On the Road to Clean Water

Ag Water Quality and Nutrient Management Education

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and

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University of Kentucky

Extension Education Efforts

- Land Grant Institution
  - Delivering research-based information to improve quality of life
  - Field days
  - Publications
  - Farm visits

UK Experiment Station Farm Field Day, 1958
University of Kentucky Special Collections

UK Livestock Field Day, 1965
Herald-Leader staff, University of Kentucky Special Collections

Regulatory Considerations

- Federal Regulations
  - Clean Water Act (1948, 1972)
    - KPDES/KNDOP
  - Safe Drinking Water Act (1974)
  - Federal Insecticide, Fungicide and Rodenticide Act (1947, 1972, 1996)
  - Spill Prevention Control and Countermeasure (2013)

Regulatory Considerations

- State Regulation
  - Ag Water Quality Act (1994, 2001)

Beef Bash, 2012
University of Kentucky Research and Education Center

KY Ag Water Quality Act

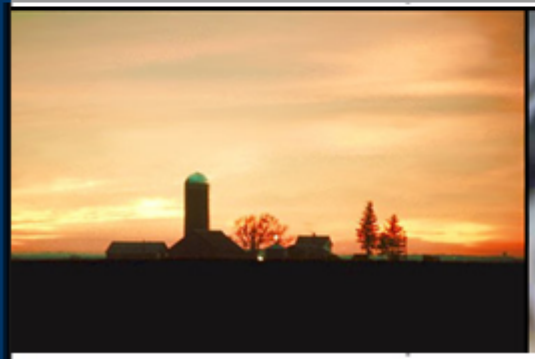
KY Agriculture Water Quality Act

- 10+ acres in agriculture or forestry must develop a water quality plan
- Anyone applying for cost share needs a water quality plan
  - Kentucky Soil Erosion and Water Quality Cost Share Program (State cost share)
  - NRCS Environmental Quality Incentives Program (EQIP)
  - GOAP County Ag Investment Program (CAIP)

How Does a Landowner Get a Water Quality Plan?

1) Local Conservation District
2) Web Tool

www.ca.uky.edu/awqa



Kentucky Agriculture Water Quality Act Planning Tool

University of Kentucky Cooperative Extension

Home
Background Information
Planning Tool
How to Use Planning Tool
Create a Plan
Helpful Hints
View All BMPs
Calculators & Tools
Plans & Drawings
More Resources
State Ag. Water Quality Plan
Producer's Workbook
Copyright & Warranty Information

Best Management Practices for Your Farm

November 21, 2012

This web site contains an on-line tool to be used by landowners to assess their operation and identify best management practices to be included in their individual plan. After identifying the best management practices, landowners/land users implement these practices on their land. Assistance to implement the plan can be obtained by contacting your local *Conservation District Office* or your local *Cooperative Extension Service Office*.

Create Plan

How Does a Landowner Get a Water Quality Plan?

1) Local Conservation District
2) Web Tool
3) Producer Workbook

Kentucky Agriculture Water Quality Plan

Producer Workbook

FARM YOUR PLAN

MY AGRICULTURE WATER QUALITY PLAN

Field No.	Date to Complete Practice	Date Practice Completed	BMP Name	Planning Records: Past Performance (What I've been doing) Present Activities (What I'm now doing) Future Action (Other things I need to do)
1			Livestock BMP # 2 Proper Grazing Use	
1			Livestock BMP #11 Nutrient Management	
2			Crops BMP #3 Conservation Tillage	
2			Crops BMP #13 Cover Crop	
N/A			Farmstead BMP #2 Septic System	
1, 2			Forestry BMP #4 Sinkholes	

Land Owner _____ Operator _____ Farm I. D. # _____

Comprehensive BMP List

IMPLEMENTED	RECOMMENDED
CROPS	
	BMP#1: Conservation Cropping Sequence
BMP#2: Conservation Cover	
BMP#3: Conservation Tillage / Crop Residue Use	
	BMP#4: Contour Farming
BMP#5: Nutrient Management	
	BMP#6: Filter Strip
	BMP#7: Grasses and Legumes in Rotation
	BMP#8: Mulching
	BMP#9: Pasture and Hay Land Management
	BMP#10: Strip Cropping
	BMP#11: Critical Area Planting and Treatment
	BMP#12: Pest Management Including Cultural Control
	BMP#13: Cover Crop
	BMP#14: Nutrient Management
	BMP#15: Grassed Waterways
FARMSTEAD	
	BMP#1: Solid Waste Procedures
	BMP#2: Septic Systems and On-Site Disposal
	BMP#3: On Farm Petroleum Storage and Handling
	BMP#4: Well Protection
FORESTRY	
	BMP#1: Construction of Access Roads and Skid Trails
	BMP#2: Revegetation
	BMP#3: Streamside Management Zones
	BMP#4: Sinkholes
	BMP#5: Logging Debris
	BMP#6: Proper Planting of Tree Seedlings by Machine
	BMP#7: Fertilization
	BMP#8: Application of Pesticides
	BMP#9: Site Preparation for Reforestation
	BMP#10: Silviculture in Wetland Area
LIVESTOCK	
	BMP#1: Planned Grazing System
BMP#2: Proper Grazing Use	

AWQP: Certification

I understand my obligations under the Agriculture Water Quality Act to implement the applicable requirements of the statewide water quality plan, and I have developed a water quality plan for my individual operations based on its guidance. I am aware of the need to review my plan periodically to record those practices or measures that I have completed, and to modify my plan as major changes are made in my operation. If my management practices are questioned by regulatory agencies or through civil actions, these updated records will serve as documentation of my efforts to improve and protect the natural resources. This plan will entitle me to:

- The Corrective Measures Process. A process to correct any identified water quality problems that may be the result of the activities conducted on my operation.
- Availability of technical assistance through the conservation districts to develop or modify as needed my water quality plan, practices, and/or measures ot to recommend changes to the statewide water quality plan.
- Financial Assistance needed for implementation of my plan as resources become available.
- Possible extensions of time for compliance with a water quality plan based on the availability of technical and financial assistance.

