



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

MoSWIMS and NTT Capabilities

Kurt Boeckmann



About the Nutrient Tracking Tool (NTT)

Overview

- The Nutrient Tracking Tool was designed and developed by the following institutes:
 1. Texas Institute for Applied Environmental Research, TIAER (Tarleton State University),
 2. United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), and
 3. USDA Agricultural Research Service (ARS).
- The web-based **NTT** application compares agricultural management systems to calculate a change in Nutrient loss potential.
- Agricultural producers and land managers can enter a Baseline (current conditions) management system and an Alternative conservation management system and produce a report showing the nutrient loss potential difference between the two systems.

Process

- User supplied information is processed using APEX.

Disclaimer

- Although NTT has been tested by its developers, NO warranty, expressed or implied, is made as to the results and functioning of the program and related program material nor shall the fact of distribution constitute any such warranty, and NO responsibility is assumed by the developers in connection therewith.



Drainage Water Management System:

- Tile Drain
- Pads and Pipes - No Ditch Improvement
- Pads and Pipes - Two-Stage Ditch System
- Pads and Pipes - Ditch Enlargement and Reservoir System
- Pads and Pipes - Tailwater Irrigation

Stream and Riparian Management:

- Stream Fencing (Livestock Access Control)
- Streambank Stabilization
- Riparian Forest Buffer
- Filter Strip
- Waterway (Grassed Buffer)
- Contour Buffer (Strip Farming)

Land Grading and Management

- Land Leveling
- Terrace System

Wetlands and Ponds:

- Wetlands
- Ponds

Auto Irrigation and Fertigation:

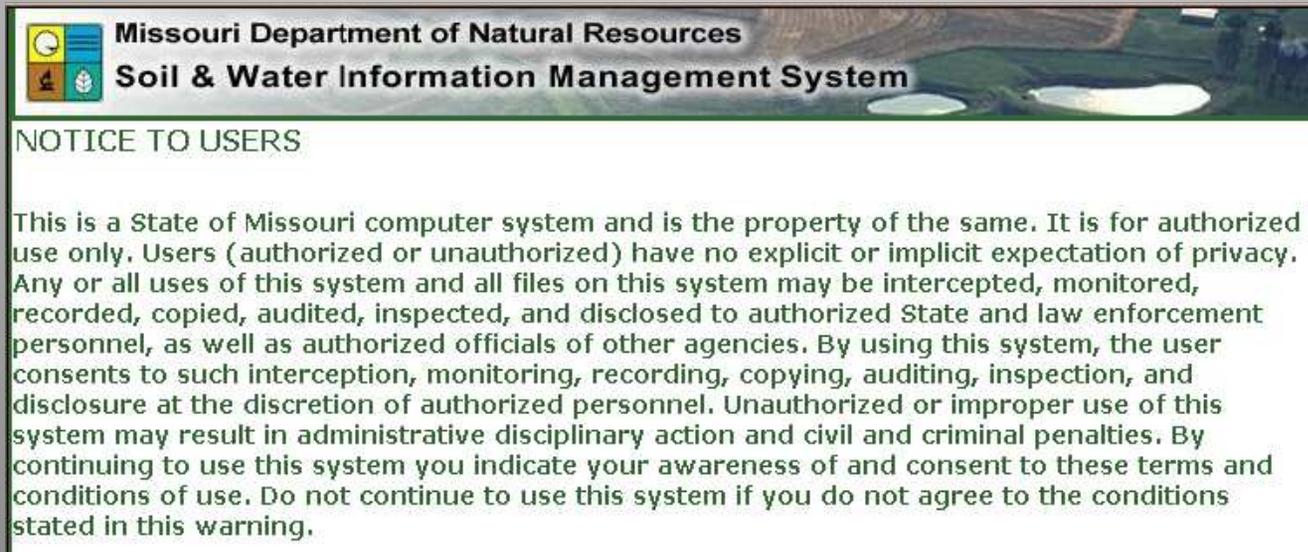
- Auto Irrigation
- Auto Fertigation

BMP Combinations Not Allowed:

