CHESAPEAKE BAY PROGRAM

RESOURCE IMPROVEMENT PRACTICE

DEFINITIONS AND VERIFICATION VISUAL INDICATORS

GUIDANCE DOCUMENT

Presented by the Agriculture Workgroup's Resource Improvement Technical Review Panel:

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Introduction

As Chesapeake Bay states implement local Watershed Implementation Plans to meet the new Total Maximum Daily Load requirements for the Chesapeake Bay Watershed, a more accurate accounting of all conservation measures on agricultural lands is critical to ensure that appropriate nutrient load reductions are being credited in the Bay Watershed Model. Traditionally, states have relied upon both State and Federal Cost-Share Programs as the source of conservation implementation data for progress to report in their Watershed Implementation Plans.

Recognizing that many conservation measures have been, and are being, implemented without Federal or State financial assistance, the Chesapeake Bay Program has agreed to credit Best Management Practices that meet CBP or NRCS definitions and standards and Resource Improvement Practices that have been implemented without public cost-share funds provided they are providing a reduction of sediment and nutrients to the Chesapeake Bay. This document will provide the process for identification and verification of these two types of practices.

Objective

The objective of this guidance document is to provide what is required for the collection and verification of non-cost-shared agricultural best management practices that meet CBP definitions and establish definitions and verifications methods for Resource Improvement Practices**.** The goal is to account for all verified farmer implemented conservation practices that result in nutrient and sediment reductions. In order for practices to be counted in the Bay Model, data will have to be tracked, verified and reported and then transmitted to the Chesapeake Bay Program via the National Environmental Information Exchange Network (NEIEN).

The process of identifying Non-cost shared practices will normally happen when local Conservation District or other trained technical staffs are on farms working with cooperators and landowners assisting them with the planning process to correct any potential environmental concerns that the landowner may have. It is extremely important for technical staff to establish a dialogue with landowners to encourage the proper use and maintenance of all BMPs. It is the intent of this document is to provide guidance for jurisdictions to develop verification protocols for the reporting all non cost-shared conservation practices for crediting toward progress in their state Watershed Implementation Plans.

Why Is It Important To Report Non Cost shared BMP's?

- **Farmers and Agricultural Landowners** install many BMP's outside of state or federal cost share programs or cannot accept a government subsidy:
  - ✓ Plain Sect Farmers (Amish, Mennonite Farmers as examples)
  - ✓ Farms owned by corporations that cannot accept federal funding due to the payment limitations.
- **Some state nutrient regulations** require farmers to install practices that provide water quality protection and need to be verified for compliance with state laws. These state requirements may result in practices that are not required to meet NRCS Standards and Specifications:
  - ✓ Stream Exclusion (fencing type or distance from stream)
  - ✓ 10' and 35' buffers for fertilizer and manure application setbacks
- **Watershed Organizations, Environmental Organizations, Conservation Organizations, and NGOs** are all helping Farmers and Agricultural Landowners to meet WIP goals to protect water quality by installing BMPs:
  - ✓ Shenandoah RC&D Council - Stream exclusion fencing with narrow width tree plantings
  - ✓ Nanticoke Watershed Alliance – 10' Buffers on Drainage Ditches
  - ✓ Chester River Association - Switch grass plantings for field buffers
  - ✓ Mid-Shore Riverkeeper Conservancy - Water Control Structures on Field Ditches

Non Cost-Shared Practices that Provide Resource Improvement

Resource Improvement Best Management Practices (RI) are non-cost shared BMPs that are typically financed by the operator or other non-public entity or source and may or may not meet the practice standards associated with federal and state cost-share programs. RI practices may lack the contractual provisions of cost-shared BMPs as well as the corresponding implementation and maintenance oversight. ***"Resource Improvement BMP's are practices which provide similar annual environmental benefits for water quality but may not fully meet all the design criteria of existing governmental design standards. RI BMP's are usually identified during a visit with the farmer. RI BMP's are implemented by a farmer and are not cost shared through a federal or state program. RI BMP's can be the result of a farmer choosing not to completely follow all the details of the design standard from the District or NRCS, but will contain all the critical elements for water quality resource improvement. Accepted CBP RI BMP's definitions contain descriptions of the practice with Visual Indicators. A Visual Indicator is a means of assessing the presence of key elements that must be present to achieve the water quality benefits of the RI practice and to be reported in Jurisdictional WIPs. The inspection interval of an agricultural Resource Improvement BMP shall be reduced from those practices meeting state or federal contractual guidelines resulting in more frequent inspections to insure proper function."***

Resource Improvement Practices are Multi-Year Visual Assessment Practices

The Resource Improvement Practices (RI) discussed in this guidance documents fall under Visual Assessment BMPs - Multi-Year Practices in the Chesapeake Bay Program Partnership Agricultural Workgroup's Agricultural BMP Verification Guidance (May 9, 2014). These are practices can be visually assessed and have a protracted physical presence on the landscape, i.e., of more than one year when properly maintained and operated.