I would like to be kept informed, through the conservation district's mailing list, of new information as it becomes available regarding: resource needs, water quality, environmental conditions, new or more effective best management practices, new and beneficial technologies, and new or expanded sources of technical and financial assistance such as cost share or incentive programs.

AWQ Plan Certification and/or Plan is Filed at the Robertson County, Kentucky, Conservation District

Farm ID: 217
Farm Name: Big Red Farm
Farm Owner: Amanda Gumbert
Address: Blue Licks Pike
Farm Operator: Amanda Gumbert

Date Plan Developed: 5/20/2008 10:37:19 AM

_____ _____
_____ _____
_____ _____

Signed **Date Signed**

KY Ag Water Quality Act Compliance Survey (2010-2011)

- 62% of respondents were aware of the Kentucky Agriculture Water Quality Act prior to the survey
- 58.7% of respondents had an Ag Water Quality Plan
  - 51.9% of the plans were developed during the years 2001-2005

KY Ag Water Quality Act Compliance Survey (2010-2011)

- Only 16.7% of respondents have updated Ag Water Quality plans since initial development
- Over half (56.9%) of respondents reported more than five years since updating their Ag Water Quality plan
- Only 33.3% of respondents had implemented 100% of their Ag Water Quality Plan

How is Nutrient Management Related to the KY Ag Water Quality Plan?

- Livestock BMP #11 – Nutrient Management
- Crops BMP #14 – Nutrient Management

This is NOT new!

AWQA Minimum Requirements - Old

- Comply with NRCS Code 590 (2001)
- Manage manure in a manner that prevents degradation of water, soil, air, and that protects public health and safety.
- Sufficient land must be available for a disposal area without overloading soils or exceeding crop requirements.
- Minimize edge-of-field delivery of nutrients where no setbacks are required.

What Changed?

- Updates to KY NRCS 590
- N and P Risk Assessments must be used on every field
  - A new N and P Index have been developed
  - Producers no longer have the choice to choose a P threshold vs. a P index approach for planning nutrient applications (2001)
- Every application field must have a RUSLE2 soil loss assessment
  - Soil loss tolerance levels must not be exceeded

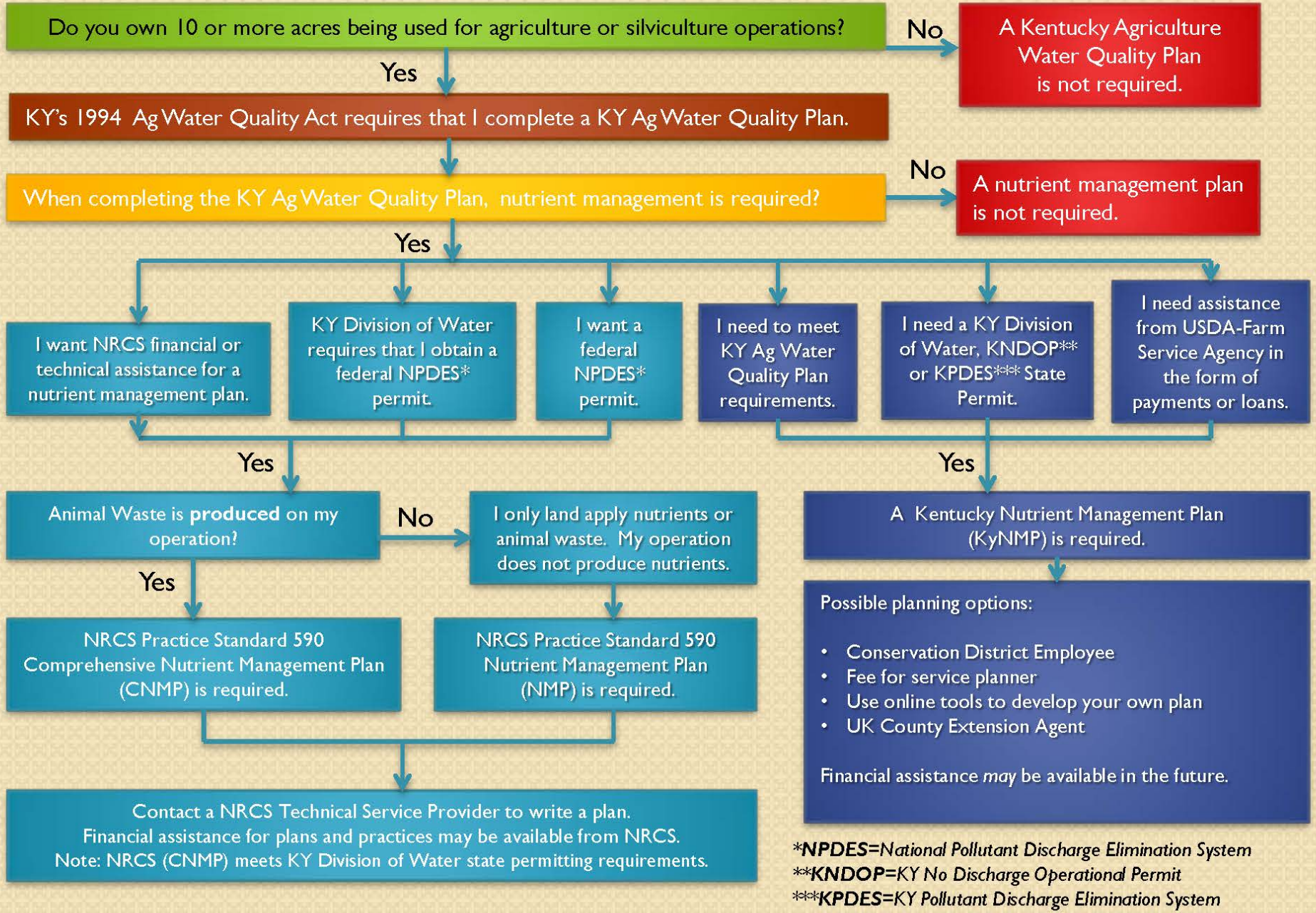
What Changed?