- Auto Irrigation and Auto Fertigation
- Auto Irrigation and Pads and Pipes
- Multiple Pads and Pipes
- Filter Strip and Riparian Forest Buffer
- Grassed Waterway and Riparian Forest Buffer
- Grassed Waterway and Filter Strip
- Contour Buffer and Filter Strip
- Contour Buffer and Grassed Waterway

Missouri Soil and Water Information Management System (MoSWIMS)

- developed to automate the cost-share procedures used by the Missouri Soil and Water Conservation District offices
- used to allocate funds by project, obligate funds, and document incentive payments made to agricultural landowners
- automates cost-share forms and generates various financial and management reports



Missouri Department of Natural Resources
Soil & Water Information Management System

NOTICE TO USERS

This is a State of Missouri computer system and is the property of the same. It is for authorized use only. Users (authorized or unauthorized) have no explicit or implicit expectation of privacy. Any or all uses of this system and all files on this system may be intercepted, monitored, recorded, copied, audited, inspected, and disclosed to authorized State and law enforcement personnel, as well as authorized officials of other agencies. By using this system, the user consents to such interception, monitoring, recording, copying, auditing, inspection, and disclosure at the discretion of authorized personnel. Unauthorized or improper use of this system may result in administrative disciplinary action and civil and criminal penalties. By continuing to use this system you indicate your awareness of and consent to these terms and conditions of use. Do not continue to use this system if you do not agree to the conditions stated in this warning.



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Soil and Water Contract EXAMPLE
Missouri Soil and Water Information Management System (MOSWIMS)



MISSOURI DEPARTMENT OF NATURAL RESOURCES
SOIL AND WATER DISTRICTS COMMISSION
COST-SHARE ASSISTANCE CONTRACT PAYMENT

56 - ADAIR SWCD
2410 SOUTH FRANKLIN ST
KIRKSVILLE, MO 63501
(660)665-7710

DNR OFFICE USE ONLY

INV# _____
VOUCHER# _____

Contract Number
SGE 056-14-0016 CO2

Landowner TIN:
XXX-XX-4643

Legal Owner: }

PRACTICE: DSL-4 - TERRACE SYSTEM	
RESOURCE CONCERN: SHEET AND RILL / GULLY E 2014	MAXIMUMS: Practice:12500.00
TECHNICIAN ASSIGNED:	

Contract Approved: 02/21/2014

Practice Completed:

Contract Payment Approved:

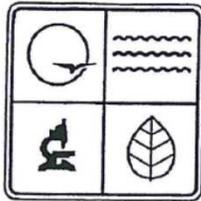
REASON:

Extent Installed: 2,326.00

LIFE SPAN 10	TERM DATE 05/30/2014	ACRES SERVED 5.70 30.7	HUC CODE 07110005-0108	PWSS-P	CLASS/SUBCLASS 3/E
"T" ON FIELD 5	PRE-INSTALL (SR) 8	POST-INSTALL (SR) 3	PRE-INSTALL (G)	POST-INSTALL (G)	

OTHER FUNDS:	MAX COST-SHARE \$	\$8,549.41
MAINTENANCE AGREEMENT RECORDED: NO	TOTAL AMOUNT DUE	\$8,549.41
COOPERATOR CERTIFICATION		

Terrace Contract 1 Components



MISSOURI DEPARTMENT OF NATURAL RESOURCES
SOIL AND WATER DISTRICTS COMMISSION
COST-SHARE ASSISTANCE CONTRACT PAYMENT

56 - ADAIR SWCD
2410 SOUTH FRANKLIN ST
KIRKSVILLE, MO 63501
(660)665-7710

Contract Number
SGE 056-14-0016 CO2

Landowner TIN:
XXX-XX-4643

Legal Owner:

