188	188	451	143	376	2,137
17	200	640	200	200	480	152	400	2,270
18	212	677	212	212	508	161	423	2,404
19	223	715	223	223	536	170	447	2,538
20	235	752	235	235	564	179	470	2,671
21	247	790	247	247	593	188	494	2,805
22	259	828	259	259	621	197	517	2,938
23	270	865	270	270	649	206	541	3,072
24	282	903	282	282	677	214	564	3,205
25	294	941	294	294	705	223	588	3,339
26	306	978	306	306	734	232	611	3,472
27	317	1,016	317	317	762	241	635	3,606
28	329	1,053	329	329	790	250	658	3,740
29	341	1,091	341	341	818	259	682	3,873
30	353	1,129	353	353	846	268	705	4,007
Sub Watershed #303 Annual Nitrogen Reduction (pounds)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	16	50	16	16	38	12	31	178
2	31	101	31	31	75	24	63	357
3	47	151	47	47	113	36	94	535
4	63	201	63	63	151	48	126	714

5	79	251	79	79	188	60	157	892
6	94	302	94	94	226	72	188	1,070
7	110	352	110	110	264	84	220	1,249
8	126	402	126	126	302	95	251	1,427
9	141	452	141	141	339	107	283	1,606
10	157	503	157	157	377	119	314	1,784
11	173	553	173	173	415	131	346	1,962
12	188	603	188	188	452	143	377	2,141
13	204	653	204	204	490	155	408	2,319
14	220	704	220	220	528	167	440	2,498
15	236	754	236	236	565	179	471	2,676
16	251	804	251	251	603	191	503	2,854
17	267	854	267	267	641	203	534	3,033
18	283	905	283	283	678	215	565	3,211
19	298	955	298	298	716	227	597	3,390
20	314	1,005	314	314	754	239	628	3,568
21	330	1,055	330	330	792	251	660	3,747
22	346	1,106	346	346	829	263	691	3,925
23	361	1,156	361	361	867	275	722	4,103
24	377	1,206	377	377	905	286	754	4,282
25	393	1,256	393	393	942	298	785	4,460
26	408	1,307	408	408	980	310	817	4,639
27	424	1,357	424	424	1,018	322	848	4,817
28	440	1,407	440	440	1,055	334	879	4,995
29	455	1,457	455	455	1,093	346	911	5,174
30	471	1,508	471	471	1,131	358	942	5,352
Sub Watershed #304 Annual Nitrogen Reduction (pounds)								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total**
1	3	9	3	3	7	2	6	33
2	6	19	6	6	14	4	12	67
3	9	28	9	9	21	7	18	100
4	12	38	12	12	28	9	24	134
5	15	47	15	15	35	11	29	167
6	18	57	18	18	42	13	35	201
7	21	66	21	21	49	16	41	234
8	24	75	24	24	57	18	47	267
9	26	85	26	26	64	20	53	301
10	29	94	29	29	71	22	59	334
11	32	104	32	32	78	25	65	368
12	35	113	35	35	85	27	71	401
13	38	122	38	38	92	29	77	435

14	41	132	41	41	99	31	82	468
15	44	141	44	44	106	34	88	501
16	47	151	47	47	113	36	94	535
17	50	160	50	50	120	38	100	568
18	53	170	53	53	127	40	106	602
19	56	179	56	56	134	42	112	635
20	59	188	59	59	141	45	118	669
21	62	198	62	62	148	47	124	702
22	65	207	65	65	155	49	129	736
23	68	217	68	68	162	51	135	769
24	71	226	71	71	170	54	141	802
25	74	235	74	74	177	56	147	836
26	77	245	77	77	184	58	153	869
27	79	254	79	79	191	60	159	903
28	82	264	82	82	198	63	165	936
29	85	273	85	85	205	65	171	970
30	88	283	88	88	212	67	177	1,003

Sub Watershed #401 Annual Nitrogen Reduction (pounds)

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	8	24	8	8	18	6	15	86
2	15	49	15	15	37	12	30	173
3	23	73	23	23	55	17	46	259
4	30	97	30	30	73	23	61	346
5	38	122	38	38	91	29	76	432
6	46	146	46	46	110	35	91	519
7	53	170	53	53	128	40	107	605
8	61	195	61	61	146	46	122	692
9	69	219	69	69	164	52	137	778
10	76	244	76	76	183	58	152	865
11	84	268	84	84	201	64	167	951
12	91	292	91	91	219	69	183	1,038
13	99	317	99	99	237	75	198	1,124
14	107	341	107	107	256	81	213	1,211
15	114	365	114	114	274	87	228	1,297
16	122	390	122	122	292	93	244	1,383
17	129	414	129	129	311	98	259	1,470
18	137	438	137	137	329	104	274	1,556
19	145	463	145	145	347	110	289	1,643
20	152	487	152	152	365	116	304	1,729
21	160	511	160	160	384	121	320	1,816
22	167	536	167	167	402	127	335	1,902

23	175	560	175	175	420	133	350	1,989
24	183	585	183	183	438	139	365	2,075
25	190	609	190	190	457	145	381	2,162
26	198	633	198	198	475	150	396	2,248
27	206	658	206	206	493	156	411	2,335
28	213	682	213	213	511	162	426	2,421
29	221	706	221	221	530	168	441	2,508
30	228	731	228	228	548	174	457	2,594

Sub Watershed #402 Annual Nitrogen Reduction (pounds)

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	3	11	3	3	8	3	7	39
2	7	22	7	7	16	5	14	78
3	10	33	10	10	25	8	21	116
4	14	44	14	14	33	10	27	155
5	17	55	17	17	41	13	34	194
6	21	66	21	21	49	16	41	233
7	24	77	24	24	57	18	48	272
8	27	88	27	27	66	21	55	311
9	31	98	31	31	74	23	62	349
10	34	109	34	34	82	26	68	388
11	38	120	38	38	90	29	75	427
12	41	131	41	41	98	31	82	466
13	44	142	44	44	107	34	89	505
14	48	153	48	48	115	36	96	544
15	51	164	51	51	123	39	103	582
16	55	175	55	55	131	42	109	621
17	58	186	58	58	139	44	116	660
18	62	197	62	62	148	47	123	699
19	65	208	65	65	156	49	130	738
20	68	219	68	68	164	52	137	777
21	72	230	72	72	172	55	144	815
22	75	241	75	75	180	57	150	854
23	79	252	79	79	189	60	157	893
24	82	263	82	82	197	62	164	932
25	85	273	85	85	205	65	171	971
26	89	284	89	89	213	68	178	1,010
27	92	295	92	92	222	70	185	1,048
28	96	306	96	96	230	73	191	1,087
29	99	317	99	99	238	75	198	1,126
30	103	328	103	103	246	78	205	1,165

Sub Watershed #403 Annual Nitrogen Reduction (pounds)								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total
1	2	8	2	2	6	2	5	28
2	5	16	5	5	12	4	10	56
3	7	24	7	7	18	6	15	84
4	10	31	10	10	24	7	20	112
5	12	39	12	12	29	9	25	139
6	15	47	15	15	35	11	29	167
7	17	55	17	17	41	13	34	195
8	20	63	20	20	47	15	39	223
9	22	71	22	22	53	17	44	251
10	25	79	25	25	59	19	49	279
11	27	86	27	27	65	21	54	307
12	29	94	29	29	71	22	59	335
13	32	102	32	32	77	24	64	362
14	34	110	34	34	82	26	69	390
15	37	118	37	37	88	28	74	418
16	39	126	39	39	94	30	79	446
17	42	133	42	42	100	32	83	474
18	44	141	44	44	106	34	88	502
19	47	149	47	47	112	35	93	530
20	49	157	49	49	118	37	98	558
21	52	165	52	52	124	39	103	585
22	54	173	54	54	130	41	108	613
23	56	181	56	56	135	43	113	641
24	59	188	59	59	141	45	118	669
25	61	196	61	61	147	47	123	697
26	64	204	64	64	153	48	128	725
27	66	212	66	66	159	50	133	753
28	69	220	69	69	165	52	137	781
29	71	228	71	71	171	54	142	808
30	74	236	74	74	177	56	147	836

Sub Watershed #404 Total Annual Cost Before Cost-Share, Cropland BMPs								
Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$2,963	$12,205	$2,543	$2,163	$7,781	$1,144	$1,037	$29,835
2	$3,052	$12,571	$2,619	$2,228	$8,014	$1,179	$1,068	$30,730
3	$3,144	$12,948	$2,698	$2,295	$8,254	$1,214	$1,100	$31,652
4	$3,238	$13,337	$2,778	$2,363	$8,502	$1,250	$1,133	$32,602
5	$3,335	$13,737	$2,862	$2,434	$8,757	$1,288	$1,167	$33,580

6	$3,435	$14,149	$2,948	$2,507	$9,020	$1,326	$1,202	$34,587
7	$3,538	$14,573	$3,036	$2,583	$9,290	$1,366	$1,238	$35,625
8	$3,644	$15,010	$3,127	$2,660	$9,569	$1,407	$1,275	$36,694
9	$3,754	$15,461	$3,221	$2,740	$9,856	$1,449	$1,314	$37,794
10	$3,866	$15,924	$3,318	$2,822	$10,152	$1,493	$1,353	$38,928
11	$3,982	$16,402	$3,417	$2,907	$10,456	$1,538	$1,394	$40,096
12	$4,102	$16,894	$3,520	$2,994	$10,770	$1,584	$1,435	$41,299
13	$4,225	$17,401	$3,625	$3,084	$11,093	$1,631	$1,479	$42,538
14	$4,351	$17,923	$3,734	$3,176	$11,426	$1,680	$1,523	$43,814
15	$4,482	$18,461	$3,846	$3,272	$11,769	$1,731	$1,569	$45,129
16	$4,616	$19,015	$3,961	$3,370	$12,122	$1,783	$1,616	$46,482
17	$4,755	$19,585	$4,080	$3,471	$12,486	$1,836	$1,664	$47,877
18	$4,898	$20,173	$4,203	$3,575	$12,860	$1,891	$1,714	$49,313
19	$5,044	$20,778	$4,329	$3,682	$13,246	$1,948	$1,765	$50,793
20	$5,196	$21,401	$4,459	$3,793	$13,643	$2,006	$1,818	$52,316
21	$5,352	$22,043	$4,592	$3,906	$14,053	$2,067	$1,873	$53,886
22	$5,512	$22,705	$4,730	$4,024	$14,474	$2,129	$1,929	$55,502
23	$5,678	$23,386	$4,872	$4,144	$14,908	$2,192	$1,987	$57,167
24	$5,848	$24,087	$5,018	$4,269	$15,356	$2,258	$2,047	$58,882
25	$6,023	$24,810	$5,169	$4,397	$15,816	$2,326	$2,108	$60,649
26	$6,204	$25,554	$5,324	$4,529	$16,291	$2,396	$2,171	$62,468
27	$6,390	$26,321	$5,483	$4,665	$16,779	$2,468	$2,236	$64,342
28	$6,582	$27,110	$5,648	$4,804	$17,283	$2,542	$2,304	$66,273
29	$6,779	$27,924	$5,817	$4,949	$17,801	$2,618	$2,373	$68,261
30	$6,983	$28,761	$5,992	$5,097	$18,335	$2,696	$2,444	$70,309

Sub Watershed #405 Total Annual Cost Before Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$3,196	$13,165	$2,743	$2,333	$8,393	$1,234	$1,119	$32,182
2	$3,292	$13,560	$2,825	$2,403	$8,644	$1,271	$1,152	$33,148
3	$3,391	$13,967	$2,910	$2,475	$8,904	$1,309	$1,187	$34,142
4	$3,493	$14,386	$2,997	$2,549	$9,171	$1,349	$1,222	$35,166
5	$3,597	$14,817	$3,087	$2,626	$9,446	$1,389	$1,259	$36,221
6	$3,705	$15,262	$3,180	$2,705	$9,729	$1,431	$1,297	$37,308
7	$3,816	$15,719	$3,275	$2,786	$10,021	$1,474	$1,336	$38,427
8	$3,931	$16,191	$3,373	$2,869	$10,322	$1,518	$1,376	$39,580
9	$4,049	$16,677	$3,474	$2,955	$10,631	$1,563	$1,417	$40,767
10	$4,170	$17,177	$3,579	$3,044	$10,950	$1,610	$1,460	$41,990
11	$4,295	$17,692	$3,686	$3,135	$11,279	$1,659	$1,503	$43,250
12	$4,424	$18,223	$3,796	$3,229	$11,617	$1,708	$1,548	$44,547
13	$4,557	$18,770	$3,910	$3,326	$11,966	$1,760	$1,595	$45,884
14	$4,694	$19,333	$4,028	$3,426	$12,325	$1,812	$1,643	$47,260
15	$4,834	$19,913	$4,149	$3,529	$12,695	$1,867	$1,692	$48,678

16	$4,980	$20,510	$4,273	$3,635	$13,075	$1,923	$1,743	$50,139
17	$5,129	$21,126	$4,401	$3,744	$13,468	$1,981	$1,795	$51,643
18	$5,283	$21,759	$4,533	$3,856	$13,872	$2,040	$1,849	$53,192
19	$5,441	$22,412	$4,669	$3,972	$14,288	$2,101	$1,904	$54,788
20	$5,604	$23,085	$4,809	$4,091	$14,716	$2,164	$1,961	$56,431
21	$5,773	$23,777	$4,954	$4,214	$15,158	$2,229	$2,020	$58,124
22	$5,946	$24,490	$5,102	$4,340	$15,613	$2,296	$2,081	$59,868
23	$6,124	$25,225	$5,255	$4,470	$16,081	$2,365	$2,143	$61,664
24	$6,308	$25,982	$5,413	$4,604	$16,563	$2,436	$2,208	$63,514
25	$6,497	$26,761	$5,575	$4,743	$17,060	$2,509	$2,274	$65,419
26	$6,692	$27,564	$5,743	$4,885	$17,572	$2,584	$2,342	$67,382
27	$6,893	$28,391	$5,915	$5,031	$18,099	$2,662	$2,412	$69,404
28	$7,100	$29,243	$6,092	$5,182	$18,642	$2,742	$2,485	$71,486
29	$7,313	$30,120	$6,275	$5,338	$19,202	$2,824	$2,559	$73,630
30	$7,532	$31,024	$6,463	$5,498	$19,778	$2,908	$2,636	$75,839

Sub Watershed #501 Total Annual Cost Before Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$2,409	$9,924	$2,068	$1,759	$6,327	$930	$843	$24,260
2	$2,482	$10,222	$2,130	$1,812	$6,517	$958	$869	$24,988
3	$2,556	$10,529	$2,193	$1,866	$6,712	$987	$895	$25,738
4	$2,633	$10,845	$2,259	$1,922	$6,913	$1,017	$921	$26,510
5	$2,712	$11,170	$2,327	$1,980	$7,121	$1,047	$949	$27,305
6	$2,793	$11,505	$2,397	$2,039	$7,334	$1,079	$978	$28,124
7	$2,877	$11,850	$2,469	$2,100	$7,554	$1,111	$1,007	$28,968
8	$2,963	$12,206	$2,543	$2,163	$7,781	$1,144	$1,037	$29,837
9	$3,052	$12,572	$2,619	$2,228	$8,014	$1,179	$1,068	$30,732
10	$3,144	$12,949	$2,698	$2,295	$8,255	$1,214	$1,100	$31,654
11	$3,238	$13,337	$2,779	$2,364	$8,503	$1,250	$1,133	$32,604
12	$3,335	$13,738	$2,862	$2,435	$8,758	$1,288	$1,167	$33,582
13	$3,435	$14,150	$2,948	$2,508	$9,020	$1,327	$1,202	$34,590
14	$3,538	$14,574	$3,036	$2,583	$9,291	$1,366	$1,238	$35,627
15	$3,644	$15,011	$3,127	$2,660	$9,570	$1,407	$1,275	$36,696
16	$3,754	$15,462	$3,221	$2,740	$9,857	$1,450	$1,314	$37,797
17	$3,866	$15,926	$3,318	$2,822	$10,153	$1,493	$1,353	$38,931
18	$3,982	$16,403	$3,417	$2,907	$10,457	$1,538	$1,394	$40,099
19	$4,102	$16,895	$3,520	$2,994	$10,771	$1,584	$1,436	$41,302
20	$4,225	$17,402	$3,625	$3,084	$11,094	$1,631	$1,479	$42,541
21	$4,352	$17,924	$3,734	$3,177	$11,427	$1,680	$1,523	$43,817
22	$4,482	$18,462	$3,846	$3,272	$11,770	$1,731	$1,569	$45,131
23	$4,617	$19,016	$3,962	$3,370	$12,123	$1,783	$1,616	$46,485
24	$4,755	$19,586	$4,080	$3,471	$12,486	$1,836	$1,664	$47,880
25	$4,898	$20,174	$4,203	$3,575	$12,861	$1,891	$1,714	$49,316