- The KY NRCS 590-based CNMP is complicated to develop, requires TSPs, and a waiting period
- The AWQA has added another option for developing NMPs

AWQA Minimum Requirements - New

- Comply with NRCS Code 590 (2013) or KyNMP (UK Pub – ID-211 *Kentucky Nutrient Management Planning Guidelines*).
- Manage manure in a manner that prevents degradation of water, soil, air, and that protects public health and safety.
- Sufficient land must be available for a disposal area without overloading soils or exceeding crop requirements.
- Minimize edge-of-field delivery of nutrients where no setbacks are required.

Kentucky Nutrient Management Plan Flow Chart



**NPDES*=*National Pollutant Discharge Elimination System*
***KNDOP*=*KY No Discharge Operational Permit*
****KPDES*=*KY Pollutant Discharge Elimination System*

ID-211 KENTUCKY NUTRIENT MANAGEMENT PLANNING GUIDELINES

Steve Higgins, Amanda Gumbert, Stephanie Mehlhope







WORKSHEET 1 - ESTIMATING NUTRIENTS GENERATED PER CONFINEMENT PERIOD — **SOLIDS WORKSHEET**

1. Nutrients Generated (As Excreted)

Animal Type (See List)	Number	x Percent Waste as Solids	x Avg. Weight	/ 1000	x Confinement Period (days/yr) *	= Animal Unit Days		Table 1 Value	=	N	P_2O_5 (lbs)	K_2O
Beef (all cattle and calves)	200	x 1.00	x 650	/ 1000	x 120	= 15,600	x N	0.34	=	5,304		
							P_2O_5	0.21	=		3,276	
							K_2O	0.25	=			3,900
							N		=			
							P_2O_5		=			
		x	x	/ 1000	x	= 0	x K_2O		=			
							N		=			
							P_2O_5		=			
		x	x	/ 1000	x	= 0	x K_2O		=			
								Step 1 Total	=	5,304	3,276	3,900

2. Manure Generated (As Excreted)

Animal Unit Days (from Step 1)	x	Manure/A.U. Table 1 value	=	Volume of Manure	
15,600	x	1	=	15,600	cu.ft.
	x		=		cu.ft.
	x		=		cu.ft.
			Step 2 Total	15,600	cu.ft.

* Confinement period must be adjusted for dairy cows where they are only held a short period of time during milking (e.g., 365 days x 25% confinement during the day = 91 days total confinement)

Override Volume of Manure

3. Daily Bedding or Wasted Forage (cu.ft.) — 0 cu.ft.

4. Total Tons = Step 2 + Step 3 / 33 Cu.Ft./Ton — 472.72 Tons

(Swine, Dairy, Beef, Horse, Sheep = 33 Cu. Ft./Ton; Poultry = 74 Cu.Ft./Ton)

5. Weighted Nutrient Value Before Nutrient Losses (lbs/ton) (Step 1 Total / Step 4)

N	P_2O_5	K_2O
11.22	6.93	8.25

Print Worksheet | Worksheet 2 (Solids) | Go to Worksheet 1 (Liquids)

Note: All manure calculations are carried to two decimal points with no rounding. All commercial fertilizer calculations will be rounded to whole numbers.

