The Journal of Extension

Volume 44 | Number 5 Article 30

10-1-2006

Livestock-Influenced Water Quality Risk Assessment Tool

Tipton D. Hudson
Washington State University Extension, hudsont@wsu.edu

Joe H. Harrison
Washington State University Extension, jhharrison@wsu.edu

Rick Koelsch
University of Nebraska, rkoelsch1@unl.edu

Recommended Citation

Hudson, T. D., Harrison, J. H., & Koelsch, R. (2006). Livestock-Influenced Water Quality Risk Assessment Tool. *The Journal of Extension, 44*(5), Article 30. https://tigerprints.clemson.edu/joe/vol44/iss5/30

This Tools of the Trade is brought to you for free and open access by the Conferences at TigerPrints. It has been accepted for inclusion in The Journal of Extension by an authorized editor of TigerPrints. For more information, please contact kokeefe@clemson.edu.

October 2006 // Volume 44 // Number 5 // Tools of the Trade // 5TOT7

PREVIOUS ARTICLE | ISSUE CONTENTS

Livestock-Influenced Water Quality Risk Assessment Tool

Abstract
This article describes a livestock-influenced water quality risk assessment tool that was developed to assist livestock producers with conducting a self-assessment of their operation and management relative to a facility's risk of negatively affecting water quality. The tool focuses on factors likely to influence designation of the operation as a Concentrated Animal Feeding Operation by a permitting authority and was also designed to be used in cooperation with a technical service provider to make a site-specific assessment. The tool is available in paper format and an interactive Microsoft Excel™ spreadsheet version.

Tipton D. Hudson
Rangeland & Livestock Management Educator
Washington State University Extension
Ellensburg, Washington
hudsont@wsu.edu

Joe H. Harrison
Nutrient Management Specialist
Washington State University Extension
Puyallup, Washington
jhharrison@wsu.edu

Rick Koelsch
Biological Systems Engineering and Animal Science
University of Nebraska
Lincoln, Nebraska
rkoelsch1@unl.edu

Introduction

The U.S. Environmental Protection Agency (EPA) (U.S. EPA 2003) released new guidelines for Concentrated Animal Feeding Operations and Animal Feeding Operations (CAFO/AFO) in 2003. Under the new guidelines, affected CAFOs will be required to develop a nutrient management plan, implement practices to manage manure in an environmentally safe manner, conduct soil and manure testing, and keep a variety of records. The changes in the federal rule resulted in a need in Washington to provide livestock producers with an assessment tool that would help them evaluate their operation and management relative to the facility's risk of negatively affecting water quality, especially via point-source pollution.

This article describes a livestock-influenced water quality risk assessment tool that was developed to assist livestock producers with conducting a self-assessment of their operation and management in relation the risk of negatively impacting water quality. A major goal in developing the assessment tool was to assist livestock producers with information that would:

1. Contribute to an operation's sustainability;
2. Assist with adoption of best management practices (BMPs); and
3. Maintain a non-CAFO designation.

The tool was developed as a partnership (Livestock Nutrient Management Education Partnership -

LNMEP) including the Washington State Department of Agriculture, Washington State Department of Ecology, U.S. Environmental Protection Agency, Washington State conservation districts, Washington State Natural Resources Conservation Service (NRCS), Washington State University (WSU) Extension, Washington Cattlemen's Association, and Washington State Dairy Federation.

Assessment Tool Development

The livestock-influenced water quality risk assessment tool was based on previous assessment tools (Kansas Livestock Environmental Stewardship, Utah State University Water Quality Extension, and University of Wyoming Extension) as well as the experience of the LNMEP members. The tool was designed with the following objectives:

1. Ensure relevance to all livestock species;
2. Provide an assessment of relative risk;
3. Recommend suggested BMPs;
4. Provide visual (pictorial) examples of practices and conditions; and
5. Encourage the producer to contact their local conservation district staff for assistance with BMP implementation.

In addition, it was decided that the assessment tool be made available in paper format and an interactive Microsoft Excel™ spreadsheet version.