PRACTICE: DSL-4 - TERRACE SYSTEM

MAXIMUMS: Practice:12500.00

COMPONENT	EXHIBIT APPROVED	EXHIBIT COMPLETED	UNIT COST	UNIT	CS%	PAYMENT AMOUNT
HORIZONTAL OUTLET6IN	2.0000	2.0000	\$62.4500	EA	75	\$93.67
RELIEF WELL 10IN	1.0000	1.0000	\$136.9200	EA	75	\$102.69
RELIEF WELL 6IN	1.0000	1.0000	\$86.4700	EA	75	\$64.85
RISER 6IN	7.0000	7.0000	\$104.6800	EA	75	\$549.57
TERRBRBASEPR	2326.0000	2326.0000	\$2.3800	LIN FT	75	\$4,151.91
TOPSOILTERR	2326.0000	2326.0000	\$1.2100	LIN FT	75	\$2,110.84
TRENCH/BKFILL < 12IN	1279.0000	1279.0000	\$1.3600	FT	75	\$1,304.58

Total Cost-Share at 75%

\$8,378.11

Terrace Contract 2 Components

COMPONENT	EXTENT APPROVED	EXTENT COMPLETED	UNIT COST	UNIT	CS%	PAYMENT AMOUNT
RELIEF WELL 8IN	1.0000	1.0000	\$118.7800	EA	75	\$89.08
RISER 6IN	2.0000	2.0000	\$104.6800	EA	75	\$157.02
TERRBRBASEPR	1058.0000	1058.0000	\$2.3800	LIN FT	75	\$1,888.53
TOPSOILTERR	677.0000	677.0000	\$1.2100	LIN FT	75	\$614.37
TRENCH/BKFILL < 12IN	624.0000	624.0000	\$1.3600	FT	75	\$636.48

Contract 2 Cost-Share at 75%

\$3,385.48

Total Cost of Terrace System = \$15,683

Waterway Contract Components



MISSOURI DEPARTMENT OF NATURAL RESOURCES
SOIL AND WATER DISTRICTS COMMISSION
COST-SHARE ASSISTANCE CONTRACT PAYMENT

[Redacted]
KIRKSVILLE, MO 63501

Legal Owner: [Redacted]