WORKSHEET 2 SOLIDS - NUTRIENT BALANCE

Tract	Field No.	Acres
	H	50

Soil Test P Value (Mehlich 3): 266

		N	P_2O_5	K_2O
1.	**Crop or Crop Sequence/Rotation**	Corn Silage (Ton)		
2.	**Realistic Yield (Average from 5-10 Years)** (must enter a value for proper results)	20		
3.	**Plant Nutrients Needed or Allowed** (lbs/ac) (Using crop removal rates in Table 5)	194	72	160
4.	**Adjusted P_2O_5 Application Rate according to Threshold.** Choose P_2O_5 x 0 (P_2O_5 x 0 for Soil Test P <400; x 1 for Soil Test P 401-600; x 0.5 for Soil Test P 601-800; >800 = Manure cannot be applied)		0	
5.	**Fertilizer Credits** (Starter ***or*** Other) (lbs/ac)	0	0	0
6.	**Nitrogen credits from Previous Manure Applications** (lbs/ac) Table 4 value x net application of manure nutrients "**N**' in previous year(s) Table 4	0		
7.	**Plant Nutrients Needed Minus Credits** (lbs/ac) (Step 3 for N minus Steps 5 & 6 or Step 4 for P_2O_5 minus Step 5)	194	72	160
8.	**Nutrients in Manure** (lbs/ton) (Use lab test ***or*** weighted value as determined in Worksheet 1)	11.22	6.93	8.25
9.	**Percent Nutrients Retained in System** Table 2 Enter Table value as a decimal. (Enter zero with lab analysis)	80%	95%	95%
10.	**Net Retained Nutrients in Manure** (lbs./ton) (Step 8 x Step 9) Enter zero with lab analysis.	8.97	6.58	7.83
11.	**Percent of Available Nutrients** Table 3	35%	80%	100%
12.	**Net Available Nutrients** (lbs./ton) (Step 10 x Step 11 without lab analysis. Step 8 x Step 11 with lab analysis)	3.13	5.26	7.83
13.	**Application Rate** (tons/ac) (Step 7 / Step 12) Note: Application limitations may apply.	9.5	9.5	9.5
14.	**Net Application Amount for All Nutrients** (lbs/ac) [Step 12 x Step 13]	29.73	49.97	74.38
15.	**Nutrient Needs or Surpluses** (lbs/ac) (Step 14 minus Step 7) "-" sign indicates need	-164.27	-22.03	-85.62

Tons Available Solids: 472.72 — **-Tons Applied in Field** (Step 13 x Field Acres): 475 — **= Balance**: -2.27

Uniform Application Rate = 9.4544 **ton/ac**

WORKSHEET 3

WORKSHEET 3 - APPLICATION RATES AND LAND REQUIREMENTS [1]

Tract No.

Print This Page

Field No.	Acres	Crop Rotation / Sequence & Realistic Yield	Expected Application Date or Timing	Expected Application Rate[2] (tons/ac or lbs/ac)		Actual Application Date or Timing	Actual Application Rate[2] (tons/ac or lbs/ac)	Form Solid, Liquid, or Commercial Fertilizer	Total per Field (tons or lbs)		Soil Test Phosphorus [3]	Planned BMPs [4]	
												BMP	Date
H	50	Corn Silage	Spring 2012	9.5	tons/ac	3/31/2012	15 T/A	Solid	750	tons/ac	266		
D	20	Wheat	Fall 2012	6.5	tons/ac			Solid	0	tons/ac	120		
F	20	Wheat	Fall 2012	6.5	tons/ac			Solid	0	tons/ac	380		
G	32	Wheat	Fall 2012	6.5	tons/ac			Solid	0	tons/ac	268		

1. Where land application is occurring under long term lease or agreement with adjacent landowner, fields must be included in the above table.
2. Reference maximum rate per application from Worksheet 2. For phosphorus based applications, a one time application can occur for crops grown in multiple years (e.g., corn following by winter wheat followed by soybeans).
3. When soil test P exceeds 400, use Phosphorous Threshold.
4. Fields that have a "High" soil test phosphorus (>400) should implement Best Management Practices (BMPs) to reduce the risk of nutrient movement to sensitive waterbodies.. BMPs may include, but not be limited to: installing conservation buffers, reducing P_2O_5 application rate, incorporating manure, adding chemical treatments to litter that tie up soluble P and keep it from moving over the landscape, and/or adjusting application timing.