The assessment tool was organized as follows:

Section 1--Directions for use of Assessment Tool

Section 2 and Step 1--Determine if the livestock or poultry operation is an Animal Feeding Operation

Section 3 and Step 2--Risk assessment

Section 4--List of contact information for all conservation district staff and Washington State University Extension livestock educators

Section 5--Photo Gallery--Summary of all pictures used to depict conditions at livestock operations that would result in low or high relative risk of negatively impacting water quality

Section 6--Acknowledgements

Section 7--Summary list of suggested BMPs and NRCS practice standard code numbers

Risk Assessment Format

The risk assessment tool was organized as a series of 29 questions divided into three categories. The three categories were:

1. Proximity of Confinement Area to Water, Confinement Condition factors, or Factors Related to Non-AFO Operations (15 questions)
2. Factors Adopted to Reduce Risk (10 questions)
3. Other Management Factors (4 questions)

The paper version of the risk assessment tool was constructed in a four-column format (Table 1). The first column lists the assessment question, the second and third columns are for selection of a response to the question of higher or lower risk, and the fourth column lists the suggested BMPs to consider adopting if the risk is rated higher. Pictures in the Photo Gallery section are provided to assist with a visual interpretation of the context of each question and potential management conditions or practices.

Table 1.
Four-Column Format of Paper Risk Assessment Tool

Proximity of Confinement Area to Water, Confinement Condition Factors, or Factors Related to Non-AFO Operations	**Higher Risk (H)**	**Lower Risk (L)**	**Suggested Best Management Practices if Risk Is High**

1. Are animals confined for a portion of the day?	Yes	No	None
2. Is the confinement area located in a floodplain?	Within floodplain	Above floodplain	Move animal confinement area out of flood plain
3. What is the distance from the confinement area to any water well(s)?	Less than 100 feet away	More than 100 feet away	Consider relocating lot and conduct water quality test on well water
4. How close is the confinement area to Surface Water?	Less than 100 feet away	More than 100 feet away	Consider relocating lot or routing surface water through culvert

The Excel™ version of the livestock-influenced water quality risk assessment tool is similar in design to the paper version. A major difference is that the Excel™ version is interactive, with buttons to navigate within the spreadsheet. In addition, when a given question is answered as higher risk, the suggested BMP is linked as a response.

Web Site

The livestock-influenced water quality risk assessment tools in paper and Excel™ are available at the following Web sites:
http://www.puyallup.wsu.edu/dairy/joeharrison/
http://animalag.wsu.edu

Summary

A livestock-influenced water quality risk assessment tool was developed to assist livestock producers with evaluating of their operation and management relative to a facility's risk of negatively impacting water quality. The tool can be used to conduct a self-assessment or used in cooperation with a technical service provider to make a site-specific assessment. Advantages of the tool are that it contains visual examples of site-specific conditions to assist with interpretation of practices or conditions that may positively or negatively impact water quality. In addition, the assessment tool results in a set of recommended BMPs for the livestock producer to implement to protect water quality.

References

Kansas Livestock Environmental Stewardship Online Assessments. (n.d.). Retrieved December, 2004, from: http://www.oznet.ksu.edu/kles/Assessments/

Electronic-Field Office Technical Guide. (n.d.) Retrieved December, 2004, from: http://www.nrcs.usda.gov/technical/efotg/

U.S. Environmental Protection Agency Concentrated Animal Feeding Operation - Final Rule. (February 12, 2003). Retrieved December, 2004, from: http://cfpub.epa.gov/npdes/afo/cafofinalrule.cfm

AFO/CAFO Information. (n.d.). Retrieved December, 2004, from Utah State University Water Quality Extension's Web site: http://extension.usu.edu/cooperative/waterquality/index.cfm/cid.813/tid.1728/#ac

Evaluating Confined Livestock Operations. (n.d.). Retrieved December, 2004, from: http://www.uwyo.edu/CES/Drought/AFO/evaluating.htm