PRACTICE: DWP-03 - SOD WATERWAY

56 - ADAIR SWCD
2410 SOUTH FRANKLIN ST
KIRKSVILLE, MO 63501
(660)665-7710

Contract Number

Landowner TIN:
XXX-XX-1248

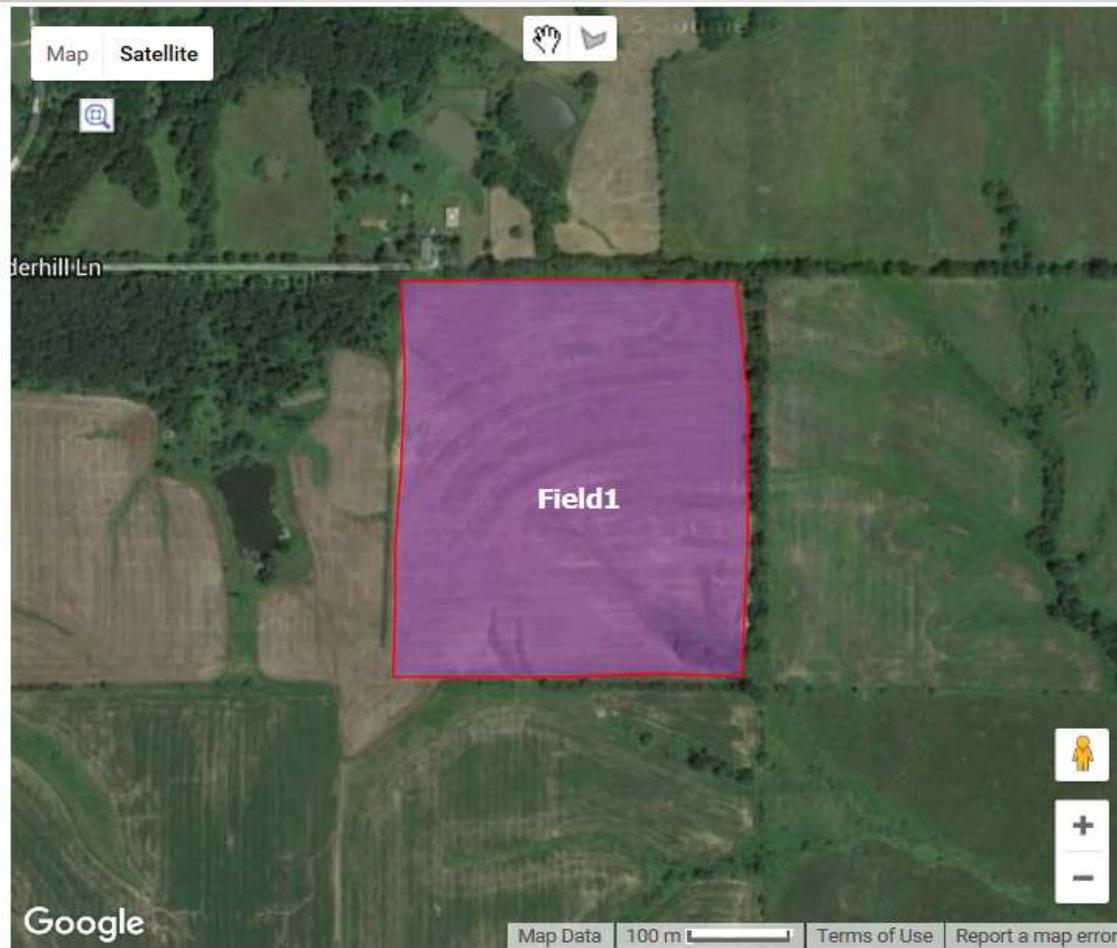
COMPONENT	EXTENT APPROVED	EXTENT COMPLETED	UNIT COST	UNIT	CS %	PAYMENT AMOUNT
CRITICAL AREA SEEDING	2.5000	2.5000	\$492.0100	AC	75	\$922.51
WATERWAY(2)	2700.0000	2700.0000	\$2.1100	CU YD	75	\$4,272.75
SUBTOTAL						5,195.26
TOTAL AMOUNT DUE						5,195.26

Total Cost of Waterway = \$6,926



MISSOURI
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NATURAL RESOURCES

Nutrient Tracking Tool Simulation Kirksville MO Area Field 30.7 ac, 4.32% Slope, Loam/Silt Loam Soils





Baseline Corn/Soybean + Minimum Till

Management Operations

Add New

Delete Selected

Select <input type="checkbox"/>	Crop	Operation	Year	Month	Day	Fertilizer	Amount (lbs/ac)	Depth(in)	NO3	PO4	Org N	Org P
<input type="checkbox"/>	CORN	Fertilizer	1	5	4	Commercial Fertilizer	180	4	1	0	0	0
<input type="checkbox"/>	CORN	Fertilizer	1	5	4	Commercial Fertilizer	60	4	0	1	0	0
<input type="checkbox"/>	CORN	Tillage	1	5	5	FIELD CULTIVATOR 36i	0	0	0	0	0	0
<input type="checkbox"/>	CORN	Tillage	1	5	5	SPRINGTOOTH HARRC	0	0	0	0	0	0
<input type="checkbox"/>	CORN	Planting	1	5	6	PLANTER REGULAR 12	40469	0	0	0	0	0
<input type="checkbox"/>	CORN	Harvest	1	10	10	HARVEST	0	0	0	0	0	0
<input type="checkbox"/>	CORN	Kill	1	10	11	KILL	0	0	0	0	0	0
<input type="checkbox"/>	SOYBEANS	Fertilizer	2	5	14	Commercial Fertilizer	40	4	0	1	0	0
<input type="checkbox"/>	SOYBEANS	Tillage	2	5	15	SPRINGTOOTH HARRC	0	0	0	0	0	0
<input type="checkbox"/>	SOYBEANS	Tillage	2	5	15	FIELD CULTIVATOR 36i	0	0	0	0	0	0
<input type="checkbox"/>	SOYBEANS	Planting	2	5	16	PLANTER REGULAR 12	307561	0	0	0	0	0
<input type="checkbox"/>	SOYBEANS	Harvest	2	10	15	HARVEST	0	0	0	0	0	0
<input type="checkbox"/>	SOYBEANS	Kill	2	10	16	KILL	0	0	0	0	0	0