26	$5,045	$20,779	$4,329	$3,682	$13,247	$1,948	$1,766	$50,796
27	$5,196	$21,403	$4,459	$3,793	$13,644	$2,006	$1,819	$52,320
28	$5,352	$22,045	$4,593	$3,907	$14,053	$2,067	$1,873	$53,889
29	$5,513	$22,706	$4,730	$4,024	$14,475	$2,129	$1,929	$55,506
30	$5,678	$23,387	$4,872	$4,145	$14,909	$2,193	$1,987	$57,171
Sub Watershed #502 Total Annual Cost Before Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$2,323	$9,568	$1,993	$1,696	$6,100	$897	$813	$23,389
2	$2,393	$9,855	$2,053	$1,746	$6,283	$924	$837	$24,091
3	$2,464	$10,151	$2,115	$1,799	$6,471	$952	$862	$24,814
4	$2,538	$10,455	$2,178	$1,853	$6,665	$980	$888	$25,558
5	$2,614	$10,769	$2,244	$1,908	$6,865	$1,010	$915	$26,325
6	$2,693	$11,092	$2,311	$1,966	$7,071	$1,040	$942	$27,115
7	$2,774	$11,425	$2,380	$2,025	$7,283	$1,071	$971	$27,928
8	$2,857	$11,767	$2,452	$2,085	$7,502	$1,103	$1,000	$28,766
9	$2,943	$12,120	$2,525	$2,148	$7,727	$1,136	$1,030	$29,629
10	$3,031	$12,484	$2,601	$2,212	$7,959	$1,170	$1,061	$30,518
11	$3,122	$12,859	$2,679	$2,279	$8,197	$1,205	$1,093	$31,433
12	$3,215	$13,244	$2,759	$2,347	$8,443	$1,242	$1,125	$32,377
13	$3,312	$13,642	$2,842	$2,418	$8,697	$1,279	$1,159	$33,348
14	$3,411	$14,051	$2,927	$2,490	$8,957	$1,317	$1,194	$34,348
15	$3,514	$14,472	$3,015	$2,565	$9,226	$1,357	$1,230	$35,379
16	$3,619	$14,907	$3,106	$2,642	$9,503	$1,397	$1,267	$36,440
17	$3,728	$15,354	$3,199	$2,721	$9,788	$1,439	$1,305	$37,533
18	$3,839	$15,814	$3,295	$2,803	$10,082	$1,483	$1,344	$38,659
19	$3,955	$16,289	$3,394	$2,887	$10,384	$1,527	$1,384	$39,819
20	$4,073	$16,778	$3,495	$2,973	$10,696	$1,573	$1,426	$41,014
21	$4,195	$17,281	$3,600	$3,062	$11,017	$1,620	$1,468	$42,244
22	$4,321	$17,799	$3,708	$3,154	$11,347	$1,669	$1,512	$43,511
23	$4,451	$18,333	$3,819	$3,249	$11,687	$1,719	$1,558	$44,817
24	$4,585	$18,883	$3,934	$3,346	$12,038	$1,770	$1,604	$46,161
25	$4,722	$19,450	$4,052	$3,447	$12,399	$1,823	$1,653	$47,546
26	$4,864	$20,033	$4,174	$3,550	$12,771	$1,878	$1,702	$48,972
27	$5,010	$20,634	$4,299	$3,657	$13,154	$1,934	$1,753	$50,442
28	$5,160	$21,253	$4,428	$3,766	$13,549	$1,992	$1,806	$51,955
29	$5,315	$21,891	$4,561	$3,879	$13,955	$2,052	$1,860	$53,513
30	$5,474	$22,548	$4,697	$3,996	$14,374	$2,114	$1,916	$55,119
Sub Watershed #503 Total Annual Cost Before Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**

1	$3,318	$13,666	$2,847	$2,422	$8,712	$1,281	$1,161	$33,408
2	$3,417	$14,076	$2,933	$2,495	$8,974	$1,320	$1,196	$34,410
3	$3,520	$14,498	$3,021	$2,569	$9,243	$1,359	$1,232	$35,442
4	$3,626	$14,933	$3,111	$2,646	$9,520	$1,400	$1,269	$36,505
5	$3,734	$15,381	$3,204	$2,726	$9,806	$1,442	$1,307	$37,601
6	$3,846	$15,843	$3,301	$2,808	$10,100	$1,485	$1,346	$38,729
7	$3,962	$16,318	$3,400	$2,892	$10,403	$1,530	$1,387	$39,890
8	$4,081	$16,808	$3,502	$2,979	$10,715	$1,576	$1,428	$41,087
9	$4,203	$17,312	$3,607	$3,068	$11,036	$1,623	$1,471	$42,320
10	$4,329	$17,831	$3,715	$3,160	$11,367	$1,672	$1,515	$43,589
11	$4,459	$18,366	$3,826	$3,255	$11,708	$1,722	$1,561	$44,897
12	$4,593	$18,917	$3,941	$3,352	$12,060	$1,773	$1,607	$46,244
13	$4,731	$19,485	$4,059	$3,453	$12,421	$1,827	$1,656	$47,631
14	$4,872	$20,069	$4,181	$3,557	$12,794	$1,881	$1,705	$49,060
15	$5,019	$20,671	$4,307	$3,663	$13,178	$1,938	$1,756	$50,532
16	$5,169	$21,291	$4,436	$3,773	$13,573	$1,996	$1,809	$52,048
17	$5,324	$21,930	$4,569	$3,886	$13,980	$2,056	$1,863	$53,609
18	$5,484	$22,588	$4,706	$4,003	$14,400	$2,118	$1,919	$55,218
19	$5,648	$23,266	$4,847	$4,123	$14,832	$2,181	$1,977	$56,874
20	$5,818	$23,964	$4,992	$4,247	$15,277	$2,247	$2,036	$58,580
21	$5,992	$24,683	$5,142	$4,374	$15,735	$2,314	$2,097	$60,338
22	$6,172	$25,423	$5,296	$4,505	$16,207	$2,383	$2,160	$62,148
23	$6,357	$26,186	$5,455	$4,641	$16,693	$2,455	$2,225	$64,012
24	$6,548	$26,971	$5,619	$4,780	$17,194	$2,529	$2,292	$65,933
25	$6,745	$27,780	$5,788	$4,923	$17,710	$2,604	$2,360	$67,911
26	$6,947	$28,614	$5,961	$5,071	$18,241	$2,683	$2,431	$69,948
27	$7,155	$29,472	$6,140	$5,223	$18,789	$2,763	$2,504	$72,046
28	$7,370	$30,356	$6,324	$5,380	$19,352	$2,846	$2,579	$74,208
29	$7,591	$31,267	$6,514	$5,541	$19,933	$2,931	$2,657	$76,434
30	$7,819	$32,205	$6,709	$5,707	$20,531	$3,019	$2,736	$78,727
Sub Watershed #504 Total Annual Cost Before Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$2,653	$10,928	$2,277	$1,937	$6,967	$1,025	$929	$26,714
2	$2,733	$11,256	$2,345	$1,995	$7,176	$1,055	$956	$27,515
3	$2,815	$11,594	$2,415	$2,055	$7,391	$1,087	$985	$28,341
4	$2,899	$11,941	$2,488	$2,116	$7,613	$1,119	$1,015	$29,191
5	$2,986	$12,300	$2,562	$2,180	$7,841	$1,153	$1,045	$30,067
6	$3,076	$12,669	$2,639	$2,245	$8,076	$1,188	$1,076	$30,969
7	$3,168	$13,049	$2,718	$2,312	$8,318	$1,223	$1,109	$31,898
8	$3,263	$13,440	$2,800	$2,382	$8,568	$1,260	$1,142	$32,855
9	$3,361	$13,843	$2,884	$2,453	$8,825	$1,298	$1,176	$33,841
10	$3,462	$14,259	$2,971	$2,527	$9,090	$1,337	$1,212	$34,856

11	$3,566	$14,686	$3,060	$2,603	$9,363	$1,377	$1,248	$35,901
12	$3,673	$15,127	$3,151	$2,681	$9,643	$1,418	$1,285	$36,979
13	$3,783	$15,581	$3,246	$2,761	$9,933	$1,461	$1,324	$38,088
14	$3,896	$16,048	$3,343	$2,844	$10,231	$1,505	$1,364	$39,231
15	$4,013	$16,530	$3,444	$2,929	$10,538	$1,550	$1,404	$40,407
16	$4,133	$17,025	$3,547	$3,017	$10,854	$1,596	$1,447	$41,620
17	$4,257	$17,536	$3,653	$3,108	$11,179	$1,644	$1,490	$42,868
18	$4,385	$18,062	$3,763	$3,201	$11,515	$1,693	$1,535	$44,154
19	$4,517	$18,604	$3,876	$3,297	$11,860	$1,744	$1,581	$45,479
20	$4,652	$19,162	$3,992	$3,396	$12,216	$1,796	$1,628	$46,843
21	$4,792	$19,737	$4,112	$3,498	$12,582	$1,850	$1,677	$48,249
22	$4,936	$20,329	$4,235	$3,603	$12,960	$1,906	$1,727	$49,696
23	$5,084	$20,939	$4,362	$3,711	$13,349	$1,963	$1,779	$51,187
24	$5,236	$21,567	$4,493	$3,822	$13,749	$2,022	$1,833	$52,723
25	$5,393	$22,214	$4,628	$3,937	$14,162	$2,083	$1,888	$54,304
26	$5,555	$22,881	$4,767	$4,055	$14,587	$2,145	$1,944	$55,933
27	$5,722	$23,567	$4,910	$4,177	$15,024	$2,209	$2,002	$57,611
28	$5,893	$24,274	$5,057	$4,302	$15,475	$2,276	$2,063	$59,340
29	$6,070	$25,002	$5,209	$4,431	$15,939	$2,344	$2,124	$61,120
30	$6,252	$25,753	$5,365	$4,564	$16,417	$2,414	$2,188	$62,953

Sub Watershed #505 Total Annual Cost Before Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$2,545	$10,481	$2,184	$1,857	$6,682	$983	$891	$25,622
2	$2,621	$10,795	$2,249	$1,913	$6,882	$1,012	$917	$26,390
3	$2,700	$11,119	$2,317	$1,971	$7,089	$1,042	$945	$27,182
4	$2,781	$11,453	$2,386	$2,030	$7,301	$1,074	$973	$27,997
5	$2,864	$11,797	$2,458	$2,091	$7,520	$1,106	$1,002	$28,837
6	$2,950	$12,150	$2,531	$2,153	$7,746	$1,139	$1,032	$29,702
7	$3,038	$12,515	$2,607	$2,218	$7,978	$1,173	$1,063	$30,593
8	$3,130	$12,890	$2,685	$2,284	$8,218	$1,208	$1,095	$31,511
9	$3,223	$13,277	$2,766	$2,353	$8,464	$1,245	$1,128	$32,457
10	$3,320	$13,675	$2,849	$2,424	$8,718	$1,282	$1,162	$33,430
11	$3,420	$14,086	$2,935	$2,496	$8,980	$1,321	$1,197	$34,433
12	$3,522	$14,508	$3,023	$2,571	$9,249	$1,360	$1,233	$35,466
13	$3,628	$14,943	$3,113	$2,648	$9,526	$1,401	$1,270	$36,530
14	$3,737	$15,392	$3,207	$2,728	$9,812	$1,443	$1,308	$37,626
15	$3,849	$15,854	$3,303	$2,810	$10,107	$1,486	$1,347	$38,755
16	$3,964	$16,329	$3,402	$2,894	$10,410	$1,531	$1,387	$39,917
17	$4,083	$16,819	$3,504	$2,981	$10,722	$1,577	$1,429	$41,115
18	$4,206	$17,324	$3,609	$3,070	$11,044	$1,624	$1,472	$42,348
19	$4,332	$17,843	$3,717	$3,162	$11,375	$1,673	$1,516	$43,619
20	$4,462	$18,379	$3,829	$3,257	$11,716	$1,723	$1,562	$44,927

21	$4,596	$18,930	$3,944	$3,355	$12,068	$1,775	$1,608	$46,275
22	$4,734	$19,498	$4,062	$3,455	$12,430	$1,828	$1,657	$47,664
23	$4,876	$20,083	$4,184	$3,559	$12,803	$1,883	$1,706	$49,093
24	$5,022	$20,685	$4,309	$3,666	$13,187	$1,939	$1,758	$50,566
25	$5,173	$21,306	$4,439	$3,776	$13,582	$1,997	$1,810	$52,083
26	$5,328	$21,945	$4,572	$3,889	$13,990	$2,057	$1,865	$53,646
27	$5,488	$22,603	$4,709	$4,006	$14,410	$2,119	$1,921	$55,255
28	$5,652	$23,281	$4,850	$4,126	$14,842	$2,183	$1,978	$56,913
29	$5,822	$23,980	$4,996	$4,250	$15,287	$2,248	$2,038	$58,620
30	$5,997	$24,699	$5,146	$4,377	$15,746	$2,316	$2,099	$60,379

Sub Watershed #506 Total Annual Cost Before Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$1,975	$8,137	$1,695	$1,442	$5,187	$763	$691	$19,890
2	$2,035	$8,381	$1,746	$1,485	$5,343	$786	$712	$20,487
3	$2,096	$8,632	$1,798	$1,530	$5,503	$809	$733	$21,101
4	$2,159	$8,891	$1,852	$1,576	$5,668	$834	$755	$21,735
5	$2,223	$9,158	$1,908	$1,623	$5,838	$859	$778	$22,387
6	$2,290	$9,432	$1,965	$1,672	$6,013	$884	$801	$23,058
7	$2,359	$9,715	$2,024	$1,722	$6,194	$911	$826	$23,750
8	$2,429	$10,007	$2,085	$1,773	$6,379	$938	$850	$24,462
9	$2,502	$10,307	$2,147	$1,827	$6,571	$966	$876	$25,196
10	$2,577	$10,616	$2,212	$1,881	$6,768	$995	$902	$25,952
11	$2,655	$10,935	$2,278	$1,938	$6,971	$1,025	$929	$26,731
12	$2,734	$11,263	$2,346	$1,996	$7,180	$1,056	$957	$27,533
13	$2,816	$11,601	$2,417	$2,056	$7,395	$1,088	$986	$28,359
14	$2,901	$11,949	$2,489	$2,118	$7,617	$1,120	$1,015	$29,209
15	$2,988	$12,307	$2,564	$2,181	$7,846	$1,154	$1,046	$30,086
16	$3,078	$12,676	$2,641	$2,247	$8,081	$1,188	$1,077	$30,988
17	$3,170	$13,057	$2,720	$2,314	$8,324	$1,224	$1,109	$31,918
18	$3,265	$13,448	$2,802	$2,383	$8,573	$1,261	$1,143	$32,875
19	$3,363	$13,852	$2,886	$2,455	$8,831	$1,299	$1,177	$33,862
20	$3,464	$14,267	$2,972	$2,528	$9,096	$1,338	$1,212	$34,878
21	$3,568	$14,695	$3,062	$2,604	$9,368	$1,378	$1,249	$35,924
22	$3,675	$15,136	$3,153	$2,682	$9,649	$1,419	$1,286	$37,002
23	$3,785	$15,590	$3,248	$2,763	$9,939	$1,462	$1,325	$38,112
24	$3,899	$16,058	$3,345	$2,846	$10,237	$1,505	$1,364	$39,255
25	$4,016	$16,540	$3,446	$2,931	$10,544	$1,551	$1,405	$40,433
26	$4,136	$17,036	$3,549	$3,019	$10,861	$1,597	$1,448	$41,646
27	$4,260	$17,547	$3,656	$3,110	$11,186	$1,645	$1,491	$42,895
28	$4,388	$18,074	$3,765	$3,203	$11,522	$1,694	$1,536	$44,182
29	$4,520	$18,616	$3,878	$3,299	$11,868	$1,745	$1,582	$45,507
30	$4,655	$19,174	$3,995	$3,398	$12,224	$1,798	$1,629	$46,873

Sub Watershed #507 Total Annual Cost Before Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$2,488	$10,249	$2,135	$1,816	$6,533	$961	$871	$25,053
2	$2,563	$10,556	$2,199	$1,871	$6,729	$990	$897	$25,805
3	$2,640	$10,873	$2,265	$1,927	$6,931	$1,019	$924	$26,579
4	$2,719	$11,199	$2,333	$1,985	$7,139	$1,050	$952	$27,376
5	$2,800	$11,535	$2,403	$2,044	$7,353	$1,081	$980	$28,197
6	$2,884	$11,881	$2,475	$2,106	$7,574	$1,114	$1,010	$29,043
7	$2,971	$12,237	$2,549	$2,169	$7,801	$1,147	$1,040	$29,915
8	$3,060	$12,604	$2,626	$2,234	$8,035	$1,182	$1,071	$30,812
9	$3,152	$12,983	$2,705	$2,301	$8,276	$1,217	$1,103	$31,736
10	$3,246	$13,372	$2,786	$2,370	$8,525	$1,254	$1,136	$32,689
11	$3,344	$13,773	$2,869	$2,441	$8,780	$1,291	$1,170	$33,669
12	$3,444	$14,186	$2,955	$2,514	$9,044	$1,330	$1,205	$34,679
13	$3,548	$14,612	$3,044	$2,590	$9,315	$1,370	$1,242	$35,720
14	$3,654	$15,050	$3,135	$2,667	$9,595	$1,411	$1,279	$36,791
15	$3,764	$15,502	$3,230	$2,747	$9,882	$1,453	$1,317	$37,895
16	$3,876	$15,967	$3,326	$2,830	$10,179	$1,497	$1,357	$39,032
17	$3,993	$16,446	$3,426	$2,915	$10,484	$1,542	$1,397	$40,203
18	$4,113	$16,939	$3,529	$3,002	$10,799	$1,588	$1,439	$41,409
19	$4,236	$17,447	$3,635	$3,092	$11,123	$1,636	$1,482	$42,651
20	$4,363	$17,971	$3,744	$3,185	$11,456	$1,685	$1,527	$43,931
21	$4,494	$18,510	$3,856	$3,280	$11,800	$1,735	$1,573	$45,249
22	$4,629	$19,065	$3,972	$3,379	$12,154	$1,787	$1,620	$46,606
23	$4,768	$19,637	$4,091	$3,480	$12,519	$1,841	$1,669	$48,004
24	$4,911	$20,226	$4,214	$3,584	$12,894	$1,896	$1,719	$49,444
25	$5,058	$20,833	$4,340	$3,692	$13,281	$1,953	$1,770	$50,928
26	$5,210	$21,458	$4,470	$3,803	$13,680	$2,012	$1,823	$52,456
27	$5,366	$22,102	$4,605	$3,917	$14,090	$2,072	$1,878	$54,029
28	$5,527	$22,765	$4,743	$4,034	$14,513	$2,134	$1,934	$55,650
29	$5,693	$23,448	$4,885	$4,155	$14,948	$2,198	$1,992	$57,320
30	$5,863	$24,151	$5,032	$4,280	$15,396	$2,264	$2,052	$59,039
Sub Watershed #107 Total Annual Cost Before Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$2,455	$10,112	$2,107	$1,792	$6,446	$948	$859	$24,719
2	$2,529	$10,415	$2,170	$1,846	$6,640	$976	$885	$25,461
3	$2,605	$10,728	$2,235	$1,901	$6,839	$1,006	$912	$26,225
4	$2,683	$11,050	$2,302	$1,958	$7,044	$1,036	$939	$27,011
5	$2,763	$11,381	$2,371	$2,017	$7,255	$1,067	$967	$27,822