Verification and Quality Assurance of Non Cost-Shared Practices

Currently the Chesapeake Bay Program accepts non-cost shared practices that meet NRCS standards for credit. This guidance document further develops definitions and suggested methods to verify and document the existence of Resource Improvement Practices. Each state will develop a method to verify and document these two types of non-cost shared practices and include it in their State Jurisdictional Protocols. The Chesapeake Bay Program Partnership Agricultural Workgroup's Agricultural BMP Verification Guidance (May 9, 2014) recommends the following for verification of non-cost shared BMP's:

"The minimum expectation of verification for non-cost-shared BMPs is recommended to be 100 percent of the initial identification of annual or multi-year structural BMPs and plan implementation by trained and certified technical field staff or engineers with supporting documentation that it meets the governmental and/or CBP practice standards. Visual assessment for single year BMPs, such as tillage practices, can be statistically sub-sampled utilizing scientifically accepted procedures. During the course of the identified physical lifespan period of multi-year BMPs, a reoccurring annual verification that the BMPs are being maintained and operated as per the appropriate practice standards at a minimum expectation for follow-up sub-sampling of 10% for BMPs achieving greater than 5% of the jurisdiction's WIP agricultural sector goals.

It is important to note that BMPs which were initially implemented and/or operated under a cost-share, regulatory, or permit program but are transitioned out of these programs and no longer are under the oversight of a cost-share agreement, regulation, or permit, will be verified by the same level of verification described for non-cost shared BMPs if they are continued to be considered for ongoing pollution reduction crediting."

How Were Resource Improvement Practices and Visual Indicators Developed?

The development of Resource Improvement Practices started in July of 2013 with the Maryland Department of Agriculture requesting that their "Non Cost-Shared Management Practice Verification Procedures Manual" be approved by the AgWG. The November 2013 version of their verification document was the original document the Technical Panel reviewed and used for the development of this Guidance Document. The process for the development of this Guidance Document included the following actions by MDA and the Technical Panel:

1) Starting in 2011, through the review of practices that farmers have installed without cost sharing, the Maryland Department of Agriculture determined there were fourteen practices that they considered to be what was first called Functional Equivalent Practices (FE). MDA's first verification procedures manual VERSION 1 created documentation worksheet that consisted of open ended and fill-in the blank questions. Upon review by MDA, it was determined at this method of documentation resulted in wide variations in interpretation and what was reported as a FE Practice. Note: Virginia also conducted a trial of collecting Non-Cost shared practices in 6 Districts, but did not provide any information to the panel for this process.
2) MDA worked with representative Conservation Districts to develop Versions 2 and 3 of the MDA Non-Cost Shared Verification Manual. It included a new FE worksheet that contained NRCS practice design criteria and FE design criteria. It was tested and updated from input by the representative Conservation Districts in Maryland.
3) MDA presented this document to the AgWG in July 2013 and the Partnership endorsed the concept and requested approval from Water Quality Goal Implementation Team (WQGIT). The WQGIT requested that the AgWG work through a technical review process for final approval. The AgWG then requested a Partnership Review Panel be created to review the MDA document and provide recommendations back to the AgWG for final approval.
4) AgWG sent out a notice to the jurisdictions for Technical Review Panel member nominations. In this notice, the AgWG requested technically qualified members from State Agencies, Conservation Districts, NRCS technical personal and the NGO Community. States submitted nominees and NRCS agreed to participate as technical members in an advisory role (See letter from Rich Sims in Appendix A). December 12, 2013, the AgWG selected the following Technical Review Panel members:

Technical Review Panel Members	**Affiliation**
Robert Ensor – Panel Chair	District Manager, Howard SCD-MD
Debbie Absher	Director of Ag Programs, SCD-DE
Gary Moore	Ag Incentives Program Manager, DCR-VA
Lamonte Garber	Watershed Restoration Coordinator Stroud Water Research Center, PA
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Mark Dubin	Chesapeake Bay Program
Emma Giese	Chesapeake Bay Program
Dana York	Green Earth Connection