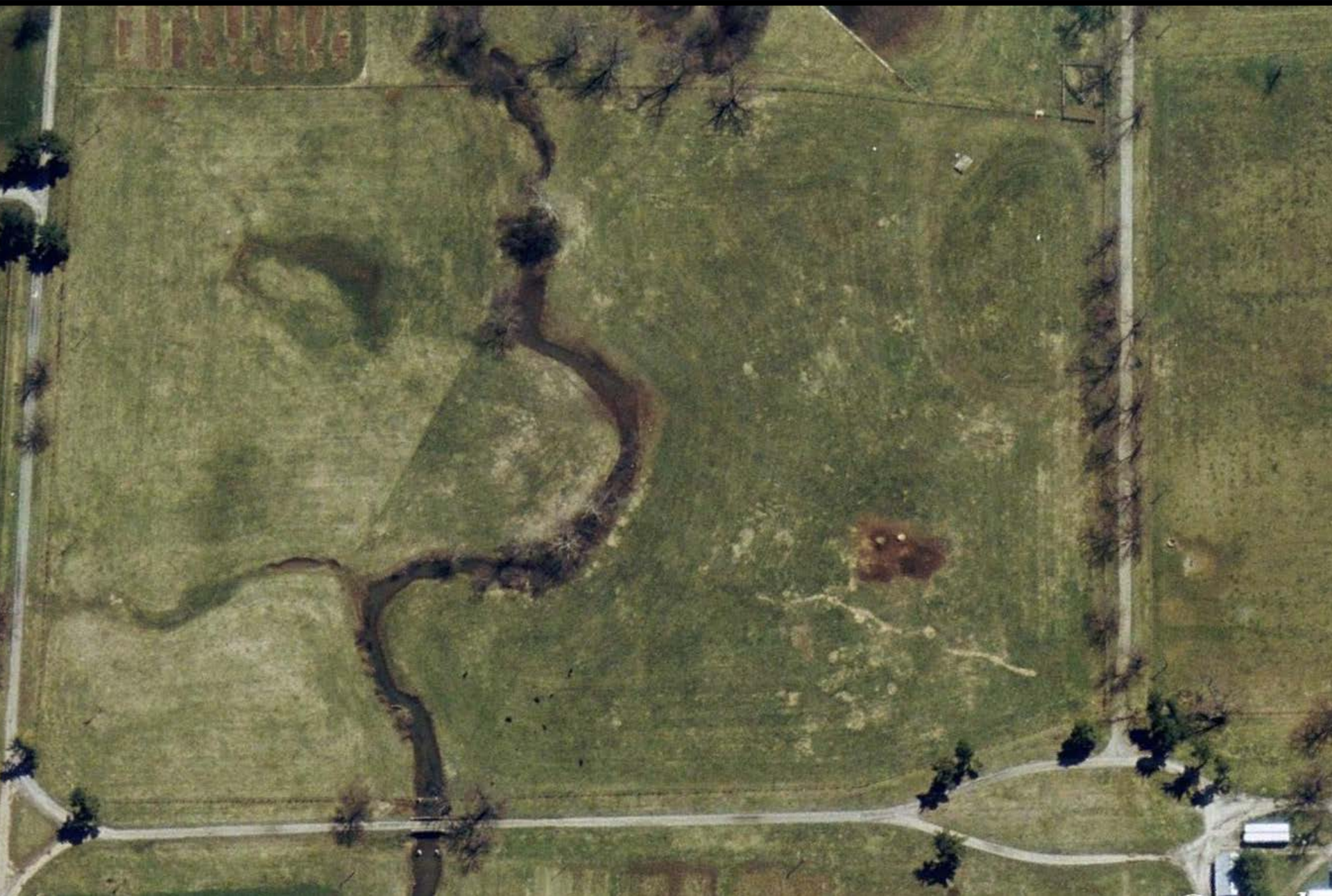
KyNMP Summary

- Similar concept as in NRCS 590 (2001/2013)
  - Inventory nutrients available (manures)
  - Determine crop needs
  - Distribute nutrients so that crop needs are met without overloading soils
- Producer can write his/her own plan
- Benefit = better understanding of their operation and nutrient management concepts
- Adaptive management can improve efficiency, production, and economic returns

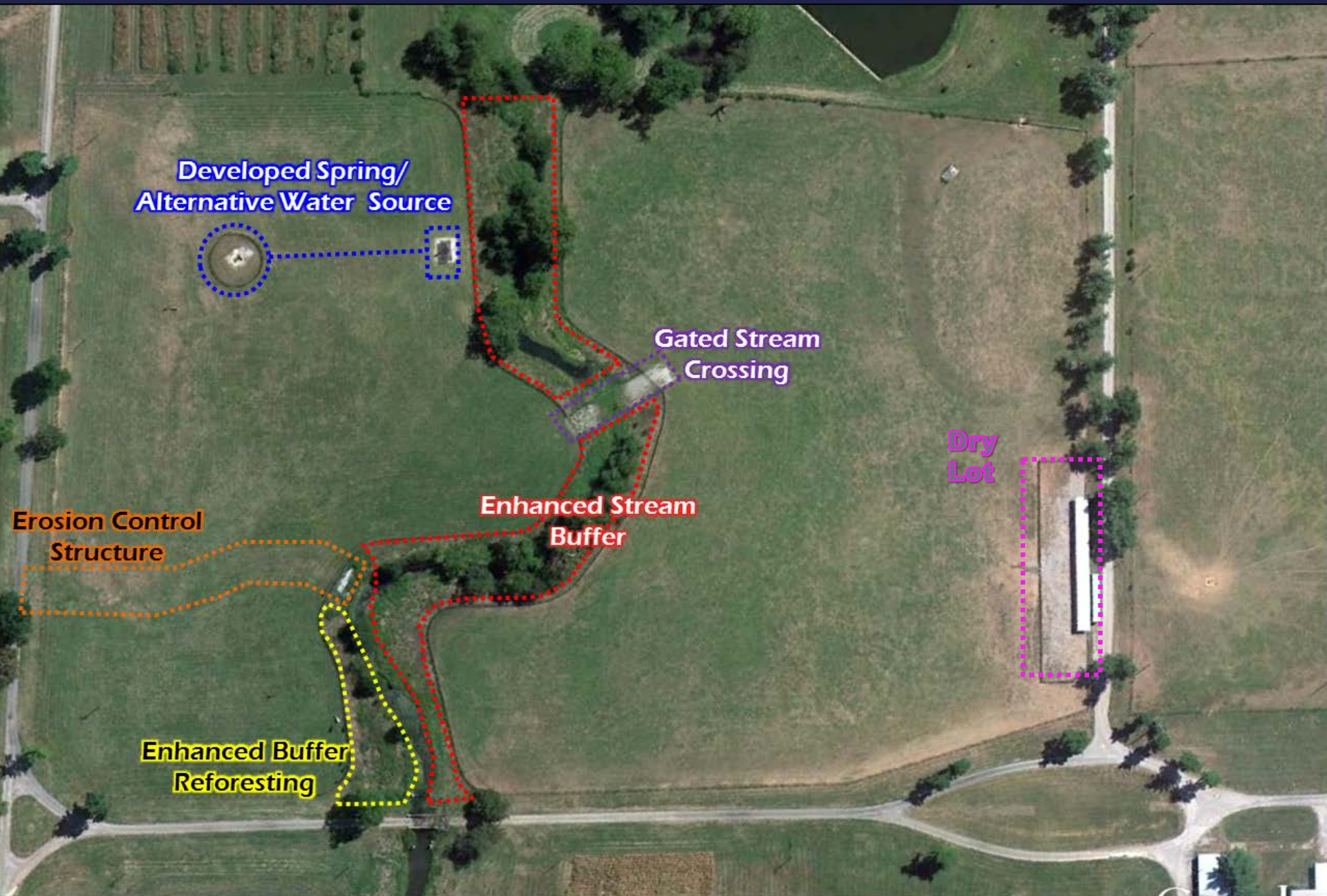
Educational Need – How Do We Help Producers?