Alternative 1

Corn / Soybeans / Minimum Till

+Winter Wheat Cover Crop + Terrace

Management Operations												
Add New		Delete Selected										
Select	Crop	Operation	Year	Month	Day	Fertilizer	Amount (lbs/ac)	Depth(in)	NO3	PO4	Org N	Org P
<input type="checkbox"/>	CORN	Fertilizer	1	5	4	Commercial Fertilizer	180	4	1	0	0	0
<input type="checkbox"/>	CORN	Fertilizer	1	5	4	Commercial Fertilizer	60	4	0	1	0	0
<input type="checkbox"/>	CORN	Tillage	1	5	5	FIELD CULTIVATOR 36i	0	0	0	0	0	0
<input type="checkbox"/>	CORN	Tillage	1	5	5	SPRINGTOOTH HARRC	0	0	0	0	0	0
<input type="checkbox"/>	CORN	Planting	1	5	6	PLANTER REGULAR 12	40469	0	0	0	0	0
<input type="checkbox"/>	CORN	Harvest	1	10	10	HARVEST	0	0	0	0	0	0
<input type="checkbox"/>	CORN	Kill	1	10	11	KILL	0	0	0	0	0	0
<input type="checkbox"/>	WINTER WHEAT	Planting	1	10	12	DRILL NO-TILL 24 FT	853887	0	0	0	0	0
<input type="checkbox"/>	WINTER WHEAT	Kill	2	4	1		0	0	0	0	0	0
<input type="checkbox"/>	SOYBEANS	Fertilizer	2	5	14	Commercial Fertilizer	40	4	0	1	0	0
<input type="checkbox"/>	SOYBEANS	Tillage	2	5	15	FIELD CULTIVATOR 36i	0	0	0	0	0	0
<input type="checkbox"/>	SOYBEANS	Tillage	2	5	15	SPRINGTOOTH HARRC	0	0	0	0	0	0
<input type="checkbox"/>	SOYBEANS	Planting	2	5	16	PLANTER REGULAR 12	307561	0	0	0	0	0
<input type="checkbox"/>	SOYBEANS	Harvest	2	10	15	HARVEST	0	0	0	0	0	0
<input type="checkbox"/>	SOYBEANS	Kill	2	10	16	KILL	0	0	0	0	0	0

Terrace System												
<input checked="" type="checkbox"/> Select		Clear <input type="button" value="Hide"/>										

Result 1

Minimum Till Corn/ Soybeans + Terrace + Winter Wheat Cover Crop

DISPLAY AND PRINT SUMMARY AND DETAILED RESULTS						
Select Type <input type="text" value="Field/Scenario"/> Field <input type="text" value="Field1"/> First Scenario <input type="text" value="Baseline"/> Second Scenario <input type="text" value="Alternative"/> Third Scenario <input type="text" value="Select One"/>						
<input type="button" value="Summary"/> <input type="button" value="By Soil"/> <input type="button" value="Graphs"/> <input type="button" value="Create PDF"/> <input type="button" value="Download DnDc Files"/>						
Detail	Description	Baseline	Alternative	Difference	Reduction (%)	Total Area
<input type="checkbox"/>	Total Area (ac.)	30.7	30.7	0	0	0
<input type="checkbox"/>	Total N (lbs/ac)	6.61 ±3.11	3.82 ±2.21	-2.79	42.2	-85.7
<input type="checkbox"/>	Total P (lbs/ac)	1.05 ±0.30	0.58 ±0.18	-0.47	44.8	-14.4
<input type="checkbox"/>	Total Flow (in)	9.2 ±1.44	8.73 ±1.41	-0.47	5.1	-14.4
<input type="checkbox"/>	Other Water Information	4.86 ±0.66	5.26 ±0.66	0.4	-8.2	12.3
<input type="checkbox"/>	Total Sediment (t/ac)	1.5201 ±0.34	0.9906 ±0.20	-0.53	34.8	-16.3
<input checked="" type="checkbox"/>	Crop Yield			0	0	0
<input type="checkbox"/>	SOYBEANS Yield (bu/ac)	57 ±3.31	57 ±3.20	0	0	0
<input type="checkbox"/>	WINTER WHEAT Yield (bu/ac)	0 ±0.00	0 ±0.00	0	NaN	0
<input type="checkbox"/>	CORN Yield (bu/ac)	160 ±8.00	161 ±8.00	1	-0.6	30.7