5) The Technical Review Panel held a teleconference January 29, 2014 to receive an introduction to the issue and their panel charge.
6) The Technical Review Panel met in person on March 2, May 8, 2014 and a May 29, 2014 teleconference for working sessions to develop the definitions and documentation checklists for the practices. During these sessions, the following overall document changes were made:

a) Change in name from Functional Equivalents (FE) to Resource Improvement Practices (RI)
b) Change FE Criteria test to Visual Indicators (VI), following the WQGIT approved process developed by the Storm Water Sector for verification of homeowner BMPs.
c) The NRCS design criteria were removed from the documentation checklists. The NRCS Practice standards will only be used as a comparison practices for assistance in identifying if a practice should be reported and a Non-Cost Shared Practice that meets a NRCS standard or a RI.
d) Final definitions and VI's for each practice were developed.
e) Two practices were deleted: Concentrated Area Protection and Wetland Development. It is recommended by the Technical Review Panel that these two be provided back to the appropriate CBP program Expert Panel or Sector for assistance on the development of an appropriate RI practice.
f) It was decided to make a jurisdictional neutral document and recommendations were made on the appropriate Agricultural Verification BMP Methods, documentation requirements and lifespan for RI practices using the Agricultural Workgroup's Agricultural BMP Verification Guidance (May 9, 2014).
g) The document was presented by the Technical Panel to the AgWG for review on June 19, 2014.
h) The document was approved by the AgWG on XXXXXXX
i) The document was approved the WSTWG and the WQGIT on XXXX.
f) The final approved document provided for jurisdictions on XXXXX.
g) Jurisdictions that choose to report RI's will develop the specified guidance and will get approval the appropriate CBP approval process. If states propose additional RIs they will need the appropriate AgWG and CBP approval.
h) CBP approved RI practices will be collected by approved jurisdictional verification processes and reported through NEIEN for credit in the Jurisdictional TMDL Watershed Improvement Plan progress runs.

Resource Improvement Practices and Visual Indicator Requirements

RI Practices and Visual Indicators (VI) meet the follow requirements:

a) RI and their associated VI's are usually found as part of a state or NGO entity working with farmers. They typically would not be designed by Agencies or NGOs, but by the farmer who has an interest in resolving a conservation water quality problem on their farm and they implemented a RI to meet that need. To receive credit for the practice, the VI's for each RI are required to be present and are verified by an approved CBP Verification Method with the appropriate documentation provided to the certifying agency for approval before credit is provided in Jurisdictional WIPs (see Matrix in Appendix B)
b) VI's will meet the appropriate federal, state and local regulations.
c) VI's provide for the safe functioning of the practice for humans or animals.
d) VI's will provide water quality or resource improvement as implemented.
e) Some RI standards will have more than one reportable code to record the appropriate buffer widths, vegetation or type of animal, or animal units, etc.. (See Appendix C- Animal Units)
f) Nutrient Exclusion Areas that are less than CBP Buffer widths (i.e. <35') are will receive "land use change" credit only as previously approved by the AgWG.
g) RI practice names, units and CBP credit will be finalized through the appropriate NEIEN Appendix process and timelines to be credited to the Jurisdiction WIP.
h) All RI practices have distinct lifespans and will be recertified at the end of RI lifespan to ensure they are being properly maintained and functioning.

How are Visual Indicators Evaluated and Recorded?

In the process of working with a farmer, RI practices may be mentioned by the farmer or discovered by the technical specialist during a farm visit. Jurisdictions may use any approved AgWG verification method (See Appendix B) to determine if the practice will meet the RI definitions and VI's. A Jurisdictional RI checklist will be used to document the appropriate information derived from these methods. Jurisdictions may use any format or design (i.e. paper, electronic, etc.) for their state checklist to document if all elements of a RI and if the practice meets a RI definition and VIs. The Checklists that are included in this Guidance Document are one example of recording all the elements required for RI verification documentation.

Jurisdictional RI checklist will contain the following information for each RI:

1) Date of verification and name of certifying official;
2) Landowner information: such as address, county, etc.;
3) Location of RI on the landscape such as: marking on an aerial map or conservation plan map, GPS location or Latitude/Longitude coordinates, etc.;
4) Presence of the required VIs (as appropriate);
5) Date the practice was installed by the farmer;
6) Appropriate reported units for state database and NEIEN;
7) Visual documentation such as a photo of the practice, drawing or other description;
8) Other notes as needed for additional documentation or re-verification.

The RI checklist and associated information will be placed the farmer's conservation plan or other jurisdictional approved location.

Who can report RI practices?

RI BMPs may be reported by using any approved AgWG Verification method (See Appendix B). Any trained and/or certified technical field staff person that has the required knowledge and skills to determine if the practice meets the applicable RI definition and VIs may conduct the RI practice review. Jurisdictions will have final oversight and will be the certifying entity of all information that is provided and approved for entry into the CBP NEIEN reporting system. The appropriate spot-checking will be completed during annual Quality Assurance Reviews and the appropriate actions will be taken if information submitted is incorrect such as: removal of RI practice from reporting system; potential re-training of technical staff; removal of certification of the individual, NGO or other entities that may report RI's, etc.

Lifespan of RIs and Re-verification

Lifespans of RI practices have been reduced from similar NRCS Practice lifespans. It is assumed that since the RI design may not be as extensive as similar NRCS practices, that a technical person must visit the RI BMP on a more frequent basis to review the efficacy of the RI BMP and the farmer's operation and maintenance of the BMP. RI lifespans are found in the below table. When a jurisdiction re-verifies the practice it must determine if required VIs are still present and functioning for the appropriate water quality credit or it will be removed from the jurisdictional and NEIEN database.