6	$2,846	$11,723	$2,442	$2,077	$7,473	$1,099	$996	$28,656
7	$2,931	$12,074	$2,515	$2,140	$7,697	$1,132	$1,026	$29,516
8	$3,019	$12,436	$2,591	$2,204	$7,928	$1,166	$1,057	$30,402
9	$3,110	$12,810	$2,669	$2,270	$8,166	$1,201	$1,088	$31,314
10	$3,203	$13,194	$2,749	$2,338	$8,411	$1,237	$1,121	$32,253
11	$3,299	$13,590	$2,831	$2,408	$8,663	$1,274	$1,155	$33,221
12	$3,398	$13,997	$2,916	$2,481	$8,923	$1,312	$1,189	$34,217
13	$3,500	$14,417	$3,004	$2,555	$9,191	$1,352	$1,225	$35,244
14	$3,605	$14,850	$3,094	$2,632	$9,467	$1,392	$1,262	$36,301
15	$3,713	$15,295	$3,187	$2,711	$9,751	$1,434	$1,300	$37,390
16	$3,825	$15,754	$3,282	$2,792	$10,043	$1,477	$1,339	$38,512
17	$3,940	$16,227	$3,381	$2,876	$10,345	$1,521	$1,379	$39,667
18	$4,058	$16,714	$3,482	$2,962	$10,655	$1,567	$1,420	$40,857
19	$4,179	$17,215	$3,586	$3,051	$10,975	$1,614	$1,463	$42,083
20	$4,305	$17,731	$3,694	$3,142	$11,304	$1,662	$1,507	$43,345
21	$4,434	$18,263	$3,805	$3,237	$11,643	$1,712	$1,552	$44,646
22	$4,567	$18,811	$3,919	$3,334	$11,992	$1,764	$1,598	$45,985
23	$4,704	$19,376	$4,037	$3,434	$12,352	$1,816	$1,646	$47,365
24	$4,845	$19,957	$4,158	$3,537	$12,723	$1,871	$1,696	$48,786
25	$4,991	$20,556	$4,282	$3,643	$13,104	$1,927	$1,747	$50,249
26	$5,140	$21,172	$4,411	$3,752	$13,497	$1,985	$1,799	$51,757
27	$5,294	$21,807	$4,543	$3,865	$13,902	$2,044	$1,853	$53,309
28	$5,453	$22,462	$4,680	$3,981	$14,319	$2,106	$1,909	$54,909
29	$5,617	$23,136	$4,820	$4,100	$14,749	$2,169	$1,966	$56,556
30	$5,785	$23,830	$4,964	$4,223	$15,191	$2,234	$2,025	$58,253

Sub Watershed #201 Total Annual Cost Before Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$1,821	$7,500	$1,562	$1,329	$4,781	$703	$637	$18,333
2	$1,875	$7,725	$1,609	$1,369	$4,925	$724	$656	$18,883
3	$1,932	$7,956	$1,658	$1,410	$5,072	$746	$676	$19,450
4	$1,990	$8,195	$1,707	$1,452	$5,224	$768	$696	$20,033
5	$2,049	$8,441	$1,759	$1,496	$5,381	$791	$717	$20,635
6	$2,111	$8,694	$1,811	$1,541	$5,543	$815	$739	$21,254
7	$2,174	$8,955	$1,866	$1,587	$5,709	$840	$761	$21,891
8	$2,239	$9,224	$1,922	$1,635	$5,880	$865	$784	$22,548
9	$2,307	$9,500	$1,979	$1,684	$6,057	$891	$807	$23,224
10	$2,376	$9,785	$2,039	$1,734	$6,238	$917	$831	$23,921
11	$2,447	$10,079	$2,100	$1,786	$6,425	$945	$856	$24,639
12	$2,520	$10,381	$2,163	$1,840	$6,618	$973	$882	$25,378
13	$2,596	$10,693	$2,228	$1,895	$6,817	$1,002	$909	$26,139
14	$2,674	$11,014	$2,295	$1,952	$7,021	$1,033	$936	$26,923
15	$2,754	$11,344	$2,363	$2,010	$7,232	$1,064	$964	$27,731

16	$2,837	$11,684	$2,434	$2,071	$7,449	$1,095	$993	$28,563
17	$2,922	$12,035	$2,507	$2,133	$7,672	$1,128	$1,023	$29,420
18	$3,009	$12,396	$2,582	$2,197	$7,902	$1,162	$1,053	$30,302
19	$3,100	$12,768	$2,660	$2,263	$8,139	$1,197	$1,085	$31,212
20	$3,193	$13,151	$2,740	$2,331	$8,384	$1,233	$1,117	$32,148
21	$3,289	$13,545	$2,822	$2,400	$8,635	$1,270	$1,151	$33,112
22	$3,387	$13,952	$2,907	$2,473	$8,894	$1,308	$1,185	$34,106
23	$3,489	$14,370	$2,994	$2,547	$9,161	$1,347	$1,221	$35,129
24	$3,593	$14,801	$3,084	$2,623	$9,436	$1,388	$1,258	$36,183
25	$3,701	$15,245	$3,176	$2,702	$9,719	$1,429	$1,295	$37,268
26	$3,812	$15,703	$3,271	$2,783	$10,011	$1,472	$1,334	$38,386
27	$3,927	$16,174	$3,370	$2,866	$10,311	$1,516	$1,374	$39,538
28	$4,045	$16,659	$3,471	$2,952	$10,620	$1,562	$1,416	$40,724
29	$4,166	$17,159	$3,575	$3,041	$10,939	$1,609	$1,458	$41,946
30	$4,291	$17,674	$3,682	$3,132	$11,267	$1,657	$1,502	$43,204

Sub Watershed #203 Total Annual Cost Before Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$1,973	$8,125	$1,693	$1,440	$5,180	$762	$690	$19,861
2	$2,032	$8,369	$1,743	$1,483	$5,335	$785	$711	$20,457
3	$2,093	$8,620	$1,796	$1,528	$5,495	$808	$732	$21,071
4	$2,155	$8,878	$1,850	$1,573	$5,660	$832	$754	$21,703
5	$2,220	$9,145	$1,905	$1,621	$5,830	$857	$777	$22,354
6	$2,287	$9,419	$1,962	$1,669	$6,005	$883	$800	$23,025
7	$2,355	$9,701	$2,021	$1,719	$6,185	$910	$824	$23,716
8	$2,426	$9,992	$2,082	$1,771	$6,370	$937	$849	$24,427
9	$2,499	$10,292	$2,144	$1,824	$6,561	$965	$875	$25,160
10	$2,574	$10,601	$2,209	$1,879	$6,758	$994	$901	$25,915
11	$2,651	$10,919	$2,275	$1,935	$6,961	$1,024	$928	$26,692
12	$2,730	$11,247	$2,343	$1,993	$7,170	$1,054	$956	$27,493
13	$2,812	$11,584	$2,413	$2,053	$7,385	$1,086	$984	$28,318
14	$2,897	$11,932	$2,486	$2,114	$7,606	$1,119	$1,014	$29,167
15	$2,984	$12,289	$2,560	$2,178	$7,835	$1,152	$1,044	$30,042
16	$3,073	$12,658	$2,637	$2,243	$8,070	$1,187	$1,076	$30,944
17	$3,165	$13,038	$2,716	$2,311	$8,312	$1,222	$1,108	$31,872
18	$3,260	$13,429	$2,798	$2,380	$8,561	$1,259	$1,141	$32,828
19	$3,358	$13,832	$2,882	$2,451	$8,818	$1,297	$1,175	$33,813
20	$3,459	$14,247	$2,968	$2,525	$9,082	$1,336	$1,211	$34,827
21	$3,563	$14,674	$3,057	$2,601	$9,355	$1,376	$1,247	$35,872
22	$3,670	$15,115	$3,149	$2,679	$9,636	$1,417	$1,284	$36,948
23	$3,780	$15,568	$3,243	$2,759	$9,925	$1,459	$1,323	$38,057
24	$3,893	$16,035	$3,341	$2,842	$10,222	$1,503	$1,362	$39,198
25	$4,010	$16,516	$3,441	$2,927	$10,529	$1,548	$1,403	$40,374

26	$4,130	$17,012	$3,544	$3,015	$10,845	$1,595	$1,445	$41,586
27	$4,254	$17,522	$3,650	$3,105	$11,170	$1,643	$1,489	$42,833
28	$4,382	$18,048	$3,760	$3,198	$11,505	$1,692	$1,533	$44,118
29	$4,513	$18,589	$3,873	$3,294	$11,850	$1,743	$1,579	$45,442
30	$4,648	$19,147	$3,989	$3,393	$12,206	$1,795	$1,627	$46,805
Sub Watershed #204 Total Annual Cost Before Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$2,989	$12,310	$2,565	$2,182	$7,848	$1,154	$1,046	$30,093
2	$3,078	$12,680	$2,642	$2,247	$8,083	$1,189	$1,077	$30,996
3	$3,171	$13,060	$2,721	$2,314	$8,326	$1,224	$1,110	$31,926
4	$3,266	$13,452	$2,802	$2,384	$8,576	$1,261	$1,143	$32,884
5	$3,364	$13,855	$2,887	$2,455	$8,833	$1,299	$1,177	$33,870
6	$3,465	$14,271	$2,973	$2,529	$9,098	$1,338	$1,213	$34,887
7	$3,569	$14,699	$3,062	$2,605	$9,371	$1,378	$1,249	$35,933
8	$3,676	$15,140	$3,154	$2,683	$9,652	$1,419	$1,286	$37,011
9	$3,786	$15,594	$3,249	$2,764	$9,941	$1,462	$1,325	$38,121
10	$3,900	$16,062	$3,346	$2,847	$10,240	$1,506	$1,365	$39,265
11	$4,017	$16,544	$3,447	$2,932	$10,547	$1,551	$1,406	$40,443
12	$4,137	$17,040	$3,550	$3,020	$10,863	$1,598	$1,448	$41,656
13	$4,261	$17,552	$3,657	$3,110	$11,189	$1,645	$1,491	$42,906
14	$4,389	$18,078	$3,766	$3,204	$11,525	$1,695	$1,536	$44,193
15	$4,521	$18,621	$3,879	$3,300	$11,871	$1,746	$1,582	$45,519
16	$4,656	$19,179	$3,996	$3,399	$12,227	$1,798	$1,630	$46,885
17	$4,796	$19,755	$4,116	$3,501	$12,594	$1,852	$1,679	$48,291
18	$4,940	$20,347	$4,239	$3,606	$12,971	$1,908	$1,729	$49,740
19	$5,088	$20,958	$4,366	$3,714	$13,360	$1,965	$1,781	$51,232
20	$5,241	$21,586	$4,497	$3,826	$13,761	$2,024	$1,834	$52,769
21	$5,398	$22,234	$4,632	$3,940	$14,174	$2,084	$1,889	$54,352
22	$5,560	$22,901	$4,771	$4,058	$14,599	$2,147	$1,946	$55,983
23	$5,727	$23,588	$4,914	$4,180	$15,037	$2,211	$2,004	$57,662
24	$5,899	$24,296	$5,062	$4,306	$15,488	$2,278	$2,064	$59,392
25	$6,075	$25,025	$5,213	$4,435	$15,953	$2,346	$2,126	$61,174
26	$6,258	$25,775	$5,370	$4,568	$16,432	$2,416	$2,190	$63,009
27	$6,445	$26,549	$5,531	$4,705	$16,925	$2,489	$2,256	$64,899
28	$6,639	$27,345	$5,697	$4,846	$17,432	$2,564	$2,323	$66,846
29	$6,838	$28,165	$5,868	$4,991	$17,955	$2,640	$2,393	$68,852
30	$7,043	$29,010	$6,044	$5,141	$18,494	$2,720	$2,465	$70,917
Sub Watershed #205 Total Annual Cost Before Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**

1	$2,782	$11,459	$2,387	$2,031	$7,305	$1,074	$974	$28,013
2	$2,866	$11,803	$2,459	$2,092	$7,524	$1,107	$1,003	$28,853
3	$2,952	$12,157	$2,533	$2,154	$7,750	$1,140	$1,033	$29,719
4	$3,040	$12,522	$2,609	$2,219	$7,983	$1,174	$1,064	$30,610
5	$3,131	$12,897	$2,687	$2,286	$8,222	$1,209	$1,096	$31,528
6	$3,225	$13,284	$2,768	$2,354	$8,469	$1,245	$1,129	$32,474
7	$3,322	$13,683	$2,851	$2,425	$8,723	$1,283	$1,163	$33,449
8	$3,422	$14,093	$2,936	$2,498	$8,985	$1,321	$1,197	$34,452
9	$3,524	$14,516	$3,024	$2,573	$9,254	$1,361	$1,233	$35,486
10	$3,630	$14,952	$3,115	$2,650	$9,532	$1,402	$1,270	$36,550
11	$3,739	$15,400	$3,208	$2,729	$9,818	$1,444	$1,309	$37,647
12	$3,851	$15,862	$3,305	$2,811	$10,112	$1,487	$1,348	$38,776
13	$3,967	$16,338	$3,404	$2,895	$10,416	$1,532	$1,388	$39,939
14	$4,086	$16,828	$3,506	$2,982	$10,728	$1,578	$1,430	$41,137
15	$4,208	$17,333	$3,611	$3,072	$11,050	$1,625	$1,473	$42,372
16	$4,334	$17,853	$3,719	$3,164	$11,381	$1,674	$1,517	$43,643
17	$4,464	$18,389	$3,831	$3,259	$11,723	$1,724	$1,562	$44,952
18	$4,598	$18,940	$3,946	$3,357	$12,074	$1,776	$1,609	$46,301
19	$4,736	$19,509	$4,064	$3,457	$12,437	$1,829	$1,658	$47,690
20	$4,878	$20,094	$4,186	$3,561	$12,810	$1,884	$1,707	$49,120
21	$5,025	$20,697	$4,312	$3,668	$13,194	$1,940	$1,759	$50,594
22	$5,175	$21,317	$4,441	$3,778	$13,590	$1,999	$1,811	$52,112
23	$5,331	$21,957	$4,574	$3,891	$13,998	$2,058	$1,866	$53,675
24	$5,491	$22,616	$4,712	$4,008	$14,418	$2,120	$1,922	$55,285
25	$5,655	$23,294	$4,853	$4,128	$14,850	$2,184	$1,979	$56,944
26	$5,825	$23,993	$4,999	$4,252	$15,296	$2,249	$2,039	$58,652
27	$6,000	$24,713	$5,149	$4,380	$15,754	$2,317	$2,100	$60,412
28	$6,180	$25,454	$5,303	$4,511	$16,227	$2,386	$2,163	$62,224
29	$6,365	$26,218	$5,462	$4,646	$16,714	$2,458	$2,228	$64,091
30	$6,556	$27,004	$5,626	$4,786	$17,215	$2,532	$2,295	$66,014
Sub Watershed #301 Total Annual Cost Before Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$6,628	$27,300	$5,688	$4,838	$17,404	$2,559	$2,320	$66,737
2	$6,827	$28,119	$5,858	$4,983	$17,926	$2,636	$2,389	$68,739
3	$7,032	$28,963	$6,034	$5,133	$18,464	$2,715	$2,461	$70,801
4	$7,243	$29,832	$6,215	$5,287	$19,018	$2,797	$2,535	$72,925
5	$7,460	$30,727	$6,401	$5,445	$19,588	$2,881	$2,611	$75,113
6	$7,684	$31,648	$6,593	$5,609	$20,176	$2,967	$2,689	$77,366
7	$7,914	$32,598	$6,791	$5,777	$20,781	$3,056	$2,770	$79,687
8	$8,152	$33,576	$6,995	$5,950	$21,405	$3,148	$2,853	$82,078
9	$8,396	$34,583	$7,205	$6,129	$22,047	$3,242	$2,938	$84,540
10	$8,648	$35,621	$7,421	$6,313	$22,708	$3,339	$3,027	$87,077

11	$8,907	$36,689	$7,644	$6,502	$23,389	$3,440	$3,117	$89,689
12	$9,175	$37,790	$7,873	$6,697	$24,091	$3,543	$3,211	$92,380
13	$9,450	$38,924	$8,109	$6,898	$24,814	$3,649	$3,307	$95,151
14	$9,733	$40,091	$8,352	$7,105	$25,558	$3,759	$3,407	$98,005
15	$10,025	$41,294	$8,603	$7,318	$26,325	$3,871	$3,509	$100,946
16	$10,326	$42,533	$8,861	$7,538	$27,115	$3,987	$3,614	$103,974
17	$10,636	$43,809	$9,127	$7,764	$27,928	$4,107	$3,722	$107,093
18	$10,955	$45,123	$9,401	$7,997	$28,766	$4,230	$3,834	$110,306
19	$11,284	$46,477	$9,683	$8,237	$29,629	$4,357	$3,949	$113,615
20	$11,622	$47,871	$9,973	$8,484	$30,518	$4,488	$4,068	$117,024
21	$11,971	$49,307	$10,272	$8,738	$31,433	$4,623	$4,190	$120,534
22	$12,330	$50,787	$10,581	$9,000	$32,376	$4,761	$4,315	$124,150
23	$12,700	$52,310	$10,898	$9,270	$33,348	$4,904	$4,445	$127,875
24	$13,081	$53,879	$11,225	$9,548	$34,348	$5,051	$4,578	$131,711
25	$13,473	$55,496	$11,562	$9,835	$35,379	$5,203	$4,715	$135,662
26	$13,878	$57,161	$11,908	$10,130	$36,440	$5,359	$4,857	$139,732
27	$14,294	$58,876	$12,266	$10,434	$37,533	$5,520	$5,003	$143,924
28	$14,723	$60,642	$12,634	$10,747	$38,659	$5,685	$5,153	$148,242
29	$15,164	$62,461	$13,013	$11,069	$39,819	$5,856	$5,307	$152,689
30	$15,619	$64,335	$13,403	$11,401	$41,013	$6,031	$5,466	$157,270