- Partnerships
- Existing Extension Programs
  - Master Cattlemen
  - Master Stocker
- Demonstrations

2002



2010


Developed Spring/
Alternative Water Source
Gated Stream
Crossing
Dry
Lot
Enhanced Stream
Buffer
Erosion Control
Structure
Enhanced Buffer
Reforesting

Educational Need – How Do We Help Producers?

- Commodity Associations
  - Annual Meetings/Leadership
- Train-the-Trainer
  - Conservation District Staff, County Agents, Extension Specialists
- Train-the-Regulator - WHAT?!?!?

Educational Need – How Do We Help Producers?

- Field Days
- Publications/Newsletters


Livestock Stewardship BMP Training and Demonstration Project
COOPERATIVE
EXTENSION
SERVICE
UK
UNIVERSITY OF
KENTUCKY
College of Agriculture


Westway
The Kentucky Agriculture Water Quality Act
What is the Agriculture Water Quality Act?
The Agriculture Water Quality Act was passed by the Kentucky General Assembly in 1994. The act protects surface and groundwater resources from pollution from agriculture and forestry practices.
What is an Agriculture Water Quality Plan?
The Kentucky Agriculture Water Quality Plan consists of best management practices (BMPs) from six areas: silviculture (forestry); pesticides and fertilizers; farmstead; crops; livestock; and streams and other waters. The statewide plan serves as a guide to individual landowners/land users as they develop water quality plans for their individual operations.
What about Cost Share?
Cost share dollars are available through federal, state, and local programs to help implement Ag Water Quality plans.
Do You Need a Water Quality Plan?
You Need a Current Ag Water Quality Plan if:
1. You own 10 acres or more that are actively involved in agriculture or forestry;
Or
2. You plan to apply for on-farm assistance through federal, state, or local cost-share programs.
Complete your Ag Water Quality Plan at:
www.ca.uky.edu/awqa
The Kentucky Agriculture Water Quality Act
UK AG & NATURAL RESOURCES & AG ECON DEPT.
COOPERATIVE EXTENSION SERVICE
UK
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College of Agriculture

The Kentucky Agriculture Water Quality Act

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What is the Agriculture Water Quality Act?

The Agriculture Water Quali
Kentucky General Assembly
surface and groundwater re
from agriculture and silvicul

Who is affected?

The act effects all landowne
ous acres and who conduct
operations on their land.

What must be implemente

All landowners/land users w
land that is used for agricult
tions must develop and imp
plan based on guidance fro
Water Quality Plan.

Do You Need a Wa

1. Do you own 10 contiguous ac
   - No: You do not need an agricul
   - Yes: Go to question 2.
2. Is your property being used fo operations?
   - No: You do not need an agricul
   - Yes: Go to question 3.
3. Do you have a conservation pl stewardship plan for your ope
   - No: You will need to develop a
   - Yes: You will need to develop a you will need to update yo plan, or forest stewardship water is protected from po on your property.

What is an Agriculture Water Quality Plan?

The Kentucky Agriculture Water Quality Plan consists of best management practices (BMPs) from six areas: silviculture (forestry); pesticides and fertilizers; farmstead; crops; livestock; and streams and other waters. The statewide plan serves as a guide to individual landowners/land users as they develop water quality plans for their individual operations.

How does the act define agriculture and silviculture operations?

According to the Kentucky Agriculture Water Quality Act, an "agriculture operation" is defined as any farm operation on a tract of land, including all income-producing improvements and farm dwellings, together with other farm buildings and structures incident to the operation and maintenance of the farm, situated on 10 contiguous acres or more of land used for agriculture or silviculture or devoted to meeting the requirements and qualifications for payments to agriculture programs under an agreement with the state or federal government.

Agriculture operations include, but are not limited to, production of livestock, livestock products, poultry, poultry products, milk, and milk products, or for the growing of crops such as but not limited to tobacco, corn, soybeans, small grains, fruits, and vegetables.

What is the process for developing and implementing an individual water quality plan?

First, landowners must assess their operations and determine if they need an agriculture water quality plan. Once the assessment is complete, the landowner must choose the appropriate BMPs for his/her operation.

Who is responsible for developing an Agriculture Water Quality Plan?

The landowner is responsible for preparing an agriculture water quality plan that best meets the needs of his/her particular farming operation. This plan belongs to the landowner and must be available in the event that water pollution occurs and is identified and traced to his/her agricultural operation. A self-certification form, can be filed with the local conservation district.

An interactive online tool is available at www.ca.uky.edu/awqa to help landowners decide which best management practices (BMPs) are needed for their farm.

For more information regarding the workbook or online computer version contact your local Conservation District office, county Extension office, or Amanda Gumbert at 859-257-6094 or amanda.gumbert@uky.edu.

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AEN-107

Paved Feeding Area
Kentucky Agricultur

Stephen Higgins and Sarah Wightman, Biosystems and Agr

Kentucky's abundant forage makes it well suited for grazing livestock. Livestock producers can make additional profits by adding a few pounds before marketing calves; however, adding those pounds requires keeping calves during the winter months (October to February), when pasture forages are dormant and supplemental feed is required. The areas used to winter calves need to be conducive to feeding and need to avoid negatively impacting the environment, especially water quality.