NRCS BMP Standard Design Lifespan and the RI lifespan:

RI BMP Name	NRCS Lifespans Years	RI Lifespans Years
Waste Storage Structure	15	5
Animal Compost Structure	15	5
Alternative Crop/Switchgrass	15	5
Watercourse Access Control (Narrow, Grass, Trees)	20	5
Grass Nutrient Exclusion Area on Watercourse and Grass Buffer on Watercourse	10	5
Forest Nutrient Exclusion Area on Watercourse and Forest Buffer on Watercourse	15	10
Vegetative Environmental Buffer for Poultry, Grass	10	3
Vegetative Environmental Buffer for Poultry, Trees	15	5
Conversion to Pasture or Hayland	5	3
Rotational Grazing	1*	3
Barnyard Clean Water Diversion	10	5
Water Control Structure	20	5
Watering Trough	20	5

*Primarily for the structural components of the NRCS practices-i.e. Fencing etc.

Resource Improvement Practices

There are 19 Resource Improvement Practices. Some practices have multiple options for different widths or vegetation:

	Resource Improvement Practice Name	Additional Practice Information
RI-1	Waste Storage Structure	
RI-2	Animal Compost Structure	
RI-3	Alternative Crop/Switchgrass	
RI-4a	Watercourse Access Control-Narrow Grass	10'-34' Width Exclusion Area, Natural Grass or planted
RI-4b	Watercourse Access Control-Narrow Trees	10'-34' Width Exclusion Area, Native Trees or planted
RI-5	Watercourse Access Control-Grass	35'+ Width Exclusion Area, Natural or planted Grass
RI-6	Watercourse Access Control-Trees	35'+ Width Exclusion Area, Natural or planted Trees
RI-7	Grass Nutrient Exclusion Area on Watercourse	10'-34' Width Nutrient Exclusion Area
RI-8	Grass Buffer on Watercourse	35'+ Width Buffer
RI-9	Forest Nutrient Exclusion Area on Watercourse	10'-34' Width Nutrient Exclusion Area
RI-10	Forest Buffer on Watercourse	35'+ Width Buffer
RI-11	Vegetative Environmental Buffer for Poultry-Grass	Warm Season Grass
RI-12	Vegetative Environmental Buffer for Poultry-Trees	Trees
RI-13	Conversion to Pasture	
RI-14	Conversion to Hayland	
RI-15	Rotational Grazing	
RI-16	Barnyard Clean Water Diversion	
RI-17	Water Control Structure	
RI-18	Watering Trough	

RI-1: WASTE STORAGE STUCTURE Resource Improvement Practice Definition

Reported Units: Number of Systems; Animal Type; Animal Units

DEFINITION

A waste storage structure for dry stackable manure constructed by fabricating a structure, or by fabricating a field-stacking pad. This does not include the temporary stacking of poultry manure in a field that would be moved to different locations each year.

PURPOSES

To temporarily store dry stackable manure.

CONDITIONS WHERE PRACTICE APPLIES

To temporarily store dry stackable manure.

CRITERIA

Size of the facility should be large enough to store all accumulated animal manure, for the maximum period during which such wastes cannot be applied to the land for reasons such as operational restrictions, weather, or crops.

Exclude clean runoff to the fullest extent practical.

Waste handling equipment shall be available to remove waste materials from agricultural waste storage facility and apply it to the land at the locations, times, and rates per local, county or state regulations.

OPERATION AND MAINTENANCE

Inspections of animal waste structures are required at least every 5 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

NRCS Comparison Practice: 313 Waste Storage Facility

RI-1: Waste Storage Structure Example Checklist Verification Date:

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	SCD	Inspection Type ☐ Initial Inspection ☐ QA Spot Check ☐ Re-verify ☐ Other _____

	RI-1 Practice: Waste Storage Structure				Supporting Data & Documentation:
	Life span: 5 years	Y	N	N/A	
	RI-1 Visual Indicators				
1	Does facility operate without polluting waters?				Visual inspection
2	Facility is located ≥ 100' from wells, unless there is a Health Dept. waiver or per State, County or Local Regulation				Estimate by paces
3	Facility is 100 feet from top of bank of any stream or per state, county our local regulation.				Est. by stream size and Location
4	Volume per sizing sheet for NRCS Spec or describe management methodology used by farmer				Owner interview
5	Offsite runoff is excluded or accounted for in storage				Visual inspection
6	Non-poultry or non-horse manure stacked for ≥ 30 days is covered with ≥ 6 mil plastic and weighted, with edges entrenched with no tears. Otherwise, runoff is controlled and non-polluting.				Computation
7	No safety concerns present.				Visual observation
8	Slab on grade, or may be other stabilized impervious surface.				Visual observation
9	Retaining wall if used is straight, not in imminent danger of failure				Visual observation
	Meets RI-1 Visual Indicators				
	RI-1 Installation Date:				
	RI-1 Reportable Units:				
	Number of Systems:				
	Animal Type: AU:				
	CERTIFICATION DATE/INITIALS:				
	RECERTIFICATION DATE/INITIALS:				