Sub Watershed #302 Total Annual Cost Before Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$5,270	$21,708	$4,522	$3,847	$13,839	$2,035	$1,844	$53,066
2	$5,428	$22,359	$4,658	$3,962	$14,254	$2,096	$1,900	$54,658
3	$5,591	$23,030	$4,798	$4,081	$14,681	$2,159	$1,957	$56,297
4	$5,759	$23,721	$4,942	$4,204	$15,122	$2,224	$2,016	$57,986
5	$5,932	$24,432	$5,090	$4,330	$15,576	$2,291	$2,076	$59,726
6	$6,110	$25,165	$5,243	$4,460	$16,043	$2,359	$2,138	$61,518
7	$6,293	$25,920	$5,400	$4,594	$16,524	$2,430	$2,202	$63,363
8	$6,482	$26,698	$5,562	$4,731	$17,020	$2,503	$2,268	$65,264
9	$6,676	$27,499	$5,729	$4,873	$17,530	$2,578	$2,337	$67,222
10	$6,876	$28,324	$5,901	$5,019	$18,056	$2,655	$2,407	$69,239
11	$7,083	$29,173	$6,078	$5,170	$18,598	$2,735	$2,479	$71,316
12	$7,295	$30,049	$6,260	$5,325	$19,156	$2,817	$2,553	$73,455
13	$7,514	$30,950	$6,448	$5,485	$19,731	$2,902	$2,630	$75,659
14	$7,740	$31,879	$6,641	$5,649	$20,323	$2,989	$2,709	$77,929
15	$7,972	$32,835	$6,841	$5,819	$20,932	$3,078	$2,790	$80,267
16	$8,211	$33,820	$7,046	$5,994	$21,560	$3,171	$2,874	$82,675
17	$8,457	$34,835	$7,257	$6,173	$22,207	$3,266	$2,960	$85,155
18	$8,711	$35,880	$7,475	$6,359	$22,873	$3,364	$3,049	$87,709
19	$8,972	$36,956	$7,699	$6,549	$23,559	$3,465	$3,140	$90,341
20	$9,241	$38,065	$7,930	$6,746	$24,266	$3,569	$3,234	$93,051

21	$9,519	$39,207	$8,168	$6,948	$24,994	$3,676	$3,331	$95,843
22	$9,804	$40,383	$8,413	$7,157	$25,744	$3,786	$3,431	$98,718
23	$10,098	$41,594	$8,665	$7,371	$26,516	$3,899	$3,534	$101,679
24	$10,401	$42,842	$8,925	$7,592	$27,312	$4,016	$3,640	$104,730
25	$10,713	$44,127	$9,193	$7,820	$28,131	$4,137	$3,749	$107,872
26	$11,035	$45,451	$9,469	$8,055	$28,975	$4,261	$3,862	$111,108
27	$11,366	$46,815	$9,753	$8,296	$29,844	$4,389	$3,978	$114,441
28	$11,707	$48,219	$10,046	$8,545	$30,740	$4,521	$4,097	$117,874
29	$12,058	$49,666	$10,347	$8,802	$31,662	$4,656	$4,220	$121,410
30	$12,420	$51,156	$10,657	$9,066	$32,612	$4,796	$4,347	$125,053

Sub Watershed #303 Total Annual Cost Before Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$7,132	$29,376	$6,120	$5,206	$18,727	$2,754	$2,496	$71,811
2	$7,346	$30,257	$6,304	$5,362	$19,289	$2,837	$2,571	$73,965
3	$7,566	$31,165	$6,493	$5,523	$19,868	$2,922	$2,648	$76,184
4	$7,793	$32,100	$6,687	$5,689	$20,464	$3,009	$2,727	$78,470
5	$8,027	$33,063	$6,888	$5,859	$21,078	$3,100	$2,809	$80,824
6	$8,268	$34,055	$7,095	$6,035	$21,710	$3,193	$2,894	$83,249
7	$8,516	$35,076	$7,308	$6,216	$22,361	$3,288	$2,980	$85,746
8	$8,771	$36,129	$7,527	$6,403	$23,032	$3,387	$3,070	$88,319
9	$9,035	$37,213	$7,753	$6,595	$23,723	$3,489	$3,162	$90,968
10	$9,306	$38,329	$7,985	$6,793	$24,435	$3,593	$3,257	$93,697
11	$9,585	$39,479	$8,225	$6,996	$25,168	$3,701	$3,354	$96,508
12	$9,872	$40,663	$8,472	$7,206	$25,923	$3,812	$3,455	$99,403
13	$10,168	$41,883	$8,726	$7,422	$26,701	$3,927	$3,559	$102,386
14	$10,473	$43,140	$8,987	$7,645	$27,502	$4,044	$3,666	$105,457
15	$10,788	$44,434	$9,257	$7,875	$28,327	$4,166	$3,775	$108,621
16	$11,111	$45,767	$9,535	$8,111	$29,176	$4,291	$3,889	$111,879
17	$11,445	$47,140	$9,821	$8,354	$30,052	$4,419	$4,005	$115,236
18	$11,788	$48,554	$10,115	$8,605	$30,953	$4,552	$4,126	$118,693
19	$12,142	$50,011	$10,419	$8,863	$31,882	$4,689	$4,249	$122,254
20	$12,506	$51,511	$10,731	$9,129	$32,838	$4,829	$4,377	$125,921
21	$12,881	$53,056	$11,053	$9,403	$33,823	$4,974	$4,508	$129,699
22	$13,268	$54,648	$11,385	$9,685	$34,838	$5,123	$4,643	$133,590
23	$13,666	$56,287	$11,727	$9,975	$35,883	$5,277	$4,783	$137,598
24	$14,076	$57,976	$12,078	$10,274	$36,960	$5,435	$4,926	$141,726
25	$14,498	$59,715	$12,441	$10,583	$38,069	$5,598	$5,074	$145,977
26	$14,933	$61,507	$12,814	$10,900	$39,211	$5,766	$5,226	$150,357
27	$15,381	$63,352	$13,198	$11,227	$40,387	$5,939	$5,383	$154,867
28	$15,842	$65,253	$13,594	$11,564	$41,599	$6,117	$5,544	$159,513
29	$16,317	$67,210	$14,002	$11,911	$42,846	$6,301	$5,711	$164,299
30	$16,807	$69,226	$14,422	$12,268	$44,132	$6,490	$5,882	$169,228

Sub Watershed #304 Total Annual Cost Before Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$2,989	$12,310	$2,565	$2,182	$7,848	$1,154	$1,046	$30,093
2	$3,078	$12,680	$2,642	$2,247	$8,083	$1,189	$1,077	$30,996
3	$3,171	$13,060	$2,721	$2,314	$8,326	$1,224	$1,110	$31,926
4	$3,266	$13,452	$2,802	$2,384	$8,576	$1,261	$1,143	$32,884
5	$3,364	$13,855	$2,887	$2,455	$8,833	$1,299	$1,177	$33,870
6	$3,465	$14,271	$2,973	$2,529	$9,098	$1,338	$1,213	$34,887
7	$3,569	$14,699	$3,062	$2,605	$9,371	$1,378	$1,249	$35,933
8	$3,676	$15,140	$3,154	$2,683	$9,652	$1,419	$1,286	$37,011
9	$3,786	$15,594	$3,249	$2,764	$9,941	$1,462	$1,325	$38,121
10	$3,900	$16,062	$3,346	$2,847	$10,240	$1,506	$1,365	$39,265
11	$4,017	$16,544	$3,447	$2,932	$10,547	$1,551	$1,406	$40,443
12	$4,137	$17,040	$3,550	$3,020	$10,863	$1,598	$1,448	$41,656
13	$4,261	$17,552	$3,657	$3,110	$11,189	$1,645	$1,491	$42,906
14	$4,389	$18,078	$3,766	$3,204	$11,525	$1,695	$1,536	$44,193
15	$4,521	$18,621	$3,879	$3,300	$11,871	$1,746	$1,582	$45,519
16	$4,656	$19,179	$3,996	$3,399	$12,227	$1,798	$1,630	$46,885
17	$4,796	$19,755	$4,116	$3,501	$12,594	$1,852	$1,679	$48,291
18	$4,940	$20,347	$4,239	$3,606	$12,971	$1,908	$1,729	$49,740
19	$5,088	$20,958	$4,366	$3,714	$13,360	$1,965	$1,781	$51,232
20	$5,241	$21,586	$4,497	$3,826	$13,761	$2,024	$1,834	$52,769
21	$5,398	$22,234	$4,632	$3,940	$14,174	$2,084	$1,889	$54,352
22	$5,560	$22,901	$4,771	$4,058	$14,599	$2,147	$1,946	$55,983
23	$5,727	$23,588	$4,914	$4,180	$15,037	$2,211	$2,004	$57,662
24	$5,899	$24,296	$5,062	$4,306	$15,488	$2,278	$2,064	$59,392
25	$6,075	$25,025	$5,213	$4,435	$15,953	$2,346	$2,126	$61,174
26	$6,258	$25,775	$5,370	$4,568	$16,432	$2,416	$2,190	$63,009
27	$6,445	$26,549	$5,531	$4,705	$16,925	$2,489	$2,256	$64,899
28	$6,639	$27,345	$5,697	$4,846	$17,432	$2,564	$2,323	$66,846
29	$6,838	$28,165	$5,868	$4,991	$17,955	$2,640	$2,393	$68,852
30	$7,043	$29,010	$6,044	$5,141	$18,494	$2,720	$2,465	$70,917
Sub Watershed #401 Total Annual Cost Before Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$4,091	$16,852	$3,511	$2,987	$10,743	$1,580	$1,432	$41,196
2	$4,214	$17,358	$3,616	$3,076	$11,066	$1,627	$1,475	$42,432
3	$4,341	$17,879	$3,725	$3,168	$11,398	$1,676	$1,519	$43,705
4	$4,471	$18,415	$3,836	$3,263	$11,740	$1,726	$1,565	$45,016
5	$4,605	$18,967	$3,952	$3,361	$12,092	$1,778	$1,612	$46,367

6	$4,743	$19,536	$4,070	$3,462	$12,454	$1,832	$1,660	$47,758
7	$4,885	$20,122	$4,192	$3,566	$12,828	$1,886	$1,710	$49,190
8	$5,032	$20,726	$4,318	$3,673	$13,213	$1,943	$1,761	$50,666
9	$5,183	$21,348	$4,447	$3,783	$13,609	$2,001	$1,814	$52,186
10	$5,338	$21,988	$4,581	$3,897	$14,018	$2,061	$1,868	$53,752
11	$5,499	$22,648	$4,718	$4,014	$14,438	$2,123	$1,924	$55,364
12	$5,663	$23,327	$4,860	$4,134	$14,871	$2,187	$1,982	$57,025
13	$5,833	$24,027	$5,006	$4,258	$15,317	$2,253	$2,042	$58,736
14	$6,008	$24,748	$5,156	$4,386	$15,777	$2,320	$2,103	$60,498
15	$6,189	$25,491	$5,311	$4,517	$16,250	$2,390	$2,166	$62,313
16	$6,374	$26,255	$5,470	$4,653	$16,738	$2,461	$2,231	$64,182
17	$6,566	$27,043	$5,634	$4,793	$17,240	$2,535	$2,298	$66,108
18	$6,762	$27,854	$5,803	$4,936	$17,757	$2,611	$2,367	$68,091
19	$6,965	$28,690	$5,977	$5,084	$18,290	$2,690	$2,438	$70,134
20	$7,174	$29,551	$6,156	$5,237	$18,838	$2,770	$2,511	$72,238
21	$7,390	$30,437	$6,341	$5,394	$19,404	$2,853	$2,586	$74,405
22	$7,611	$31,350	$6,531	$5,556	$19,986	$2,939	$2,664	$76,637
23	$7,840	$32,291	$6,727	$5,723	$20,585	$3,027	$2,744	$78,936
24	$8,075	$33,259	$6,929	$5,894	$21,203	$3,118	$2,826	$81,304
25	$8,317	$34,257	$7,137	$6,071	$21,839	$3,212	$2,911	$83,743
26	$8,567	$35,285	$7,351	$6,253	$22,494	$3,308	$2,998	$86,256
27	$8,824	$36,343	$7,572	$6,441	$23,169	$3,407	$3,088	$88,843
28	$9,088	$37,434	$7,799	$6,634	$23,864	$3,509	$3,181	$91,509
29	$9,361	$38,557	$8,033	$6,833	$24,580	$3,615	$3,276	$94,254
30	$9,642	$39,713	$8,274	$7,038	$25,317	$3,723	$3,374	$97,082

Sub Watershed #402 Total Annual Cost Before Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$2,410	$9,929	$2,068	$1,760	$6,329	$931	$844	$24,271
2	$2,483	$10,226	$2,130	$1,812	$6,519	$959	$869	$24,999
3	$2,557	$10,533	$2,194	$1,867	$6,715	$987	$895	$25,749
4	$2,634	$10,849	$2,260	$1,923	$6,916	$1,017	$922	$26,521
5	$2,713	$11,175	$2,328	$1,980	$7,124	$1,048	$949	$27,317
6	$2,794	$11,510	$2,398	$2,040	$7,338	$1,079	$978	$28,137
7	$2,878	$11,855	$2,470	$2,101	$7,558	$1,111	$1,007	$28,981
8	$2,965	$12,211	$2,544	$2,164	$7,784	$1,145	$1,038	$29,850
9	$3,054	$12,577	$2,620	$2,229	$8,018	$1,179	$1,069	$30,746
10	$3,145	$12,954	$2,699	$2,296	$8,258	$1,214	$1,101	$31,668
11	$3,239	$13,343	$2,780	$2,365	$8,506	$1,251	$1,134	$32,618
12	$3,337	$13,743	$2,863	$2,436	$8,761	$1,288	$1,168	$33,596
13	$3,437	$14,156	$2,949	$2,509	$9,024	$1,327	$1,203	$34,604
14	$3,540	$14,580	$3,038	$2,584	$9,295	$1,367	$1,239	$35,643
15	$3,646	$15,018	$3,129	$2,661	$9,574	$1,408	$1,276	$36,712

16	$3,755	$15,468	$3,223	$2,741	$9,861	$1,450	$1,314	$37,813
17	$3,868	$15,932	$3,319	$2,824	$10,157	$1,494	$1,354	$38,948
18	$3,984	$16,410	$3,419	$2,908	$10,462	$1,538	$1,394	$40,116
19	$4,104	$16,903	$3,521	$2,995	$10,775	$1,585	$1,436	$41,319
20	$4,227	$17,410	$3,627	$3,085	$11,099	$1,632	$1,479	$42,559
21	$4,354	$17,932	$3,736	$3,178	$11,432	$1,681	$1,524	$43,836
22	$4,484	$18,470	$3,848	$3,273	$11,775	$1,732	$1,569	$45,151
23	$4,619	$19,024	$3,963	$3,371	$12,128	$1,784	$1,616	$46,505
24	$4,757	$19,595	$4,082	$3,473	$12,492	$1,837	$1,665	$47,901
25	$4,900	$20,183	$4,205	$3,577	$12,866	$1,892	$1,715	$49,338
26	$5,047	$20,788	$4,331	$3,684	$13,252	$1,949	$1,766	$50,818
27	$5,198	$21,412	$4,461	$3,795	$13,650	$2,007	$1,819	$52,342
28	$5,354	$22,054	$4,595	$3,908	$14,060	$2,068	$1,874	$53,912
29	$5,515	$22,716	$4,732	$4,026	$14,481	$2,130	$1,930	$55,530
30	$5,680	$23,397	$4,874	$4,146	$14,916	$2,193	$1,988	$57,196

Sub Watershed #403 Total Annual Cost Before Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$1,644	$6,771	$1,411	$1,200	$4,317	$635	$575	$16,553
2	$1,693	$6,974	$1,453	$1,236	$4,446	$654	$593	$17,049
3	$1,744	$7,184	$1,497	$1,273	$4,580	$673	$610	$17,561
4	$1,796	$7,399	$1,541	$1,311	$4,717	$694	$629	$18,087
5	$1,850	$7,621	$1,588	$1,351	$4,858	$714	$648	$18,630
6	$1,906	$7,850	$1,635	$1,391	$5,004	$736	$667	$19,189
7	$1,963	$8,085	$1,684	$1,433	$5,154	$758	$687	$19,765
8	$2,022	$8,328	$1,735	$1,476	$5,309	$781	$708	$20,358
9	$2,082	$8,578	$1,787	$1,520	$5,468	$804	$729	$20,968
10	$2,145	$8,835	$1,841	$1,566	$5,632	$828	$751	$21,597
11	$2,209	$9,100	$1,896	$1,613	$5,801	$853	$773	$22,245
12	$2,276	$9,373	$1,953	$1,661	$5,975	$879	$796	$22,913
13	$2,344	$9,654	$2,011	$1,711	$6,154	$905	$820	$23,600
14	$2,414	$9,944	$2,072	$1,762	$6,339	$932	$845	$24,308
15	$2,487	$10,242	$2,134	$1,815	$6,529	$960	$870	$25,037
16	$2,561	$10,549	$2,198	$1,870	$6,725	$989	$896	$25,788
17	$2,638	$10,866	$2,264	$1,926	$6,927	$1,019	$923	$26,562
18	$2,717	$11,192	$2,332	$1,983	$7,135	$1,049	$951	$27,359
19	$2,799	$11,528	$2,402	$2,043	$7,349	$1,081	$979	$28,180
20	$2,883	$11,873	$2,474	$2,104	$7,569	$1,113	$1,009	$29,025
21	$2,969	$12,230	$2,548	$2,167	$7,796	$1,147	$1,039	$29,896
22	$3,058	$12,596	$2,624	$2,232	$8,030	$1,181	$1,070	$30,793
23	$3,150	$12,974	$2,703	$2,299	$8,271	$1,216	$1,102	$31,716
24	$3,244	$13,364	$2,784	$2,368	$8,519	$1,253	$1,135	$32,668
25	$3,342	$13,764	$2,868	$2,439	$8,775	$1,290	$1,170	$33,648