Per Year

Total Cost of Terrace System = \$15,683



Alternative 2

Corn / Soybeans / Min Till

Winter Wheat Cover Crop + Terrace + **Grassed Waterway**

Management Operations

Add New Delete Selected

Select	Crop	Operation	Year	Month	Day	Fertilizer	Amount (lbs/ac)	Depth(in)	NO3	PO4	Org N	Org P	Hide
<input type="checkbox"/>	CORN	Fertilizer	1	5	4	Commercial Fertilizer	180	4	1	0	0	0	
<input type="checkbox"/>	CORN	Fertilizer	1	5	4	Commercial Fertilizer	60	4	0	1	0	0	
<input type="checkbox"/>	CORN	Tillage	1	5	5	SPRINGTOOTH HARRC	0	0	0	0	0	0	
<input type="checkbox"/>	CORN	Tillage	1	5	5	FIELD CULTIVATOR 36f	0	0	0	0	0	0	
<input type="checkbox"/>	CORN	Planting	1	5	6	PLANTER REGULAR 12	40469	0	0	0	0	0	
<input type="checkbox"/>	CORN	Harvest	1	10	10	HARVEST	0	0	0	0	0	0	
<input type="checkbox"/>	CORN	Kill	1	10	11		0	0	0	0	0	0	
<input type="checkbox"/>	WINTER WHEAT	Planting	1	10	20	DRILL NO-TILL 24 FT	853887	0	0	0	0	0	
<input type="checkbox"/>	WINTER WHEAT	Kill	2	5	13		0	0	0	0	0	0	
<input type="checkbox"/>	SOYBEANS	Fertilizer	2	5	14	Commercial Fertilizer	40	4	0	1	0	0	
<input type="checkbox"/>	SOYBEANS	Tillage	2	5	15	SPRINGTOOTH HARRC	0	0	0	0	0	0	
<input type="checkbox"/>	SOYBEANS	Tillage	2	5	15	FIELD CULTIVATOR 36f	0	0	0	0	0	0	
<input type="checkbox"/>	SOYBEANS	Planting	2	5	16	PLANTER REGULAR 12	307561	0	0	0	0	0	
<input type="checkbox"/>	SOYBEANS	Harvest	2	10	15	HARVEST	0	0	0	0	0	0	
<input type="checkbox"/>	SOYBEANS	Kill	2	10	16		0	0	0	0	0	0	

Water Ways

Vegetation: SWITCHGRASS Width (ft) *Including both sides of channel: 50 Clear Hide