Additional Notes/Documentation about RI:

RI-2: ANIMAL COMPOST STRUCTURE Resource Improvement Practice Definition

Reported Units: Number of Systems; Animal Type; Animal Units

DEFINITION

An on-farm facility for the treatment or disposal of livestock and poultry carcasses for a small numbers of animals. (Typically less than 80 Animal Units total on the farm)

PURPOSES

Provide proper disposal of carcasses to decrease non-point source pollution of surface and groundwater resources.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies where animal carcass treatment or disposal must be considered as a component of a waste management system for livestock or poultry operations. This practice includes disposal of normal, not catastrophic, animal mortality.

CRITERIA

The facility shall be designed to handle normal mortality.

Contaminated runoff from any mortality facility without a roof must be controlled.

Leachate should not occur from any composting facility.

Operators should receive proper training on the use of the facility.

OPERATION AND MAINTENANCE

Inspections of animal mortality facilities are required at least every 5 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

NRCS Comparison Practice: 316 Animal Mortality Facility

RI-2: Animal Compost Structure Example Checklist Verification Date:

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	SCD	Inspection Type ☐ Initial Inspection ☐ QA Spot Check ☐ Re-verify ☐ Other _____

	RI-2 Practice: Animal Compost Structure				Supporting Data & Documentation:
	Life span: 5 years	Y	N	N/A	
	RI-2 Visual Indicators				
1	Does facility operate without polluting waters?				Visual inspection
2	Facility is located ≥ 100' from wells, unless there is a Health Dept. waiver or per State, County or Local Regulation				Estimate by paces
3	Facility is 100 feet from top of bank of any stream or per state, county our local regulation.				Est. by stream size and Location
4	Facility meets pollution control requirements of state & local agencies and regulations				Visual inspection
5	Carbon:Nitrogen Ratio is correct, moisture and temperature are correct so composting occurs.				Visual Inspection
	Meets RI-2 Visual Indicators				
	RI-2 Installation Date:				
	RI-2 Reportable Units:				
	Number of Systems:				
	Animal Type: AU:				
	CERTIFICATION DATE/INITIALS:				
	RECERTIFICATION DATE/INITIALS:				

Additional Notes/Documentation about RI:

RI-3: ALTERNATIVE CROP/SWITCHGRASS Resource Improvement Practice Definition

Reported Unit: Acres

DEFINITION

Conversion of cropland to a herbaceous alternative crop of switchgrass.

PURPOSES

Improve water quality and sequester atmospheric carbon dioxide; Promote desired plant growth; improve or provide wildlife habitat.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to alternative crops plantings of switchgrass on land that was previously used for crop production.

This practice does not apply to plantings that are intended to function primarily as field borders, hedgerows, or riparian buffers, for which other standards are applicable.

OPERATION AND MAINTENANCE

Inspections of the alternative crop are required at least every 5 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

NRCS Comparison Practice: 327 Conservation Cover

RI-3: Alternative Crop/Switchgrass Example Checklist Verification Date:

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	SCD	Inspection Type ☐ Initial Inspection ☐ QA Spot Check ☐ Re-verify ☐ Other _____

	RI-3 Practice: Alternative Crop/Switchgrass				Supporting Data & Documentation:
	Life span: 5 years	Y	N	N/A	
	RI-3 Visual Indicators				
1	Pure switchgrass planting				Visual Inspection
2	Appropriate lime & fertilizer applied per state regulations				Owner Interview
3	Livestock are excluded				Visual Inspection
4	75% cover is present				Visual Inspection
	Meets RI-3 Visual Indicators				
	RI-3 Installation Date:				
	RI-3 Reportable Units:				
	Acres:				
	CERTIFICATION DATE/INITIALS:				
	RECERTIFICATION DATE/INITIALS:				

Additional Notes/Documentation about RI:

RI-4a,4b,5,6: WATERCOURSE ACCESS CONTROL Resource Improvement Practice Definition

Reported Units: Feet Length, Feet Width

RI Code	RI BMP Name	Additional Practice Information
RI-4a	Watercourse Access Control-Narrow Grass	10'-34' Width Exclusion Area, Natural Grass or planted
RI-4b	Watercourse Access Control-Narrow Trees	10'-34' Width Exclusion Area, Native Trees or planted
RI-5	Watercourse Access Control-Grass	35'+ Width Exclusion Area, Natural or planted Grass
RI-6	Watercourse Access Control-Trees	35'+ Width Exclusion Area, Natural or planted Trees

DEFINITION

A constructed barrier to livestock. A field border will be present of either herbaceous materials or trees between the watercourse and the barrier or fence. The RI width will be either 10 to 34 feet, or 35 feet or greater.