26	$3,442	$14,177	$2,954	$2,512	$9,038	$1,329	$1,205	$34,657
27	$3,545	$14,603	$3,042	$2,588	$9,309	$1,369	$1,241	$35,697
28	$3,652	$15,041	$3,133	$2,666	$9,589	$1,410	$1,278	$36,768
29	$3,761	$15,492	$3,228	$2,745	$9,876	$1,452	$1,316	$37,871
30	$3,874	$15,957	$3,324	$2,828	$10,172	$1,496	$1,356	$39,007

Sub Watershed #404 Total Annual Cost After Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$1,807	$6,102	$254	$1,081	$3,890	$572	$1,037	$14,745
2	$1,862	$6,285	$262	$1,114	$4,007	$589	$1,068	$15,187
3	$1,918	$6,474	$270	$1,147	$4,127	$607	$1,100	$15,643
4	$1,975	$6,668	$278	$1,182	$4,251	$625	$1,133	$16,112
5	$2,034	$6,868	$286	$1,217	$4,379	$644	$1,167	$16,596
6	$2,095	$7,074	$295	$1,254	$4,510	$663	$1,202	$17,094
7	$2,158	$7,287	$304	$1,291	$4,645	$683	$1,238	$17,606
8	$2,223	$7,505	$313	$1,330	$4,785	$704	$1,275	$18,135
9	$2,290	$7,730	$322	$1,370	$4,928	$725	$1,314	$18,679
10	$2,358	$7,962	$332	$1,411	$5,076	$746	$1,353	$19,239
11	$2,429	$8,201	$342	$1,453	$5,228	$769	$1,394	$19,816
12	$2,502	$8,447	$352	$1,497	$5,385	$792	$1,435	$20,411
13	$2,577	$8,701	$363	$1,542	$5,547	$816	$1,479	$21,023
14	$2,654	$8,962	$373	$1,588	$5,713	$840	$1,523	$21,654
15	$2,734	$9,230	$385	$1,636	$5,884	$865	$1,569	$22,303
16	$2,816	$9,507	$396	$1,685	$6,061	$891	$1,616	$22,972
17	$2,900	$9,793	$408	$1,735	$6,243	$918	$1,664	$23,661
18	$2,988	$10,086	$420	$1,787	$6,430	$946	$1,714	$24,371
19	$3,077	$10,389	$433	$1,841	$6,623	$974	$1,765	$25,102
20	$3,169	$10,701	$446	$1,896	$6,822	$1,003	$1,818	$25,855
21	$3,265	$11,022	$459	$1,953	$7,026	$1,033	$1,873	$26,631
22	$3,362	$11,352	$473	$2,012	$7,237	$1,064	$1,929	$27,430
23	$3,463	$11,693	$487	$2,072	$7,454	$1,096	$1,987	$28,253
24	$3,567	$12,044	$502	$2,134	$7,678	$1,129	$2,047	$29,101
25	$3,674	$12,405	$517	$2,198	$7,908	$1,163	$2,108	$29,974
26	$3,784	$12,777	$532	$2,264	$8,145	$1,198	$2,171	$30,873
27	$3,898	$13,160	$548	$2,332	$8,390	$1,234	$2,236	$31,799
28	$4,015	$13,555	$565	$2,402	$8,641	$1,271	$2,304	$32,753
29	$4,135	$13,962	$582	$2,474	$8,901	$1,309	$2,373	$33,736
30	$4,259	$14,381	$599	$2,549	$9,168	$1,348	$2,444	$34,748
Sub Watershed #405 Total Annual Cost After Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**

1	$1,950	$6,582	$274	$1,167	$4,196	$617	$1,119	$15,905
2	$2,008	$6,780	$282	$1,202	$4,322	$636	$1,152	$16,382
3	$2,068	$6,983	$291	$1,238	$4,452	$655	$1,187	$16,873
4	$2,130	$7,193	$300	$1,275	$4,585	$674	$1,222	$17,380
5	$2,194	$7,409	$309	$1,313	$4,723	$695	$1,259	$17,901
6	$2,260	$7,631	$318	$1,352	$4,865	$715	$1,297	$18,438
7	$2,328	$7,860	$327	$1,393	$5,011	$737	$1,336	$18,991
8	$2,398	$8,096	$337	$1,435	$5,161	$759	$1,376	$19,561
9	$2,470	$8,338	$347	$1,478	$5,316	$782	$1,417	$20,148
10	$2,544	$8,589	$358	$1,522	$5,475	$805	$1,460	$20,752
11	$2,620	$8,846	$369	$1,568	$5,639	$829	$1,503	$21,375
12	$2,699	$9,112	$380	$1,615	$5,809	$854	$1,548	$22,016
13	$2,780	$9,385	$391	$1,663	$5,983	$880	$1,595	$22,676
14	$2,863	$9,666	$403	$1,713	$6,162	$906	$1,643	$23,357
15	$2,949	$9,956	$415	$1,764	$6,347	$933	$1,692	$24,057
16	$3,038	$10,255	$427	$1,817	$6,538	$961	$1,743	$24,779
17	$3,129	$10,563	$440	$1,872	$6,734	$990	$1,795	$25,523
18	$3,222	$10,880	$453	$1,928	$6,936	$1,020	$1,849	$26,288
19	$3,319	$11,206	$467	$1,986	$7,144	$1,051	$1,904	$27,077
20	$3,419	$11,542	$481	$2,046	$7,358	$1,082	$1,961	$27,889
21	$3,521	$11,889	$495	$2,107	$7,579	$1,115	$2,020	$28,726
22	$3,627	$12,245	$510	$2,170	$7,806	$1,148	$2,081	$29,588
23	$3,736	$12,613	$526	$2,235	$8,041	$1,182	$2,143	$30,475
24	$3,848	$12,991	$541	$2,302	$8,282	$1,218	$2,208	$31,390
25	$3,963	$13,381	$558	$2,371	$8,530	$1,254	$2,274	$32,331
26	$4,082	$13,782	$574	$2,442	$8,786	$1,292	$2,342	$33,301
27	$4,205	$14,196	$591	$2,516	$9,050	$1,331	$2,412	$34,300
28	$4,331	$14,621	$609	$2,591	$9,321	$1,371	$2,485	$35,329
29	$4,461	$15,060	$628	$2,669	$9,601	$1,412	$2,559	$36,389
30	$4,595	$15,512	$646	$2,749	$9,889	$1,454	$2,636	$37,481

Sub Watershed #501 Total Annual Cost After Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$1,470	$4,962	$207	$879	$3,163	$465	$843	$11,990
2	$1,514	$5,111	$213	$906	$3,258	$479	$869	$12,350
3	$1,559	$5,264	$219	$933	$3,356	$494	$895	$12,720
4	$1,606	$5,422	$226	$961	$3,457	$508	$921	$13,102
5	$1,654	$5,585	$233	$990	$3,560	$524	$949	$13,495
6	$1,704	$5,752	$240	$1,019	$3,667	$539	$978	$13,900
7	$1,755	$5,925	$247	$1,050	$3,777	$555	$1,007	$14,316
8	$1,808	$6,103	$254	$1,082	$3,891	$572	$1,037	$14,746
9	$1,862	$6,286	$262	$1,114	$4,007	$589	$1,068	$15,188
10	$1,918	$6,474	$270	$1,147	$4,127	$607	$1,100	$15,644

11	$1,975	$6,669	$278	$1,182	$4,251	$625	$1,133	$16,113
12	$2,034	$6,869	$286	$1,217	$4,379	$644	$1,167	$16,597
13	$2,096	$7,075	$295	$1,254	$4,510	$663	$1,202	$17,095
14	$2,158	$7,287	$304	$1,291	$4,646	$683	$1,238	$17,607
15	$2,223	$7,506	$313	$1,330	$4,785	$704	$1,275	$18,136
16	$2,290	$7,731	$322	$1,370	$4,928	$725	$1,314	$18,680
17	$2,359	$7,963	$332	$1,411	$5,076	$747	$1,353	$19,240
18	$2,429	$8,202	$342	$1,453	$5,229	$769	$1,394	$19,817
19	$2,502	$8,448	$352	$1,497	$5,385	$792	$1,436	$20,412
20	$2,577	$8,701	$363	$1,542	$5,547	$816	$1,479	$21,024
21	$2,655	$8,962	$373	$1,588	$5,713	$840	$1,523	$21,655
22	$2,734	$9,231	$385	$1,636	$5,885	$865	$1,569	$22,305
23	$2,816	$9,508	$396	$1,685	$6,061	$891	$1,616	$22,974
24	$2,901	$9,793	$408	$1,736	$6,243	$918	$1,664	$23,663
25	$2,988	$10,087	$420	$1,788	$6,430	$946	$1,714	$24,373
26	$3,077	$10,390	$433	$1,841	$6,623	$974	$1,766	$25,104
27	$3,170	$10,701	$446	$1,896	$6,822	$1,003	$1,819	$25,857
28	$3,265	$11,022	$459	$1,953	$7,027	$1,033	$1,873	$26,633
29	$3,363	$11,353	$473	$2,012	$7,238	$1,064	$1,929	$27,432
30	$3,464	$11,694	$487	$2,072	$7,455	$1,096	$1,987	$28,255

Sub Watershed #502 Total Annual Cost After Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$1,417	$4,784	$199	$848	$3,050	$449	$813	$11,559
2	$1,459	$4,928	$205	$873	$3,141	$462	$837	$11,906
3	$1,503	$5,075	$211	$899	$3,236	$476	$862	$12,263
4	$1,548	$5,228	$218	$926	$3,333	$490	$888	$12,631
5	$1,595	$5,384	$224	$954	$3,433	$505	$915	$13,010
6	$1,643	$5,546	$231	$983	$3,536	$520	$942	$13,401
7	$1,692	$5,712	$238	$1,012	$3,642	$536	$971	$13,803
8	$1,743	$5,884	$245	$1,043	$3,751	$552	$1,000	$14,217
9	$1,795	$6,060	$253	$1,074	$3,863	$568	$1,030	$14,643
10	$1,849	$6,242	$260	$1,106	$3,979	$585	$1,061	$15,082
11	$1,904	$6,429	$268	$1,139	$4,099	$603	$1,093	$15,535
12	$1,961	$6,622	$276	$1,174	$4,222	$621	$1,125	$16,001
13	$2,020	$6,821	$284	$1,209	$4,348	$639	$1,159	$16,481
14	$2,081	$7,025	$293	$1,245	$4,479	$659	$1,194	$16,975
15	$2,143	$7,236	$302	$1,282	$4,613	$678	$1,230	$17,485
16	$2,208	$7,453	$311	$1,321	$4,751	$699	$1,267	$18,009
17	$2,274	$7,677	$320	$1,360	$4,894	$720	$1,305	$18,549
18	$2,342	$7,907	$329	$1,401	$5,041	$741	$1,344	$19,106
19	$2,412	$8,144	$339	$1,443	$5,192	$764	$1,384	$19,679
20	$2,485	$8,389	$350	$1,487	$5,348	$786	$1,426	$20,270

21	$2,559	$8,640	$360	$1,531	$5,508	$810	$1,468	$20,878
22	$2,636	$8,900	$371	$1,577	$5,674	$834	$1,512	$21,504
23	$2,715	$9,167	$382	$1,625	$5,844	$859	$1,558	$22,149
24	$2,797	$9,442	$393	$1,673	$6,019	$885	$1,604	$22,814
25	$2,880	$9,725	$405	$1,723	$6,200	$912	$1,653	$23,498
26	$2,967	$10,017	$417	$1,775	$6,386	$939	$1,702	$24,203
27	$3,056	$10,317	$430	$1,828	$6,577	$967	$1,753	$24,929
28	$3,148	$10,627	$443	$1,883	$6,774	$996	$1,806	$25,677
29	$3,242	$10,945	$456	$1,940	$6,978	$1,026	$1,860	$26,447
30	$3,339	$11,274	$470	$1,998	$7,187	$1,057	$1,916	$27,241

Sub Watershed #503 Total Annual Cost After Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$2,024	$6,833	$285	$1,211	$4,356	$641	$1,161	$16,511
2	$2,085	$7,038	$293	$1,247	$4,487	$660	$1,196	$17,006
3	$2,147	$7,249	$302	$1,285	$4,621	$680	$1,232	$17,516
4	$2,212	$7,467	$311	$1,323	$4,760	$700	$1,269	$18,041
5	$2,278	$7,691	$320	$1,363	$4,903	$721	$1,307	$18,583
6	$2,346	$7,921	$330	$1,404	$5,050	$743	$1,346	$19,140
7	$2,417	$8,159	$340	$1,446	$5,201	$765	$1,387	$19,714
8	$2,489	$8,404	$350	$1,489	$5,357	$788	$1,428	$20,306
9	$2,564	$8,656	$361	$1,534	$5,518	$811	$1,471	$20,915
10	$2,641	$8,916	$371	$1,580	$5,684	$836	$1,515	$21,542
11	$2,720	$9,183	$383	$1,627	$5,854	$861	$1,561	$22,189
12	$2,802	$9,459	$394	$1,676	$6,030	$887	$1,607	$22,854
13	$2,886	$9,742	$406	$1,727	$6,211	$913	$1,656	$23,540
14	$2,972	$10,035	$418	$1,778	$6,397	$941	$1,705	$24,246
15	$3,061	$10,336	$431	$1,832	$6,589	$969	$1,756	$24,974
16	$3,153	$10,646	$444	$1,887	$6,787	$998	$1,809	$25,723
17	$3,248	$10,965	$457	$1,943	$6,990	$1,028	$1,863	$26,495
18	$3,345	$11,294	$471	$2,002	$7,200	$1,059	$1,919	$27,289
19	$3,446	$11,633	$485	$2,062	$7,416	$1,091	$1,977	$28,108
20	$3,549	$11,982	$499	$2,123	$7,638	$1,123	$2,036	$28,951
21	$3,655	$12,341	$514	$2,187	$7,868	$1,157	$2,097	$29,820
22	$3,765	$12,712	$530	$2,253	$8,104	$1,192	$2,160	$30,714
23	$3,878	$13,093	$546	$2,320	$8,347	$1,227	$2,225	$31,636
24	$3,994	$13,486	$562	$2,390	$8,597	$1,264	$2,292	$32,585
25	$4,114	$13,890	$579	$2,462	$8,855	$1,302	$2,360	$33,562
26	$4,238	$14,307	$596	$2,535	$9,121	$1,341	$2,431	$34,569
27	$4,365	$14,736	$614	$2,612	$9,394	$1,382	$2,504	$35,606
28	$4,496	$15,178	$632	$2,690	$9,676	$1,423	$2,579	$36,675
29	$4,631	$15,634	$651	$2,771	$9,966	$1,466	$2,657	$37,775
30	$4,769	$16,103	$671	$2,854	$10,265	$1,510	$2,736	$38,908

Sub Watershed #504 Total Annual Cost After Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$1,618	$5,464	$228	$968	$3,483	$512	$929	$13,202
2	$1,667	$5,628	$234	$997	$3,588	$528	$956	$13,599
3	$1,717	$5,797	$242	$1,027	$3,695	$543	$985	$14,007
4	$1,768	$5,971	$249	$1,058	$3,806	$560	$1,015	$14,427
5	$1,822	$6,150	$256	$1,090	$3,920	$577	$1,045	$14,860
6	$1,876	$6,334	$264	$1,123	$4,038	$594	$1,076	$15,305
7	$1,932	$6,524	$272	$1,156	$4,159	$612	$1,109	$15,764
8	$1,990	$6,720	$280	$1,191	$4,284	$630	$1,142	$16,237
9	$2,050	$6,922	$288	$1,227	$4,413	$649	$1,176	$16,725
10	$2,112	$7,129	$297	$1,263	$4,545	$668	$1,212	$17,226
11	$2,175	$7,343	$306	$1,301	$4,681	$688	$1,248	$17,743
12	$2,240	$7,563	$315	$1,340	$4,822	$709	$1,285	$18,275
13	$2,307	$7,790	$325	$1,381	$4,966	$730	$1,324	$18,824
14	$2,377	$8,024	$334	$1,422	$5,115	$752	$1,364	$19,388
15	$2,448	$8,265	$344	$1,465	$5,269	$775	$1,404	$19,970
16	$2,521	$8,513	$355	$1,509	$5,427	$798	$1,447	$20,569
17	$2,597	$8,768	$365	$1,554	$5,590	$822	$1,490	$21,186
18	$2,675	$9,031	$376	$1,600	$5,757	$847	$1,535	$21,822
19	$2,755	$9,302	$388	$1,649	$5,930	$872	$1,581	$22,476
20	$2,838	$9,581	$399	$1,698	$6,108	$898	$1,628	$23,151
21	$2,923	$9,869	$411	$1,749	$6,291	$925	$1,677	$23,845
22	$3,011	$10,165	$424	$1,801	$6,480	$953	$1,727	$24,560
23	$3,101	$10,470	$436	$1,855	$6,674	$982	$1,779	$25,297
24	$3,194	$10,784	$449	$1,911	$6,875	$1,011	$1,833	$26,056
25	$3,290	$11,107	$463	$1,968	$7,081	$1,041	$1,888	$26,838
26	$3,389	$11,440	$477	$2,027	$7,293	$1,073	$1,944	$27,643
27	$3,490	$11,784	$491	$2,088	$7,512	$1,105	$2,002	$28,472
28	$3,595	$12,137	$506	$2,151	$7,737	$1,138	$2,063	$29,327
29	$3,703	$12,501	$521	$2,215	$7,970	$1,172	$2,124	$30,206
30	$3,814	$12,876	$537	$2,282	$8,209	$1,207	$2,188	$31,113
Sub Watershed #505 Total Annual Cost After Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$1,552	$5,241	$218	$929	$3,341	$491	$891	$12,663
2	$1,599	$5,398	$225	$957	$3,441	$506	$917	$13,042
3	$1,647	$5,560	$232	$985	$3,544	$521	$945	$13,434
4	$1,696	$5,726	$239	$1,015	$3,651	$537	$973	$13,837
5	$1,747	$5,898	$246	$1,045	$3,760	$553	$1,002	$14,252