Some livestock producers use a paved feeding area to limit mud, ease manure removal, and facilitate feeding and management. Typically, producers are interested in improving herd health, limiting expenses, and increasing profits, but environmental issues also need to be addressed to prevent degradation of natural resources and limit the possibility of nuisance complaints and notices of violation (NOVs).

Best management practices (BMPs) are particular management methods that consider the nutrients in manure; reduce runoff; and trap, filter, and control pollution. This publication is intended to provide an overview of the impacts associated with paved feeding areas and highlight the Kentucky Agriculture Water Quality Plan (KAWQP) and the BMPs it recommends for livestock producers.

Figure 1. Ae
land.

Potential Environmental Problems

When densely stocked animals are fed concentrated diets and the area on which the animals are standing is impervious (no rainwater infiltration), the manure and dirty water that is produced will pollute runoff. It needs to be managed. The following sections describe the environmental impacts of paved feeding areas.

Animal Con

First con
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approximat
or about 5,8
animal. Cor
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that a feedin
that is appr
than that of

Now co
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marketed at
weight is 85
duces appr
and 35 lb of
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as distiller's
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ID-175

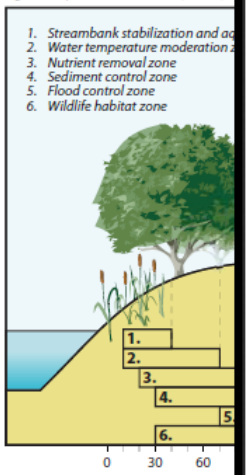
Riparian Buffers

A Livestock Best Management P

Amanda A. Gumbert, Steve Higgins, and Carmen Agouridis

In Kentucky, cattle on pastures are often watered by streams. Although this practice solves water requirements for cattle, providing livestock free access to streams and riparian areas can lead to a contaminated water supply and damaged ecosystems. A better solution is to implement riparian buffers with limited access points to streams or provide alternative water sources. This practice can protect water quality, increase herd production, and provide other landowner benefits. The purpose of this publication is to explain the role of riparian areas and how they can benefit the livestock producer, the herd, and the environment.

Figure 1. Riparian area widths (in feet) a



What Is a Riparian Buffer?

A riparian buffer is the strip of land that borders a stream, river, or other body of water. The water body may be permanent or intermittent and may include areas associated with groundwater recharge. The riparian buffer, also called a riparian area or zone, is a transitional zone between aquatic ecosystems (the water body itself) and upland areas (such as pasture or woodlands). The riparian buffer may consist of trees, shrubs, grasses, or a combination of the three.

Buffer Widths

Accomplish
functions listed
etation location,
riparian buffer.
may be naturall
the landowner

Buffer width
distance betwe
body and the n
each side of the
of 20 feet mea
each side of the
be considered w
width. For exam
require a differ
well-maintaine

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ID-200

Environmental Compliance for Dairy Operations

Steve Higgins and Sarah Wightman, Biosystems and Agricultural Engineering, and Amanda Gumbert, Agricultural Programs

Some farmers are reluctant to talk about the environment, but because farms are under increasing review by state and federal regulatory agencies, producers need to be familiar with environmental issues and regulations. Implementing best management practices (BMPs) can help farmers continue to protect the environment and increase productivity.

Common pollutants from farms include sediment, pathogens, and nutrients coming from muddy conditions and excess manure. An Agriculture Water Quality Plan (AWQP) can resolve many of these pollution issues. This plan is required by law in Kentucky if a landowner owns 10 or more acres that are being used for agriculture or silviculture operations. These plans are designed to help producers identify potential sources of pollution on their operation and implement BMPs that protect natural resources and improve efficiency.

This publication provides dairy producers with the tools they need to accurately assess environmental challenges on their farm and provides strategies to obtain compliance and preserve environmental quality for future generations.

Confinement Facilities

Challenges

There are three general types of confinement facilities: totally enclosed, partially enclosed, and open. Each of these facilities is subject to different stormwater runoff issues. In totally enclosed facilities, animals are managed completely under a roof. Totally enclosed facilities generally do not produce polluted runoff if designed correctly. Pollution could originate from these facilities if the manure generated from these areas is not collected and managed properly or if stormwater is allowed to come in contact with the manure or other waste.

The second type of confinement facility is partially enclosed facilities that include a roofed building that covers part of the holding area, but animals also have access to uncovered areas. The third type are open confinement facilities with unroofed areas, where animals are held, fed, and handled. Partially enclosed and open facilities can be significant sources of polluted runoff if stormwater runoff is not properly managed. Other areas on dairies that can produce stormwater pollution include loafing areas, parlor-holding areas, silage storage areas, manure storage and handling areas, dry lots, feeding areas, and any unvegetated areas.

Photo: Amanda Sterrett, Animal and Food Science Department.

Best Management Practices

Open concrete lots, roofs, and other impervious areas generate significant volumes of water that must be properly managed. For example, a roof measuring 75 by 150 feet produces approximately 160,000 gallons of clean water runoff per year. To prevent the contamination of clean water and reduce the amount of water that must be managed, consider installing gutters, downspouts, and diversion ditches that collect clean water and direct it away from the confinement facilities. Diverting stormwater can significantly decrease the amount of water flowing into the confinement area. This reduces the amount of contaminated runoff that can flow offsite and into surface waters. Diversion can also decrease the amount of water flowing into liquid manure containment facilities, which allows the producer to gain storage capacity. For more information about diverting stormwater, see University of Kentucky Cooperative Extension publication "Stormwater BMPs for Confined Livestock Facilities" (AEN-103).