PURPOSES

This practice is to prevent, restrict, or control access of livestock into surface water or environmentally sensitive areas.

CONDITIONS WHERE PRACTICE APPLIES

This practice may be applied on any area adjacent to surface water or environmentally sensitive areas where the control of livestock is needed. Fences are not required where natural barriers or other methodologies will meet this purpose.

CRITERIA

Fencing shall be appropriately installed and maintained sufficient to control or restrict the access of livestock.

The minimum buffered width between fence and surface water and or environmentally sensitive area shall be no less than 10 feet measured horizontally on a line perpendicular to the water body, beginning at the top of bank. In order to adequately address water quality, the buffer width may need to be expanded to include important resource features such as wetlands, steep slopes, areas that are occasionally or seasonally flooded, or critical habitats.

Vegetation in the buffer between the barrier and surface water should be of a density to help reduce sediment, organic material, nutrients, pesticides and other pollutants in surface runoff.

OPERATION AND MAINTENANCE

Fencing materials, if used, shall be of high quality and durability, and constructed to meet the intended purpose of the practice.

Inspections of the barrier are required at least every 5 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

NRCS Comparison Practices: 382 Fence, 472 Access Control

RI-4a, 4b,5,6: Watercourse Access Control Example Checklist Verification Date:

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	SCD	Inspection Type ☐ Initial Inspection ☐ QA Spot Check ☐ Re-verify ☐ Other _____

	RI-4,5,6 Practice: Watercourse Access Control				Supporting Data & Documentation:
	Life span: 5 years	Y	N	N/A	
	RI-4,5,6 Visual Indicators				
1	Exclusion method controls the intended animals				Owner interview Visual Inspection
2	Livestock concentration and grazing are minimized in riparian (wetland, stream) areas				Visual inspection
3	If fencing is used then there is a 10' minimum setback from the top of bank of watercourse				Measurement
4	Areas around fence are stabilized				Visual Inspection
5	Vegetation in buffer between the barrier and surface water should be of a density to help reduce sediment, organic material, nutrients, pesticides and other pollutants in surface runoff.				Visual Inspection
6	Exclusion method is determined to be critical to confinement/exclusion from environmental area				Visual inspection
	Meets RI-4,5,6 Visual Indicators				
	RI Installation Date:				
	RI-4a,4b,5,6 Reportable Units: Feet				
	Check RI Reporting and Record Length in Feet:				
	RI-4a: 10'-34' – Narrow-Width Access Control, Natural Grass or planted Length Feet: Width Feet:				
	RI-4b: 10'-34' – Narrow-Width Access Control, Native Trees or planted Length Feet: Width Feet:				
	RI-5: 35'+ Width Access Control, Natural or planted Grass Length Feet: Width Feet				
	RI-6: 35'+ Width Access Control, Natural or planted Trees Length Feet: Width Feet				
	CERTIFICATION DATE/INITIALS:				
	RECERTIFICATION DATE/INITIALS:				

Additional Notes/Documentation about RI:

RI-7,8: GRASS NUTRIENT EXCLUSION AREA or BUFFER on Watercourse Resource Improvement Practice Definition

Reported Units: Feet Length, Feet Width

RI Code	RI BMP Name	Additional Practice Information
RI-7	**Grass Nutrient Exclusion Area on Watercourse**	10'-34' Width Nutrient Exclusion Area
RI-8	**Grass Buffer on Watercourse**	35'+ Width Buffer

DEFINITION

Grasses, grass-like plants, and forbs that are established **on converted cropland** that receive no nutrients and are managed to provide a herbaceous buffer located **adjacent to and up-gradient** from water bodies or a strip or area of herbaceous vegetation that inhibits nutrients and sediment from overland flow located adjacent to cropland. This includes areas that function as nutrient exclusion area or riparian herbaceous buffers.

PURPOSES

This practice is to create a nutrient exclusion area or buffer, reduce excess amounts of sediment, organic material, nutrients, pesticides and other pollutants in surface runoff and reduce excess nutrients and other chemicals in shallow ground water flow and to increase carbon storage in plant biomass and soils.

CONDITIONS WHERE PRACTICE APPLIES

This practice qualifies if applied on cropland on stable areas adjacent to permanent or intermittent streams, ditches and tidal waters**. It may only be reported on cropland without a fence (otherwise see RI-4 or RI-5 Watercourse Exclusion)**. Exclusion areas will be 10 to 34 feet, or buffers of 35 feet or greater.

CRITERIA

To create a grass nutrient exclusion area or buffer, reduce excess amounts of sediment, organic material, nutrients, pesticides and other pollutants in surface runoff and reduce excess nutrients and other chemicals in shallow ground water flow.