6	$1,799	$6,075	$253	$1,077	$3,873	$570	$1,032	$14,679
7	$1,853	$6,257	$261	$1,109	$3,989	$587	$1,063	$15,120
8	$1,909	$6,445	$269	$1,142	$4,109	$604	$1,095	$15,573
9	$1,966	$6,639	$277	$1,176	$4,232	$622	$1,128	$16,041
10	$2,025	$6,838	$285	$1,212	$4,359	$641	$1,162	$16,522
11	$2,086	$7,043	$293	$1,248	$4,490	$660	$1,197	$17,017
12	$2,149	$7,254	$302	$1,286	$4,625	$680	$1,233	$17,528
13	$2,213	$7,472	$311	$1,324	$4,763	$700	$1,270	$18,054
14	$2,279	$7,696	$321	$1,364	$4,906	$721	$1,308	$18,595
15	$2,348	$7,927	$330	$1,405	$5,053	$743	$1,347	$19,153
16	$2,418	$8,165	$340	$1,447	$5,205	$765	$1,387	$19,728
17	$2,491	$8,410	$350	$1,490	$5,361	$788	$1,429	$20,320
18	$2,566	$8,662	$361	$1,535	$5,522	$812	$1,472	$20,929
19	$2,643	$8,922	$372	$1,581	$5,688	$836	$1,516	$21,557
20	$2,722	$9,189	$383	$1,629	$5,858	$861	$1,562	$22,204
21	$2,803	$9,465	$394	$1,677	$6,034	$887	$1,608	$22,870
22	$2,888	$9,749	$406	$1,728	$6,215	$914	$1,657	$23,556
23	$2,974	$10,041	$418	$1,780	$6,401	$941	$1,706	$24,263
24	$3,063	$10,343	$431	$1,833	$6,593	$970	$1,758	$24,991
25	$3,155	$10,653	$444	$1,888	$6,791	$999	$1,810	$25,740
26	$3,250	$10,973	$457	$1,945	$6,995	$1,029	$1,865	$26,513
27	$3,347	$11,302	$471	$2,003	$7,205	$1,060	$1,921	$27,308
28	$3,448	$11,641	$485	$2,063	$7,421	$1,091	$1,978	$28,127
29	$3,551	$11,990	$500	$2,125	$7,644	$1,124	$2,038	$28,971
30	$3,658	$12,350	$515	$2,189	$7,873	$1,158	$2,099	$29,840

Sub Watershed #506 Total Annual Cost After Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$1,205	$4,068	$170	$721	$2,594	$381	$691	$9,830
2	$1,241	$4,190	$175	$743	$2,671	$393	$712	$10,125
3	$1,278	$4,316	$180	$765	$2,751	$405	$733	$10,429
4	$1,317	$4,446	$185	$788	$2,834	$417	$755	$10,742
5	$1,356	$4,579	$191	$811	$2,919	$429	$778	$11,064
6	$1,397	$4,716	$197	$836	$3,007	$442	$801	$11,396
7	$1,439	$4,858	$202	$861	$3,097	$455	$826	$11,738
8	$1,482	$5,003	$208	$887	$3,190	$469	$850	$12,090
9	$1,526	$5,154	$215	$913	$3,285	$483	$876	$12,452
10	$1,572	$5,308	$221	$941	$3,384	$498	$902	$12,826
11	$1,619	$5,467	$228	$969	$3,485	$513	$929	$13,211
12	$1,668	$5,631	$235	$998	$3,590	$528	$957	$13,607
13	$1,718	$5,800	$242	$1,028	$3,698	$544	$986	$14,015
14	$1,770	$5,974	$249	$1,059	$3,809	$560	$1,015	$14,436
15	$1,823	$6,154	$256	$1,091	$3,923	$577	$1,046	$14,869

16	$1,877	$6,338	$264	$1,123	$4,041	$594	$1,077	$15,315
17	$1,934	$6,528	$272	$1,157	$4,162	$612	$1,109	$15,774
18	$1,992	$6,724	$280	$1,192	$4,287	$630	$1,143	$16,248
19	$2,051	$6,926	$289	$1,227	$4,415	$649	$1,177	$16,735
20	$2,113	$7,134	$297	$1,264	$4,548	$669	$1,212	$17,237
21	$2,176	$7,348	$306	$1,302	$4,684	$689	$1,249	$17,754
22	$2,242	$7,568	$315	$1,341	$4,825	$710	$1,286	$18,287
23	$2,309	$7,795	$325	$1,381	$4,969	$731	$1,325	$18,835
24	$2,378	$8,029	$335	$1,423	$5,119	$753	$1,364	$19,400
25	$2,450	$8,270	$345	$1,466	$5,272	$775	$1,405	$19,982
26	$2,523	$8,518	$355	$1,510	$5,430	$799	$1,448	$20,582
27	$2,599	$8,774	$366	$1,555	$5,593	$823	$1,491	$21,199
28	$2,677	$9,037	$377	$1,601	$5,761	$847	$1,536	$21,835
29	$2,757	$9,308	$388	$1,650	$5,934	$873	$1,582	$22,490
30	$2,840	$9,587	$399	$1,699	$6,112	$899	$1,629	$23,165

Sub Watershed #507 Total Annual Cost After Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$1,518	$5,124	$214	$908	$3,267	$480	$871	$12,382
2	$1,563	$5,278	$220	$935	$3,365	$495	$897	$12,753
3	$1,610	$5,436	$227	$963	$3,466	$510	$924	$13,136
4	$1,659	$5,599	$233	$992	$3,570	$525	$952	$13,530
5	$1,708	$5,767	$240	$1,022	$3,677	$541	$980	$13,936
6	$1,760	$5,940	$248	$1,053	$3,787	$557	$1,010	$14,354
7	$1,812	$6,119	$255	$1,084	$3,901	$574	$1,040	$14,784
8	$1,867	$6,302	$263	$1,117	$4,018	$591	$1,071	$15,228
9	$1,923	$6,491	$270	$1,150	$4,138	$609	$1,103	$15,685
10	$1,980	$6,686	$279	$1,185	$4,262	$627	$1,136	$16,155
11	$2,040	$6,887	$287	$1,220	$4,390	$646	$1,170	$16,640
12	$2,101	$7,093	$296	$1,257	$4,522	$665	$1,205	$17,139
13	$2,164	$7,306	$304	$1,295	$4,658	$685	$1,242	$17,653
14	$2,229	$7,525	$314	$1,334	$4,797	$705	$1,279	$18,183
15	$2,296	$7,751	$323	$1,374	$4,941	$727	$1,317	$18,728
16	$2,365	$7,983	$333	$1,415	$5,089	$748	$1,357	$19,290
17	$2,436	$8,223	$343	$1,457	$5,242	$771	$1,397	$19,869
18	$2,509	$8,470	$353	$1,501	$5,399	$794	$1,439	$20,465
19	$2,584	$8,724	$363	$1,546	$5,561	$818	$1,482	$21,079
20	$2,661	$8,985	$374	$1,592	$5,728	$842	$1,527	$21,711
21	$2,741	$9,255	$386	$1,640	$5,900	$868	$1,573	$22,363
22	$2,824	$9,533	$397	$1,689	$6,077	$894	$1,620	$23,033
23	$2,908	$9,819	$409	$1,740	$6,259	$920	$1,669	$23,724
24	$2,995	$10,113	$421	$1,792	$6,447	$948	$1,719	$24,436
25	$3,085	$10,417	$434	$1,846	$6,641	$977	$1,770	$25,169

26	$3,178	$10,729	$447	$1,901	$6,840	$1,006	$1,823	$25,924
27	$3,273	$11,051	$460	$1,958	$7,045	$1,036	$1,878	$26,702
28	$3,371	$11,382	$474	$2,017	$7,256	$1,067	$1,934	$27,503
29	$3,473	$11,724	$488	$2,078	$7,474	$1,099	$1,992	$28,328
30	$3,577	$12,076	$503	$2,140	$7,698	$1,132	$2,052	$29,178
Sub Watershed #107 Total Annual Cost After Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$1,498	$5,056	$211	$896	$3,223	$474	$859	$12,217
2	$1,542	$5,208	$217	$923	$3,320	$488	$885	$12,583
3	$1,589	$5,364	$223	$951	$3,419	$503	$912	$12,961
4	$1,636	$5,525	$230	$979	$3,522	$518	$939	$13,349
5	$1,686	$5,691	$237	$1,008	$3,628	$533	$967	$13,750
6	$1,736	$5,861	$244	$1,039	$3,737	$549	$996	$14,162
7	$1,788	$6,037	$252	$1,070	$3,849	$566	$1,026	$14,587
8	$1,842	$6,218	$259	$1,102	$3,964	$583	$1,057	$15,025
9	$1,897	$6,405	$267	$1,135	$4,083	$600	$1,088	$15,476
10	$1,954	$6,597	$275	$1,169	$4,206	$618	$1,121	$15,940
11	$2,013	$6,795	$283	$1,204	$4,332	$637	$1,155	$16,418
12	$2,073	$6,999	$292	$1,240	$4,462	$656	$1,189	$16,911
13	$2,135	$7,209	$300	$1,278	$4,596	$676	$1,225	$17,418
14	$2,199	$7,425	$309	$1,316	$4,733	$696	$1,262	$17,941
15	$2,265	$7,648	$319	$1,355	$4,875	$717	$1,300	$18,479
16	$2,333	$7,877	$328	$1,396	$5,022	$738	$1,339	$19,033
17	$2,403	$8,113	$338	$1,438	$5,172	$761	$1,379	$19,604
18	$2,475	$8,357	$348	$1,481	$5,327	$783	$1,420	$20,192
19	$2,549	$8,608	$359	$1,525	$5,487	$807	$1,463	$20,798
20	$2,626	$8,866	$369	$1,571	$5,652	$831	$1,507	$21,422
21	$2,705	$9,132	$380	$1,618	$5,821	$856	$1,552	$22,065
22	$2,786	$9,406	$392	$1,667	$5,996	$882	$1,598	$22,727
23	$2,869	$9,688	$404	$1,717	$6,176	$908	$1,646	$23,408
24	$2,956	$9,978	$416	$1,768	$6,361	$935	$1,696	$24,111
25	$3,044	$10,278	$428	$1,821	$6,552	$964	$1,747	$24,834
26	$3,136	$10,586	$441	$1,876	$6,749	$992	$1,799	$25,579
27	$3,230	$10,904	$454	$1,932	$6,951	$1,022	$1,853	$26,346
28	$3,326	$11,231	$468	$1,990	$7,160	$1,053	$1,909	$27,137
29	$3,426	$11,568	$482	$2,050	$7,374	$1,084	$1,966	$27,951
30	$3,529	$11,915	$496	$2,112	$7,596	$1,117	$2,025	$28,789
Sub Watershed #201 Total Annual Cost After Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**

1	$1,111	$3,750	$156	$665	$2,391	$352	$637	$9,061
2	$1,144	$3,862	$161	$684	$2,462	$362	$656	$9,332
3	$1,178	$3,978	$166	$705	$2,536	$373	$676	$9,612
4	$1,214	$4,098	$171	$726	$2,612	$384	$696	$9,901
5	$1,250	$4,221	$176	$748	$2,691	$396	$717	$10,198
6	$1,288	$4,347	$181	$770	$2,771	$408	$739	$10,504
7	$1,326	$4,478	$187	$794	$2,854	$420	$761	$10,819
8	$1,366	$4,612	$192	$817	$2,940	$432	$784	$11,143
9	$1,407	$4,750	$198	$842	$3,028	$445	$807	$11,478
10	$1,449	$4,893	$204	$867	$3,119	$459	$831	$11,822
11	$1,493	$5,040	$210	$893	$3,213	$472	$856	$12,177
12	$1,537	$5,191	$216	$920	$3,309	$487	$882	$12,542
13	$1,584	$5,346	$223	$947	$3,408	$501	$909	$12,918
14	$1,631	$5,507	$229	$976	$3,511	$516	$936	$13,306
15	$1,680	$5,672	$236	$1,005	$3,616	$532	$964	$13,705
16	$1,730	$5,842	$243	$1,035	$3,724	$548	$993	$14,116
17	$1,782	$6,017	$251	$1,066	$3,836	$564	$1,023	$14,540
18	$1,836	$6,198	$258	$1,098	$3,951	$581	$1,053	$14,976
19	$1,891	$6,384	$266	$1,131	$4,070	$598	$1,085	$15,425
20	$1,948	$6,575	$274	$1,165	$4,192	$616	$1,117	$15,888
21	$2,006	$6,773	$282	$1,200	$4,318	$635	$1,151	$16,365
22	$2,066	$6,976	$291	$1,236	$4,447	$654	$1,185	$16,856
23	$2,128	$7,185	$299	$1,273	$4,581	$674	$1,221	$17,361
24	$2,192	$7,401	$308	$1,312	$4,718	$694	$1,258	$17,882
25	$2,258	$7,623	$318	$1,351	$4,859	$715	$1,295	$18,418
26	$2,326	$7,851	$327	$1,391	$5,005	$736	$1,334	$18,971
27	$2,395	$8,087	$337	$1,433	$5,155	$758	$1,374	$19,540
28	$2,467	$8,330	$347	$1,476	$5,310	$781	$1,416	$20,126
29	$2,541	$8,579	$357	$1,520	$5,469	$804	$1,458	$20,730
30	$2,617	$8,837	$368	$1,566	$5,633	$828	$1,502	$21,352
Sub Watershed #203 Total Annual Cost After Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$1,203	$4,062	$169	$720	$2,590	$381	$690	$9,816
2	$1,239	$4,184	$174	$742	$2,667	$392	$711	$10,110
3	$1,277	$4,310	$180	$764	$2,747	$404	$732	$10,414
4	$1,315	$4,439	$185	$787	$2,830	$416	$754	$10,726
5	$1,354	$4,572	$191	$810	$2,915	$429	$777	$11,048
6	$1,395	$4,709	$196	$835	$3,002	$442	$800	$11,379
7	$1,437	$4,851	$202	$860	$3,092	$455	$824	$11,721
8	$1,480	$4,996	$208	$885	$3,185	$468	$849	$12,072
9	$1,524	$5,146	$214	$912	$3,281	$482	$875	$12,434
10	$1,570	$5,301	$221	$939	$3,379	$497	$901	$12,807

11	$1,617	$5,460	$227	$968	$3,480	$512	$928	$13,192
12	$1,666	$5,623	$234	$997	$3,585	$527	$956	$13,587
13	$1,716	$5,792	$241	$1,026	$3,692	$543	$984	$13,995
14	$1,767	$5,966	$249	$1,057	$3,803	$559	$1,014	$14,415
15	$1,820	$6,145	$256	$1,089	$3,917	$576	$1,044	$14,847
16	$1,875	$6,329	$264	$1,122	$4,035	$593	$1,076	$15,293
17	$1,931	$6,519	$272	$1,155	$4,156	$611	$1,108	$15,752
18	$1,989	$6,715	$280	$1,190	$4,281	$629	$1,141	$16,224
19	$2,048	$6,916	$288	$1,226	$4,409	$648	$1,175	$16,711
20	$2,110	$7,123	$297	$1,262	$4,541	$668	$1,211	$17,212
21	$2,173	$7,337	$306	$1,300	$4,677	$688	$1,247	$17,728
22	$2,238	$7,557	$315	$1,339	$4,818	$708	$1,284	$18,260
23	$2,306	$7,784	$324	$1,379	$4,962	$730	$1,323	$18,808
24	$2,375	$8,017	$334	$1,421	$5,111	$752	$1,362	$19,372
25	$2,446	$8,258	$344	$1,463	$5,264	$774	$1,403	$19,954
26	$2,519	$8,506	$354	$1,507	$5,422	$797	$1,445	$20,552
27	$2,595	$8,761	$365	$1,553	$5,585	$821	$1,489	$21,169
28	$2,673	$9,024	$376	$1,599	$5,753	$846	$1,533	$21,804
29	$2,753	$9,294	$387	$1,647	$5,925	$871	$1,579	$22,458
30	$2,836	$9,573	$399	$1,697	$6,103	$897	$1,627	$23,132

Sub Watershed #204 Total Annual Cost After Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$1,823	$6,155	$256	$1,091	$3,924	$577	$1,046	$14,873
2	$1,878	$6,340	$264	$1,124	$4,042	$594	$1,077	$15,319
3	$1,934	$6,530	$272	$1,157	$4,163	$612	$1,110	$15,778
4	$1,992	$6,726	$280	$1,192	$4,288	$631	$1,143	$16,252
5	$2,052	$6,928	$289	$1,228	$4,416	$649	$1,177	$16,739
6	$2,114	$7,136	$297	$1,265	$4,549	$669	$1,213	$17,241
7	$2,177	$7,350	$306	$1,302	$4,685	$689	$1,249	$17,759
8	$2,242	$7,570	$315	$1,342	$4,826	$710	$1,286	$18,291
9	$2,309	$7,797	$325	$1,382	$4,971	$731	$1,325	$18,840
10	$2,379	$8,031	$335	$1,423	$5,120	$753	$1,365	$19,405
11	$2,450	$8,272	$345	$1,466	$5,273	$776	$1,406	$19,988
12	$2,524	$8,520	$355	$1,510	$5,432	$799	$1,448	$20,587
13	$2,599	$8,776	$366	$1,555	$5,595	$823	$1,491	$21,205
14	$2,677	$9,039	$377	$1,602	$5,762	$847	$1,536	$21,841
15	$2,758	$9,310	$388	$1,650	$5,935	$873	$1,582	$22,496
16	$2,840	$9,590	$400	$1,699	$6,113	$899	$1,630	$23,171
17	$2,926	$9,877	$412	$1,750	$6,297	$926	$1,679	$23,866
18	$3,013	$10,174	$424	$1,803	$6,486	$954	$1,729	$24,582
19	$3,104	$10,479	$437	$1,857	$6,680	$982	$1,781	$25,320
20	$3,197	$10,793	$450	$1,913	$6,881	$1,012	$1,834	$26,079