Terrace System

Select Clear Hide

Alternative 2

Corn / Soybeans / Minimum Till

+Winter Wheat Cover Crop + Terrace + **Grassed Waterway**

DISPLAY AND PRINT SUMMARY AND DETAILED RESULTS						
Select Type <input type="text" value="Field/Scenario"/> Field <input type="text" value="Field1"/> First Scenario <input type="text" value="Baseline"/> Second Scenario <input type="text" value="Alternative"/> Third Scenario <input type="text" value="Select One"/>						
<input type="button" value="Summary"/> <input type="button" value="By Soil"/> <input type="button" value="Graphs"/> <input type="button" value="Create PDF"/> <input type="button" value="Download DnDc Files"/>						
Detail	Description	Baseline	Alternative	Difference	Reduction (%)	Total Area
<input type="checkbox"/>	Total Area (ac.)	30.7	30.7	0	0	0
<input type="checkbox"/>	Total N (lbs/ac)	6.61 ±3.10	2.55 ±1.58	-4.06	61.4	-124.6
<input type="checkbox"/>	Total P (lbs/ac)	1.05 ±0.30	0.36 ±0.10	-0.69	65.7	-21.2
<input type="checkbox"/>	Total Flow (in)	9.21 ±1.45	7.93 ±1.42	-1.28	13.9	-39.3
<input type="checkbox"/>	Other Water Information	4.86 ±0.66	5.12 ±0.66	0.26	-5.3	8
<input type="checkbox"/>	Total Sediment (t/ac)	1.5197 ±0.34	0.4656 ±0.09	-1.05	69.4	-32.2
<input checked="" type="checkbox"/>	Crop Yield			0	0	0
<input type="checkbox"/>	SOYBEANS Yield (bu/ac)	57 ±3.31	51 ±2.02	-6	10.5	-301.2
<input type="checkbox"/>	WINTER WHEAT Yield (bu/ac)	0 ±0.00	0 ±0.00	0	NaN	0
<input type="checkbox"/>	SWITCHGRASS Yield (t/ac)	0 ±0.00	0 ±0.00	0	NaN	0
<input type="checkbox"/>	CORN Yield (bu/ac)	160.14 ±8.08	160.91 ±8.05	0.77	-0.5	-345.4

} Per Year

Total Cost of Terrace System = \$15,683
 + Waterway = \$ 6,926

Alternative 1
Corn / Soybeans / Minimum Till
+Winter Wheat Cover Crop + Terrace

Detail	Description	Baseline	Alternative	Difference	Reduction (%)	Total Area
<input type="checkbox"/>	Total Area (ac.)	30.7	30.7	0	0	0
<input type="checkbox"/>	Total N (lbs/ac)	6.61 ±3.11	3.82 ±2.21	-2.79	42.2	-85.7
<input type="checkbox"/>	Total P (lbs/ac)	1.05 ±0.30	0.58 ±0.18	-0.47	44.8	-14.4
<input type="checkbox"/>	Total Flow (in)	9.2 ±1.44	8.73 ±1.41	-0.47	5.1	-14.4
<input type="checkbox"/>	Other Water Information	4.86 ±0.66	5.26 ±0.66	0.4	-8.2	12.3
<input type="checkbox"/>	Total Sediment (t/ac)	1.5201 ±0.34	0.9906 ±0.20	-0.53	34.8	-16.3

Alternative 2
Corn / Soybeans / Minimum Till
+Winter Wheat Cover Crop + Terrace +Waterway

<input type="checkbox"/>	Total Area (ac.)	30.7	30.7	0	0	0
<input type="checkbox"/>	Total N (lbs/ac)	6.61 ±3.10	2.55 ±1.58	-4.06	61.4	-124.6
<input type="checkbox"/>	Total P (lbs/ac)	1.05 ±0.30	0.36 ±0.10	-0.69	65.7	-21.2
<input type="checkbox"/>	Total Flow (in)	9.21 ±1.45	7.93 ±1.42	-1.28	13.9	-39.3
<input type="checkbox"/>	Other Water Information	4.86 ±0.66	5.12 ±0.66	0.26	-5.3	8
<input type="checkbox"/>	Total Sediment (t/ac)	1.5197 ±0.34	0.4656 ±0.09	-1.05	69.4	-32.2



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Buyer
Point Source



Seller
Soil and Water BMP's



FY15 Regular Cost-Share

Resource Concern	Allocated	Paid	Paid %	# Contracts
Animal Waste Management	\$995,000	\$371,548	37	19
Pilot Cover Crops	\$602,200	\$150,323	25	208
Grazing Management	\$5,447,731	\$3,276,177	60	963
Irrigation Management	\$1,598,509	\$983,911	62	203
Nutrient & Pest Management	\$957,458	\$476,629	50	518
Sensitive Areas	\$2,888,623	\$1,289,283	45	325
Sheet and Rill/Gully	\$22,662,799	\$17,018,271	75	2912
Woodland Erosion	\$1,907,245	\$872,896	46	281
TOTAL	\$37,059,565	\$24,439,038	66	5429