For areas adjacent to surface water, the minimum width shall be at least 10 feet measured horizontally on a line perpendicular to the water body, beginning at the top of bank or wetland edge. There should be at least 75% cover. In order to adequately address water quality, the buffer width may need to be expanded to include important resource features such as wetlands, steep slopes, areas that are occasionally or seasonally flooded, or critical habitats.

Plant and animal pest species shall be controlled to the extent feasible to achieve and maintain the intended purpose of the vegetative cover. Noxious weeds shall be controlled as required by state law.

OPERATION AND MAINTENANCE

Inspections of the grass exclusion areas or buffers are required at least every 5 years for practices meeting RI specifications. Control concentrated flow or mass soil movement up gradient of the exclusion area or buffer to maintain function. Species shall have stiff stems and high stem density near the ground surface.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

NRCS Comparison Practice: 390 Riparian Herbaceous Cover

RI-7,8: Grass Nutrient Exclusion Area or Buffer on Watercourse Example Checklist

Verification Date:

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	SCD	Inspection Type ☐ Initial Inspection ☐ QA Spot Check ☐ Re-verify ☐ Other _____

	RI-7,8 Practice: Grass Nutrient Exclusion Area or Buffer on Watercourse				Supporting Data & Documentation:
	Life span: 5 years	Y	N	N/A	
	RI-7,8 Visual Indicators				
1	Horizontal buffer width ≥ 10', measured perpendicular to top-of-bank intermittent stream, ditch or tidal area				Estimate by paces
2	Width is ≥ 35' if receiving dissolved contaminants (e.g. nutrients, pesticides)				Visual Inspection
3	Overland flow through buffer is maintained as sheet flow				Visual Inspection
4	All excessive sheet-rill and concentrated flow are controlled in areas immediately adjacent & up gradient of buffer, before entering				Visual Inspection
5	No livestock are present nor have access				Owner Interview
6	Plant species are native (preferred), or introduced and non-invasive, with stiff stems and high stem density				Visual Inspection
7	Plants are compatible in growth rate, tolerant of flooding/saturation and shade				Visual Inspection
8	Minimum of 75% cover is present				Visual Inspection
	Meets RI-7,8 RI Visual Indicators				
	RI Installation Date:				
	RI-7,8 Reportable Units: Feet				
	Check RI Reporting and Record Length in Feet:				
	RI-7: 10'-34' Width Nutrient Exclusion Area Length Feet: Width Feet:				
	RI-8: 35'+ Width Buffer Length Feet: Width Feet:				
	CERTIFICATION DATE/INITIALS:				
	RECERTIFICATION DATE/INITIALS:				

Additional Notes/Documentation about RI:

RI-9,10: FOREST NUTRIENT EXCLUSION AREA or BUFFER on Watercourse Resource Improvement Practice Definition

Reportable Units: Feet Length, Feet Width

RI Code	RI BMP Name	Additional Practice Information
RI-9	Forest Nutrient Exclusion Area on Watercourse	10'-34' Width Nutrient Exclusion Area
RI-10	Forest Buffer on Watercourse	35'+ Width Buffer

DEFINITION

An area predominately trees and/or shrubs established **on converted cropland** located adjacent to and up-gradient from streams, ditches or tidal waters.

PURPOSES

This practice is to create a nutrient exclusion area, reduce excess amounts of sediment, organic material, nutrients, pesticides and other pollutants in surface runoff adjacent to streams.

CONDITIONS WHERE PRACTICE APPLIES

This practice qualifies if applied on stable areas adjacent to permanent or intermittent streams, ditches or tidal water. **It may only be reported on converted cropland without a fence (otherwise see RI-4 or RI-6 Watercourse Access Control).** Exclusion areas will be 10 to 34 feet, buffers will be 35 feet or greater.

CRITERIA

To create a forested nutrient exclusion area or buffer, reduce excess amounts of sediment, organic material, nutrients, pesticides and other pollutants in surface runoff.

The minimum width shall be at least 10 feet measured horizontally on a line perpendicular to the water body, beginning at the top of bank or wetland edge. In order to adequately address water quality, the buffer width may need to be expanded to include important resource features such as wetlands, steep slopes, areas that are occasionally or seasonally flooded, or critical habitats.

OPERATION AND MAINTENANCE

Inspections of the forested nutrient exclusion area/buffers are required at least every 10 years for practices meeting RI specifications.

Control concentrated flow or mass soil movement up gradient of the forested nutrient exclusion areas or buffers to maintain function.