Totally enclosing production is another way to control pollutants coming from confinement facilities, because it prevents clean rainwater from coming into contact with manure and other pollutants. Total enclosure may be expensive initially, but collecting and storing contaminated water from unenclosed facilities takes a significant amount of land and space that could otherwise be used for additional production.

Runoff from dry lots and other confinement areas can cause erosion and generate pollution that can move offsite into surface waters. Place any high traffic or congregation areas on summit positions. Avoid placing structures not in floodplains or on slopes greater than six percent. In addition, planting filter strips using warm and cool season vegetation around these areas can prevent soil erosion (Figure 1). Install these filter strips along the down slope to filter water from

What’s Next?

KyNMP Training – Hittin' The Road

- Conservation District Staff, other service providers
  - August 14-15 - Princeton
  - August 19-20 - Mayfield
  - October 1-2 - TBD
  - October 14-15 - TBD
  - October 22-23 - TBD

Questions?

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There's no question: surface and groundwater is polluted

- How do we clean it up?
  - Federal Regulations (Stick)
    - Clean Water Act
    - Safe Drinking Water Act
    - Federal Insecticide, Fungicide and Rodenticide Act
    - More on the horizon?

how do we clean it up?

- USDA Economic Programs (Carrot)
  - EQIP
    - MRBI
  - WQP
  - Conservation Compliance/HEL
  - CRP
  - Wetlands Reserve Program

how do we clean it up?

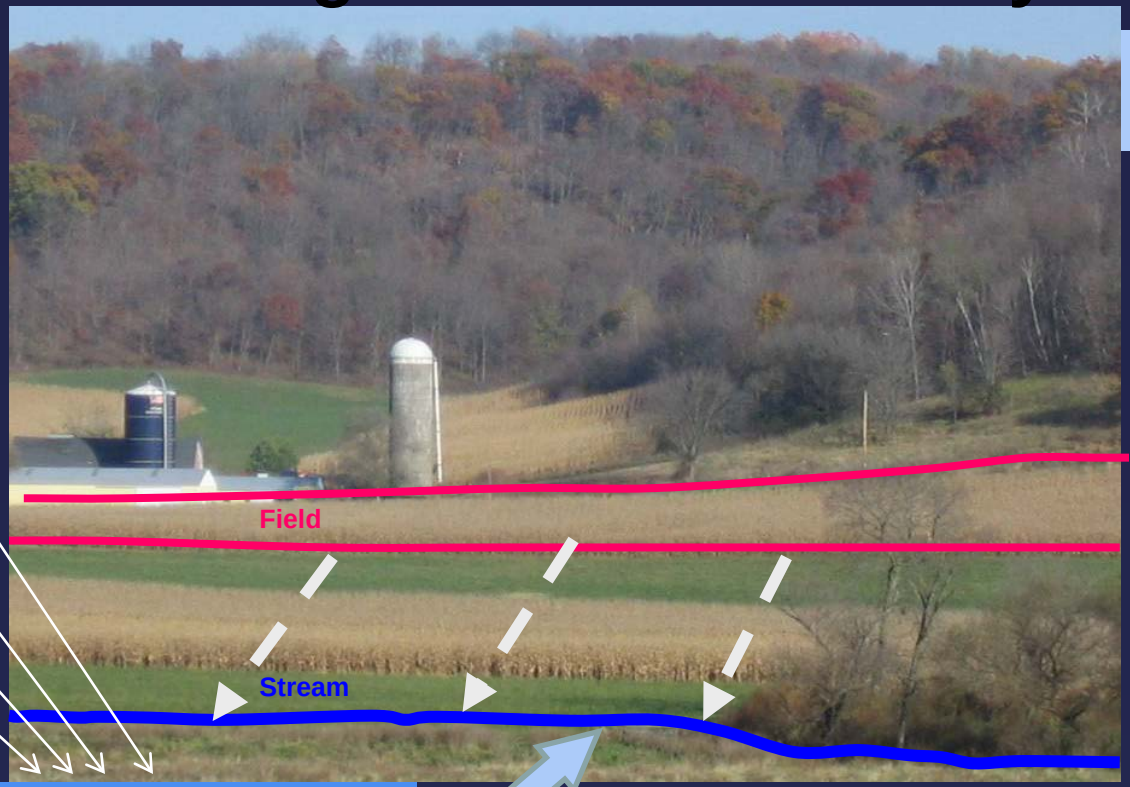
- State Regulation (Stick)
  - KPDES
  - KNDOP
  - Ag Water Quality Act (Insurance)
- Voluntary Compliance
  - Ag Water Quality Act
  - Conservation programs
- Education (Changing Hearts and Minds)
  - Cheapest but has limited effects

Extension Education Efforts

- Historical approaches
- Field days
- Technology
- Challenges
- Carrots/sticks

P Index Estimates Average Annual P Delivery

- County
- Soil Type
- Soil Test P and Organic Matter
- Field Slope
- Field Slope Length
- Contour and filter practices
- Tillage
- Rotation crops and yields
- Manure Applications
- P Fertilizer Applications
- Downfield Slope to Surface Water
- Distance to Surface Water



New Phosphorus Index

Kentucky Nitrogen and Phosphorus Index
Proposed release date: January, 2013

USDA NRCS
United States Department of Agriculture
Natural Resources Conservation Service