21	$3,293	$11,117	$463	$1,970	$7,087	$1,042	$1,889	$26,862
22	$3,392	$11,450	$477	$2,029	$7,300	$1,073	$1,946	$27,667
23	$3,493	$11,794	$491	$2,090	$7,519	$1,106	$2,004	$28,497
24	$3,598	$12,148	$506	$2,153	$7,744	$1,139	$2,064	$29,352
25	$3,706	$12,512	$521	$2,217	$7,977	$1,173	$2,126	$30,233
26	$3,817	$12,888	$537	$2,284	$8,216	$1,208	$2,190	$31,140
27	$3,932	$13,274	$553	$2,352	$8,462	$1,244	$2,256	$32,074
28	$4,050	$13,672	$570	$2,423	$8,716	$1,282	$2,323	$33,036
29	$4,171	$14,083	$587	$2,496	$8,978	$1,320	$2,393	$34,027
30	$4,296	$14,505	$604	$2,571	$9,247	$1,360	$2,465	$35,048

Sub Watershed #205 Total Annual Cost After Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$1,697	$5,730	$239	$1,015	$3,653	$537	$974	$13,844
2	$1,748	$5,901	$246	$1,046	$3,762	$553	$1,003	$14,260
3	$1,800	$6,079	$253	$1,077	$3,875	$570	$1,033	$14,687
4	$1,854	$6,261	$261	$1,110	$3,991	$587	$1,064	$15,128
5	$1,910	$6,449	$269	$1,143	$4,111	$605	$1,096	$15,582
6	$1,967	$6,642	$277	$1,177	$4,234	$623	$1,129	$16,049
7	$2,026	$6,841	$285	$1,212	$4,361	$641	$1,163	$16,531
8	$2,087	$7,047	$294	$1,249	$4,492	$661	$1,197	$17,027
9	$2,150	$7,258	$302	$1,286	$4,627	$680	$1,233	$17,537
10	$2,214	$7,476	$311	$1,325	$4,766	$701	$1,270	$18,064
11	$2,281	$7,700	$321	$1,365	$4,909	$722	$1,309	$18,605
12	$2,349	$7,931	$330	$1,406	$5,056	$744	$1,348	$19,164
13	$2,420	$8,169	$340	$1,448	$5,208	$766	$1,388	$19,739
14	$2,492	$8,414	$351	$1,491	$5,364	$789	$1,430	$20,331
15	$2,567	$8,667	$361	$1,536	$5,525	$812	$1,473	$20,941
16	$2,644	$8,927	$372	$1,582	$5,691	$837	$1,517	$21,569
17	$2,723	$9,194	$383	$1,629	$5,861	$862	$1,562	$22,216
18	$2,805	$9,470	$395	$1,678	$6,037	$888	$1,609	$22,882
19	$2,889	$9,754	$406	$1,729	$6,218	$914	$1,658	$23,569
20	$2,976	$10,047	$419	$1,780	$6,405	$942	$1,707	$24,276
21	$3,065	$10,348	$431	$1,834	$6,597	$970	$1,759	$25,004
22	$3,157	$10,659	$444	$1,889	$6,795	$999	$1,811	$25,754
23	$3,252	$10,979	$457	$1,946	$6,999	$1,029	$1,866	$26,527
24	$3,349	$11,308	$471	$2,004	$7,209	$1,060	$1,922	$27,323
25	$3,450	$11,647	$485	$2,064	$7,425	$1,092	$1,979	$28,142
26	$3,553	$11,997	$500	$2,126	$7,648	$1,125	$2,039	$28,987
27	$3,660	$12,356	$515	$2,190	$7,877	$1,158	$2,100	$29,856
28	$3,770	$12,727	$530	$2,255	$8,114	$1,193	$2,163	$30,752
29	$3,883	$13,109	$546	$2,323	$8,357	$1,229	$2,228	$31,675
30	$3,999	$13,502	$563	$2,393	$8,608	$1,266	$2,295	$32,625

Sub Watershed #301 Total Annual Cost After Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$4,043	$13,650	$569	$2,419	$8,702	$1,280	$2,320	$32,982
2	$4,164	$14,060	$586	$2,492	$8,963	$1,318	$2,389	$33,972
3	$4,289	$14,481	$603	$2,566	$9,232	$1,358	$2,461	$34,991
4	$4,418	$14,916	$621	$2,643	$9,509	$1,398	$2,535	$36,041
5	$4,551	$15,363	$640	$2,723	$9,794	$1,440	$2,611	$37,122
6	$4,687	$15,824	$659	$2,804	$10,088	$1,484	$2,689	$38,236
7	$4,828	$16,299	$679	$2,888	$10,391	$1,528	$2,770	$39,383
8	$4,972	$16,788	$699	$2,975	$10,702	$1,574	$2,853	$40,564
9	$5,122	$17,292	$720	$3,064	$11,023	$1,621	$2,938	$41,781
10	$5,275	$17,810	$742	$3,156	$11,354	$1,670	$3,027	$43,034
11	$5,434	$18,345	$764	$3,251	$11,695	$1,720	$3,117	$44,326
12	$5,597	$18,895	$787	$3,349	$12,046	$1,771	$3,211	$45,655
13	$5,764	$19,462	$811	$3,449	$12,407	$1,825	$3,307	$47,025
14	$5,937	$20,046	$835	$3,552	$12,779	$1,879	$3,407	$48,436
15	$6,116	$20,647	$860	$3,659	$13,162	$1,936	$3,509	$49,889
16	$6,299	$21,266	$886	$3,769	$13,557	$1,994	$3,614	$51,385
17	$6,488	$21,904	$913	$3,882	$13,964	$2,054	$3,722	$52,927
18	$6,683	$22,562	$940	$3,998	$14,383	$2,115	$3,834	$54,515
19	$6,883	$23,238	$968	$4,118	$14,815	$2,179	$3,949	$56,150
20	$7,090	$23,936	$997	$4,242	$15,259	$2,244	$4,068	$57,835
21	$7,302	$24,654	$1,027	$4,369	$15,717	$2,311	$4,190	$59,570
22	$7,521	$25,393	$1,058	$4,500	$16,188	$2,381	$4,315	$61,357
23	$7,747	$26,155	$1,090	$4,635	$16,674	$2,452	$4,445	$63,198
24	$7,979	$26,940	$1,122	$4,774	$17,174	$2,526	$4,578	$65,094
25	$8,219	$27,748	$1,156	$4,917	$17,689	$2,601	$4,715	$67,046
26	$8,465	$28,580	$1,191	$5,065	$18,220	$2,679	$4,857	$69,058
27	$8,719	$29,438	$1,227	$5,217	$18,767	$2,760	$5,003	$71,129
28	$8,981	$30,321	$1,263	$5,373	$19,330	$2,843	$5,153	$73,263
29	$9,250	$31,231	$1,301	$5,535	$19,909	$2,928	$5,307	$75,461
30	$9,528	$32,167	$1,340	$5,701	$20,507	$3,016	$5,466	$77,725
Sub Watershed #302 Total Annual Cost After Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$3,215	$10,854	$452	$1,924	$6,919	$1,018	$1,844	$26,226
2	$3,311	$11,179	$466	$1,981	$7,127	$1,048	$1,900	$27,013
3	$3,411	$11,515	$480	$2,041	$7,341	$1,080	$1,957	$27,823
4	$3,513	$11,860	$494	$2,102	$7,561	$1,112	$2,016	$28,658
5	$3,618	$12,216	$509	$2,165	$7,788	$1,145	$2,076	$29,517

6	$3,727	$12,583	$524	$2,230	$8,021	$1,180	$2,138	$30,403
7	$3,839	$12,960	$540	$2,297	$8,262	$1,215	$2,202	$31,315
8	$3,954	$13,349	$556	$2,366	$8,510	$1,251	$2,268	$32,254
9	$4,072	$13,749	$573	$2,437	$8,765	$1,289	$2,337	$33,222
10	$4,195	$14,162	$590	$2,510	$9,028	$1,328	$2,407	$34,219
11	$4,320	$14,587	$608	$2,585	$9,299	$1,368	$2,479	$35,245
12	$4,450	$15,024	$626	$2,663	$9,578	$1,409	$2,553	$36,303
13	$4,584	$15,475	$645	$2,742	$9,865	$1,451	$2,630	$37,392
14	$4,721	$15,939	$664	$2,825	$10,161	$1,494	$2,709	$38,514
15	$4,863	$16,417	$684	$2,909	$10,466	$1,539	$2,790	$39,669
16	$5,009	$16,910	$705	$2,997	$10,780	$1,585	$2,874	$40,859
17	$5,159	$17,417	$726	$3,087	$11,104	$1,633	$2,960	$42,085
18	$5,314	$17,940	$747	$3,179	$11,437	$1,682	$3,049	$43,347
19	$5,473	$18,478	$770	$3,275	$11,780	$1,732	$3,140	$44,648
20	$5,637	$19,032	$793	$3,373	$12,133	$1,784	$3,234	$45,987
21	$5,806	$19,603	$817	$3,474	$12,497	$1,838	$3,331	$47,367
22	$5,981	$20,191	$841	$3,578	$12,872	$1,893	$3,431	$48,788
23	$6,160	$20,797	$867	$3,686	$13,258	$1,950	$3,534	$50,251
24	$6,345	$21,421	$893	$3,796	$13,656	$2,008	$3,640	$51,759
25	$6,535	$22,064	$919	$3,910	$14,066	$2,068	$3,749	$53,312
26	$6,731	$22,726	$947	$4,027	$14,488	$2,131	$3,862	$54,911
27	$6,933	$23,407	$975	$4,148	$14,922	$2,194	$3,978	$56,558
28	$7,141	$24,110	$1,005	$4,273	$15,370	$2,260	$4,097	$58,255
29	$7,355	$24,833	$1,035	$4,401	$15,831	$2,328	$4,220	$60,003
30	$7,576	$25,578	$1,066	$4,533	$16,306	$2,398	$4,347	$61,803

Sub Watershed #303 Total Annual Cost After Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$4,350	$14,688	$612	$2,603	$9,364	$1,377	$2,496	$35,490
2	$4,481	$15,129	$630	$2,681	$9,645	$1,418	$2,571	$36,555
3	$4,615	$15,582	$649	$2,762	$9,934	$1,461	$2,648	$37,651
4	$4,754	$16,050	$669	$2,844	$10,232	$1,505	$2,727	$38,781
5	$4,897	$16,531	$689	$2,930	$10,539	$1,550	$2,809	$39,944
6	$5,043	$17,027	$709	$3,018	$10,855	$1,596	$2,894	$41,143
7	$5,195	$17,538	$731	$3,108	$11,181	$1,644	$2,980	$42,377
8	$5,351	$18,064	$753	$3,201	$11,516	$1,694	$3,070	$43,648
9	$5,511	$18,606	$775	$3,297	$11,862	$1,744	$3,162	$44,958
10	$5,676	$19,165	$799	$3,396	$12,217	$1,797	$3,257	$46,307
11	$5,847	$19,739	$822	$3,498	$12,584	$1,851	$3,354	$47,696
12	$6,022	$20,332	$847	$3,603	$12,961	$1,906	$3,455	$49,127
13	$6,203	$20,942	$873	$3,711	$13,350	$1,963	$3,559	$50,600
14	$6,389	$21,570	$899	$3,823	$13,751	$2,022	$3,666	$52,118
15	$6,580	$22,217	$926	$3,937	$14,163	$2,083	$3,775	$53,682

16	$6,778	$22,883	$953	$4,055	$14,588	$2,145	$3,889	$55,292
17	$6,981	$23,570	$982	$4,177	$15,026	$2,210	$4,005	$56,951
18	$7,191	$24,277	$1,012	$4,302	$15,477	$2,276	$4,126	$58,660
19	$7,406	$25,005	$1,042	$4,431	$15,941	$2,344	$4,249	$60,420
20	$7,629	$25,755	$1,073	$4,564	$16,419	$2,415	$4,377	$62,232
21	$7,857	$26,528	$1,105	$4,701	$16,912	$2,487	$4,508	$64,099
22	$8,093	$27,324	$1,139	$4,842	$17,419	$2,562	$4,643	$66,022
23	$8,336	$28,144	$1,173	$4,988	$17,942	$2,638	$4,783	$68,003
24	$8,586	$28,988	$1,208	$5,137	$18,480	$2,718	$4,926	$70,043
25	$8,844	$29,858	$1,244	$5,291	$19,034	$2,799	$5,074	$72,144
26	$9,109	$30,753	$1,281	$5,450	$19,605	$2,883	$5,226	$74,308
27	$9,382	$31,676	$1,320	$5,614	$20,193	$2,970	$5,383	$76,538
28	$9,664	$32,626	$1,359	$5,782	$20,799	$3,059	$5,544	$78,834
29	$9,954	$33,605	$1,400	$5,955	$21,423	$3,150	$5,711	$81,199
30	$10,252	$34,613	$1,442	$6,134	$22,066	$3,245	$5,882	$83,635

Sub Watershed #304 Total Annual Cost After Cost-Share, Cropland BMPs

Year	No-Till	Grassed Waterways	Vegetative Buffers	Nutrient Mgmt Plans	Terraces	Permanent Vegetation	Subsurface Fertilizer Application	Total Cost
1	$1,823	$6,155	$256	$1,091	$3,924	$577	$1,046	$14,873
2	$1,878	$6,340	$264	$1,124	$4,042	$594	$1,077	$15,319
3	$1,934	$6,530	$272	$1,157	$4,163	$612	$1,110	$15,778
4	$1,992	$6,726	$280	$1,192	$4,288	$631	$1,143	$16,252
5	$2,052	$6,928	$289	$1,228	$4,416	$649	$1,177	$16,739
6	$2,114	$7,136	$297	$1,265	$4,549	$669	$1,213	$17,241
7	$2,177	$7,350	$306	$1,302	$4,685	$689	$1,249	$17,759
8	$2,242	$7,570	$315	$1,342	$4,826	$710	$1,286	$18,291
9	$2,309	$7,797	$325	$1,382	$4,971	$731	$1,325	$18,840
10	$2,379	$8,031	$335	$1,423	$5,120	$753	$1,365	$19,405
11	$2,450	$8,272	$345	$1,466	$5,273	$776	$1,406	$19,988
12	$2,524	$8,520	$355	$1,510	$5,432	$799	$1,448	$20,587
13	$2,599	$8,776	$366	$1,555	$5,595	$823	$1,491	$21,205
14	$2,677	$9,039	$377	$1,602	$5,762	$847	$1,536	$21,841
15	$2,758	$9,310	$388	$1,650	$5,935	$873	$1,582	$22,496
16	$2,840	$9,590	$400	$1,699	$6,113	$899	$1,630	$23,171
17	$2,926	$9,877	$412	$1,750	$6,297	$926	$1,679	$23,866
18	$3,013	$10,174	$424	$1,803	$6,486	$954	$1,729	$24,582
19	$3,104	$10,479	$437	$1,857	$6,680	$982	$1,781	$25,320
20	$3,197	$10,793	$450	$1,913	$6,881	$1,012	$1,834	$26,079
21	$3,293	$11,117	$463	$1,970	$7,087	$1,042	$1,889	$26,862
22	$3,392	$11,450	$477	$2,029	$7,300	$1,073	$1,946	$27,667
23	$3,493	$11,794	$491	$2,090	$7,519	$1,106	$2,004	$28,497
24	$3,598	$12,148	$506	$2,153	$7,744	$1,139	$2,064	$29,352
25	$3,706	$12,512	$521	$2,217	$7,977	$1,173	$2,126	$30,233

26	$3,817	$12,888	$537	$2,284	$8,216	$1,208	$2,190	$31,140
27	$3,932	$13,274	$553	$2,352	$8,462	$1,244	$2,256	$32,074
28	$4,050	$13,672	$570	$2,423	$8,716	$1,282	$2,323	$33,036
29	$4,171	$14,083	$587	$2,496	$8,978	$1,320	$2,393	$34,027
30	$4,296	$14,505	$604	$2,571	$9,247	$1,360	$2,465	$35,048
Sub Watershed #401 Total Annual Cost After Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$2,496	$8,426	$351	$1,493	$5,372	$790	$1,432	$20,360
2	$2,571	$8,679	$362	$1,538	$5,533	$814	$1,475	$20,971
3	$2,648	$8,939	$372	$1,584	$5,699	$838	$1,519	$21,600
4	$2,727	$9,207	$384	$1,632	$5,870	$863	$1,565	$22,248
5	$2,809	$9,484	$395	$1,681	$6,046	$889	$1,612	$22,915
6	$2,893	$9,768	$407	$1,731	$6,227	$916	$1,660	$23,603
7	$2,980	$10,061	$419	$1,783	$6,414	$943	$1,710	$24,311
8	$3,069	$10,363	$432	$1,837	$6,606	$972	$1,761	$25,040
9	$3,162	$10,674	$445	$1,892	$6,805	$1,001	$1,814	$25,791
10	$3,256	$10,994	$458	$1,948	$7,009	$1,031	$1,868	$26,565
11	$3,354	$11,324	$472	$2,007	$7,219	$1,062	$1,924	$27,362
12	$3,455	$11,664	$486	$2,067	$7,436	$1,093	$1,982	$28,183
13	$3,558	$12,014	$501	$2,129	$7,659	$1,126	$2,042	$29,028
14	$3,665	$12,374	$516	$2,193	$7,888	$1,160	$2,103	$29,899
15	$3,775	$12,745	$531	$2,259	$8,125	$1,195	$2,166	$30,796
16	$3,888	$13,128	$547	$2,326	$8,369	$1,231	$2,231	$31,720
17	$4,005	$13,521	$563	$2,396	$8,620	$1,268	$2,298	$32,671
18	$4,125	$13,927	$580	$2,468	$8,879	$1,306	$2,367	$33,652
19	$4,249	$14,345	$598	$2,542	$9,145	$1,345	$2,438	$34,661
20	$4,376	$14,775	$616	$2,618	$9,419	$1,385	$2,511	$35,701
21	$4,508	$15,219	$634	$2,697	$9,702	$1,427	$2,586	$36,772
22	$4,643	$15,675	$653	$2,778	$9,993	$1,470	$2,664	$37,875
23	$4,782	$16,145	$673	$2,861	$10,293	$1,514	$2,744	$39,011
24	$4,926	$16,630	$693	$2,947	$10,601	$1,559	$2,826	$40,182
25	$5,073	$17,129	$714	$3,036	$10,919	$1,606	$2,911	$41,387
26	$5,226	$17,642	$735	$3,127	$11,247	$1,654	$2,998	$42,629
27	$5,382	$18,172	$757	$3,220	$11,584	$1,704	$3,088	$43,908
28	$5,544	$18,717	$780	$3,317	$11,932	$1,755	$3,181	$45,225
29	$5,710	$19,278	$803	$3,416	$12,290	$1,807	$3,276	$46,582
30	$5,881	$19,857	$827	$3,519	$12,659	$1,862	$3,374	$47,979
Sub Watershed #402 Total Annual Cost After Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**

1	$1,470	$4,964	$207	$880	$3,165	$465	$844	$11,995
2	$1,514	$5,113	$213	$906	$3,260	$479	$869	$12,355
3	$1,560	$5,267	$219	$933	$3,357	$494	$895	$12,725
4	$1,607	$5,425	$226	$961	$3,458	$509	$922	$13,107
5	$1,655	$5,587	$233	$990	$3,562	$524	$949	$13,500
6	$1,705	$5,755	$240	$1,020	$3,669	$540	$978	$13,905
7	$1,756	$5,928	$247	$1,050	$3,779	$556	$1,007	$14,323
8	$1,808	$6,105	$254	$1,082	$3,892	$572	$1,038	$14,752
9	$1,863	$6,289	$262	$1,114	$4,009	$590	$1,069	$15,195
10	$1,919	$6,477	$270	$1,148	$4,129	$607	$1,101	$15,651
11	$1,976	$6,672	$278	$1,182	$4,253	$625	$1,134	$16,120
12	$2,035	$6,872	$286	$1,218	$4,381	$644	$1,168	$16,604
13	$2,096	$7,078	$295	$1,254	$4,512	$664	$1,203	$17,102
14	$2,159	$7,290	$304	$1,292	$4,647	$683	$1,239	$17,615
15	$2,224	$7,509	$313	$1,331	$4,787	$704	$1,276	$18,143
16	$2,291	$7,734	$322	$1,371	$4,931	$725	$1,314	$18,688
17	$2,360	$7,966	$332	$1,412	$5,078	$747	$1,354	$19,248
18	$2,430	$8,205	$342	$1,454	$5,231	$769	$1,394	$19,826
19	$2,503	$8,451	$352	$1,498	$5,388	$792	$1,436	$20,421
20	$2,578	$8,705	$363	$1,543	$5,549	$816	$1,479	$21,033
21	$2,656	$8,966	$374	$1,589	$5,716	$841	$1,524	$21,664
22	$2,735	$9,235	$385	$1,637	$5,887	$866	$1,569	$22,314
23	$2,817	$9,512	$396	$1,686	$6,064	$892	$1,616	$22,984
24	$2,902	$9,797	$408	$1,736	$6,246	$919	$1,665	$23,673
25	$2,989	$10,091	$420	$1,788	$6,433	$946	$1,715	$24,383
26	$3,079	$10,394	$433	$1,842	$6,626	$974	$1,766	$25,115
27	$3,171	$10,706	$446	$1,897	$6,825	$1,004	$1,819	$25,868
28	$3,266	$11,027	$459	$1,954	$7,030	$1,034	$1,874	$26,644
29	$3,364	$11,358	$473	$2,013	$7,241	$1,065	$1,930	$27,444
30	$3,465	$11,699	$487	$2,073	$7,458	$1,097	$1,988	$28,267
Sub Watershed #403 Total Annual Cost After Cost-Share, Cropland BMPs								
Year	**No-Till**	**Grassed Waterways**	**Vegetative Buffers**	**Nutrient Mgmt Plans**	**Terraces**	**Permanent Vegetation**	**Subsurface Fertilizer Application**	**Total Cost**
1	$1,003	$3,386	$141	$600	$2,158	$317	$575	$8,181
2	$1,033	$3,487	$145	$618	$2,223	$327	$593	$8,426
3	$1,064	$3,592	$150	$637	$2,290	$337	$610	$8,679
4	$1,096	$3,700	$154	$656	$2,358	$347	$629	$8,939
5	$1,129	$3,811	$159	$675	$2,429	$357	$648	$9,207
6	$1,163	$3,925	$164	$696	$2,502	$368	$667	$9,483
7	$1,197	$4,043	$168	$716	$2,577	$379	$687	$9,768
8	$1,233	$4,164	$173	$738	$2,654	$390	$708	$10,061
9	$1,270	$4,289	$179	$760	$2,734	$402	$729	$10,363
10	$1,308	$4,417	$184	$783	$2,816	$414	$751	$10,674

11	$1,348	$4,550	$190	$806	$2,901	$427	$773	$10,994
12	$1,388	$4,686	$195	$831	$2,988	$439	$796	$11,324
13	$1,430	$4,827	$201	$855	$3,077	$453	$820	$11,663
14	$1,473	$4,972	$207	$881	$3,170	$466	$845	$12,013
15	$1,517	$5,121	$213	$908	$3,265	$480	$870	$12,374
16	$1,562	$5,275	$220	$935	$3,363	$494	$896	$12,745
17	$1,609	$5,433	$226	$963	$3,463	$509	$923	$13,127
18	$1,657	$5,596	$233	$992	$3,567	$525	$951	$13,521
19	$1,707	$5,764	$240	$1,021	$3,674	$540	$979	$13,927
20	$1,758	$5,937	$247	$1,052	$3,785	$557	$1,009	$14,345
21	$1,811	$6,115	$255	$1,084	$3,898	$573	$1,039	$14,775
22	$1,865	$6,298	$262	$1,116	$4,015	$590	$1,070	$15,218
23	$1,921	$6,487	$270	$1,150	$4,136	$608	$1,102	$15,675
24	$1,979	$6,682	$278	$1,184	$4,260	$626	$1,135	$16,145
25	$2,038	$6,882	$287	$1,220	$4,387	$645	$1,170	$16,629
26	$2,100	$7,089	$295	$1,256	$4,519	$665	$1,205	$17,128
27	$2,163	$7,301	$304	$1,294	$4,655	$685	$1,241	$17,642
28	$2,227	$7,520	$313	$1,333	$4,794	$705	$1,278	$18,171
29	$2,294	$7,746	$323	$1,373	$4,938	$726	$1,316	$18,716
30	$2,363	$7,978	$332	$1,414	$5,086	$748	$1,356	$19,278

Kirwin WRAPS Livestock BMP Adoption by Sub Watershed								
Sub Watershed	**Vegetative Filter Strip**	**Relocate Feeding Site**	**Relocate Pasture Feeding Site**	**Off-Stream Watering System**	**Rotational Grazing**	**Grazing Mgmt Plans**	**Fence off Streams and Ponds**	**Total Adoption**
404	1	1	3	3	4	4	2	**18**
405	1	1	3	3	4	4	2	**18**
501	1	1	3	3	4	4	2	**18**
502	1	1	3	3	4	4	2	**18**
503	1	1	3	3	4	4	2	**18**
504	1	1	3	3	4	4	2	**18**
505	1	1	3	3	4	4	1	**17**
506	1	1	3	3	4	4	1	**17**
507	1	1	3	3	4	4	1	**17**
107	1	1	3	3	4	4	1	**17**
201	1	1	3	3	4	4	1	**17**
203	1	1	3	3	4	4	1	**17**
204	1	1	3	3	3	3	1	**15**
205	1	1	3	3	3	3	1	**15**
301	1	1	3	3	3	3	1	**15**
302		1	3	3	3	3	1	**14**
303		1	2	2	3	3	1	**12**
304		1	3	3	3	3	1	**14**
401			3	3	3	3	1	**13**

402			3	3	3	3	1	**13**
403			3	3	3	3	1	**13**
Total	**15**	**18**	**62**	**62**	**75**	**75**	**27**	**334**

Kirwin WRAPS Livestock BMP Cost* Before Cost-Share by Sub Watershed								
Sub Watershed	**Vegetative Filter Strip**	**Relocate Feeding Site**	**Relocate Pasture Feeding Site**	**Off-Stream Watering System**	**Rotational Grazing**	**Grazing Mgmt Plans**	**Fence off Streams and Ponds**	**Total Cost**
404	$1,428	$12,000	$6,609	$11,385	$28,000	$6,400	$8,212	**$74,034**
405	$1,428	$12,000	$6,609	$11,385	$28,000	$6,400	$8,212	**$74,034**
501	$1,428	$12,000	$6,609	$11,385	$28,000	$6,400	$8,212	**$74,034**
502	$1,428	$12,000	$6,609	$11,385	$28,000	$6,400	$8,212	**$74,034**
503	$1,428	$12,000	$6,609	$11,385	$28,000	$6,400	$8,212	**$74,034**
504	$1,428	$12,000	$6,609	$11,385	$28,000	$6,400	$8,212	**$74,034**
505	$1,428	$12,000	$6,609	$11,385	$28,000	$6,400	$4,106	**$69,928**
506	$1,428	$12,000	$6,609	$11,385	$28,000	$6,400	$4,106	**$69,928**
507	$1,428	$12,000	$6,609	$11,385	$28,000	$6,400	$4,106	**$69,928**
107	$1,428	$12,000	$6,609	$11,385	$28,000	$6,400	$4,106	**$69,928**
201	$1,428	$12,000	$6,609	$11,385	$28,000	$6,400	$4,106	**$69,928**
203	$1,428	$12,000	$6,609	$11,385	$28,000	$6,400	$4,106	**$69,928**
204	$1,428	$12,000	$6,609	$11,385	$21,000	$4,800	$4,106	**$61,328**
205	$1,428	$12,000	$6,609	$11,385	$21,000	$4,800	$4,106	**$61,328**
301	$1,428	$12,000	$6,609	$11,385	$21,000	$4,800	$4,106	**$61,328**
302	$0	$12,000	$6,609	$11,385	$21,000	$4,800	$4,106	**$59,900**
303	$0	$12,000	$4,406	$7,590	$21,000	$4,800	$4,106	**$53,902**
304	$0	$12,000	$6,609	$11,385	$21,000	$4,800	$4,106	**$59,900**
401	$0	$0	$6,609	$11,385	$21,000	$4,800	$4,106	**$47,900**
402	$0	$0	$6,609	$11,385	$21,000	$4,800	$4,106	**$47,900**
403	$0	$0	$6,609	$11,385	$21,000	$4,800	$4,106	**$47,900**
Total	**$21,420**	**$216,000**	**$136,586**	**$235,290**	**$525,000**	**$120,000**	**$110,862**	**$1,365,158**
***2012 Dollars**								

Kirwin WRAPS Livestock BMP Cost After Cost-Share by Sub Watershed								
Sub Watershed	**Vegetative Filter Strip**	**Relocate Feeding Site**	**Relocate Pasture Feeding Site**	**Off-Stream Watering System**	**Rotational Grazing**	**Grazing Mgmt Plans**	**Fence off Streams and Ponds**	**Total Cost**
404	$714	$6,000	$3,305	$5,693	$14,000	$3,200	$4,106	**$37,017**
405	$714	$6,000	$3,305	$5,693	$14,000	$3,200	$4,106	**$37,017**
501	$714	$6,000	$3,305	$5,693	$14,000	$3,200	$4,106	**$37,017**
502	$714	$6,000	$3,305	$5,693	$14,000	$3,200	$4,106	**$37,017**
503	$714	$6,000	$3,305	$5,693	$14,000	$3,200	$4,106	**$37,017**
504	$714	$6,000	$3,305	$5,693	$14,000	$3,200	$4,106	**$37,017**

505	$714	$6,000	$3,305	$5,693	$14,000	$3,200	$2,053	**$34,964**
506	$714	$6,000	$3,305	$5,693	$14,000	$3,200	$2,053	**$34,964**
507	$714	$6,000	$3,305	$5,693	$14,000	$3,200	$2,053	**$34,964**
107	$714	$6,000	$3,305	$5,693	$14,000	$3,200	$2,053	**$34,964**
201	$714	$6,000	$3,305	$5,693	$14,000	$3,200	$2,053	**$34,964**
203	$714	$6,000	$3,305	$5,693	$14,000	$3,200	$2,053	**$34,964**
204	$714	$6,000	$3,305	$5,693	$10,500	$2,400	$2,053	**$30,664**
205	$714	$6,000	$3,305	$5,693	$10,500	$2,400	$2,053	**$30,664**
301	$714	$6,000	$3,305	$5,693	$10,500	$2,400	$2,053	**$30,664**
302	$0	$6,000	$3,305	$5,693	$10,500	$2,400	$2,053	**$29,950**
303	$0	$6,000	$2,203	$3,795	$10,500	$2,400	$2,053	**$26,951**
304	$0	$6,000	$3,305	$5,693	$10,500	$2,400	$2,053	**$29,950**
401	$0	$0	$3,305	$5,693	$10,500	$2,400	$2,053	**$23,950**
402	$0	$0	$3,305	$5,693	$10,500	$2,400	$2,053	**$23,950**
403	$0	$0	$3,305	$5,693	$10,500	$2,400	$2,053	**$23,950**
Total	**$10,710**	**$108,000**	**$68,293**	**$117,645**	**$262,500**	**$60,000**	**$55,431**	**$682,579**
***2012 Dollars**								

Kirwin WRAPS Livestock BMP Phosphorous Load Reduction by Sub Watershed (pounds)								
Sub Watershed	**Vegetative Filter Strip**	**Relocate Feeding Site**	**Relocate Pasture Feeding Site**	**Off-Stream Watering System**	**Rotational Grazing**	**Grazing Mgmt Plans**	**Fence off Streams and Ponds**	**Total Load Reduction**
404	1,276	1,595	114	114	692	692	114	**4,596**
405	1,276	1,595	114	114	692	692	114	**4,596**
501	1,276	1,595	114	114	692	692	114	**4,596**
502	1,276	1,595	114	114	692	692	114	**4,596**
503	1,276	1,595	114	114	692	692	114	**4,596**
504	1,276	1,595	114	114	692	692	114	**4,596**
505	1,276	1,595	114	114	692	692	57	**4,539**
506	1,276	1,595	114	114	692	692	57	**4,539**
507	1,276	1,595	114	114	692	692	57	**4,539**
107	1,276	1,595	114	114	692	692	57	**4,539**
201	1,276	1,595	114	114	692	692	57	**4,539**
203	1,276	1,595	114	114	692	692	57	**4,539**
204	1,276	1,595	114	114	519	519	57	**4,193**
205	1,276	1,595	114	114	519	519	57	**4,193**
301	1,276	1,595	114	114	519	519	57	**4,193**
302	0	1,595	114	114	519	519	57	**2,918**
303	0	1,595	76	76	519	519	57	**2,842**
304	0	1,595	114	114	519	519	57	**2,918**
401	0	0	114	114	519	519	57	**1,323**
402	0	0	114	114	519	519	57	**1,323**
403	0	0	114	114	519	519	57	**1,323**
Total	**19,136**	**28,704**	**2,356**	**2,356**	**12,975**	**12,975**	**1,539**	**80,042**

Kirwin WRAPS Livestock BMP Nitrogen Load Reduction by Sub Watershed (pounds)								
Sub Watershed	**Vegetative Filter Strip**	**Relocate Feeding Site**	**Relocate Pasture Feeding Site**	**Off-Stream Watering System**	**Rotational Grazing**	**Grazing Mgmt Plans**	**Fence off Streams and Ponds**	**Total Load Reduction**
404	2,403	3,004	215	215	1,303	1,303	215	**8,657**
405	2,403	3,004	215	215	1,303	1,303	215	**8,657**
501	2,403	3,004	215	215	1,303	1,303	215	**8,657**
502	2,403	3,004	215	215	1,303	1,303	215	**8,657**
503	2,403	3,004	215	215	1,303	1,303	215	**8,657**
504	2,403	3,004	215	215	1,303	1,303	215	**8,657**
505	2,403	3,004	215	215	1,303	1,303	107	**8,550**
506	2,403	3,004	215	215	1,303	1,303	107	**8,550**
507	2,403	3,004	215	215	1,303	1,303	107	**8,550**
107	2,403	3,004	215	215	1,303	1,303	107	**8,550**
201	2,403	3,004	215	215	1,303	1,303	107	**8,550**
203	2,403	3,004	215	215	1,303	1,303	107	**8,550**
204	2,403	3,004	215	215	978	978	107	**7,898**
205	2,403	3,004	215	215	978	978	107	**7,898**
301	2,403	3,004	215	215	978	978	107	**7,898**
302	0	3,004	215	215	978	978	107	**5,495**
303	0	3,004	143	143	978	978	107	**5,352**
304	0	3,004	215	215	978	978	107	**5,495**
401	0	0	215	215	978	978	107	**2,492**
402	0	0	215	215	978	978	107	**2,492**
403	0	0	215	215	978	978	107	**2,492**
Total	**36,043**	**54,065**	**4,438**	**4,438**	**24,438**	**24,438**	**2,899**	**150,758**