Manage the dominant canopy to maintain maximum vigor of over story and understory species.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

NRCS Comparison Practice: 391 Riparian Forest Buffer

RI-9,10: Forest Exclusion Area or Buffer on Watercourse Example Checklist Verification Date:

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	SCD	Inspection Type ☐ Initial Inspection ☐ QA Spot Check ☐ Re-verify ☐ Other _____

	RI-9,10 Practice: Forest Nutrient Exclusion Area or Buffer on Watercourse				Supporting Data & Documentation:
	Life span: 10 years	Y	N	N/A	
	RI-9,10 Visual Indicators				
1	Dominant vegetation (>50%) consists of existing, naturally regenerated, or planted trees and/or shrubs				Visual Inspection
2	Perpendicular distance from top-of-bank of steam, ditch or tidal area ≥ or = 10' minimum average for width of buffer				Estimate by paces
3	Overland/sheet flow through buffer is maximized (no concentrated flow)				Visual Inspection
4	Structural measures are present where vegetation practice is insufficient to control erosion				Visual Inspection
	Meets RI-9,10 Visual Indicators				
	RI Installation Date:				
	RI-9,10 Reportable Units: Feet				
	Check RI Reporting and Record Length in Feet:				
	RI-9: 10'-34' Width Nutrient Exclusion Area Length Feet: Width Feet:				
	RI-10: 35'+ Width Buffer Length Feet: Width Feet:				
	CERTIFICATION DATE/INITIALS:				
	RECERTIFICATION DATE/INITIALS:				

Additional Notes/Documentation about RI:

RI-11,12: VEGETATIVE ENVIRONMENTAL BUFFER FOR POULTRY (Grass or Trees) Resource Improvement Practice Definition

Reportable Units: Feet Length, Feet Width

RI Code	RI BMP Name	Additional Practice Information
RI-11	Vegetative Environmental Buffer for Poultry-Grass	Warm Season Grass
RI-12	Vegetative Environmental Buffer for Poultry-Trees	Trees

DEFINITION

Vegetative Environmental Buffers are a minimum of two staggered rows of trees/ shrubs or warm season grasses in linear configurations adjacent to poultry house fans.

PURPOSES

This practice applies to buffers around poultry operations that are designed to improve air and water quality by reducing and intercepting airborne particulate matter.

CONDITIONS WHERE PRACTICE APPLIES

This practice may be applied on any area where linear plantings of woody plants or warm season grasses are desired and are suitable for the intended purpose.

Vegetative Environmental Buffers are generally not used solely for purposes of enhancing aesthetics or providing wildlife habitat. These are usually secondary purposes that may complement a primary purpose.

Consider that water and air quality benefits may arise from using vegetative environmental buffers to intercept airborne particulates and to trap sediment-attached substances. Vegetative environmental buffers may also benefit air and water quality by assimilating plant nutrients in leaves and roots.

This practice does not apply to plantings that are intended to function primarily as field borders, or riparian forest buffers, for which other standards are applicable.

CRITERIA

Plant species shall be selected based on the planned purpose(s) of the vegetative environmental buffer, preferences of the client, and conditions of the site.

Use staggered spacing in multiple row plantings. Vegetative environmental buffers may be established using trees, shrubs, and/or perennial bunch grasses producing erect stems attaining avg. heights of at least 3 feet and persisting over winter.

OPERATION AND MAINTENANCE

Inspections of the vegetative environmental buffers are required at least every 3 for grass buffers and 5 years for tree buffers for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

NRCS Comparison Practice: 422 Hedgerow Planting

RI-11,12: Vegetative Environmental Buffer for Poultry Example Checklist Verification Date:

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	SCD	Inspection Type ☐ Initial Inspection ☐ QA Spot Check ☐ Re-verify ☐ Other _____

	RI-11,12 Practice: Vegetative Environmental Buffer for Poultry (grass or trees)				Supporting Data & Documentation:
	Life span: 3 years for grass or 5 years for trees	Y	N	N/A	
	RI-11,12Visual Indicators				
1	Plant species are trees, shrubs, and/or perennial bunch grasses ≥ 3' tall				Visual Inspection
2	Used for poultry house ventilation-outlet filtering and must be living and within 100' of fans.				Visual Inspection
3	Hedgerow is ≥ 2 rows wide. Row vegetation heights should be: 1'-2' (bunch grass), 2'-4' (shrubs), 6'-12' (deciduous trees), 6'-10' (evergreen trees) as appropriate.				Visual Inspection
4	If using trees, one row should contain deciduous trees and the other evergreen trees.				Visual Inspection
5	Livestock are controlled or excluded				Owner interview
6	Hedgerow is located between poultry house and sensitive areas if appropriate. Use N/A if no sensitive area.				Visual Inspection
7	Hedgerows plants will be staggered with no gaps greater than 1' when fully mature.				Visual Inspection
	Meets RI-11,12 Visual Indicators				
	RI Installation Date:				
	RI-11,12 Reportable Units: Acres				
	RI-11=Warm Season Grass Length Feet: Width Feet:				
	RI-12=Trees/Shrubs Length Feet: Width Feet:				
	CERTIFICATION DATE/INITIALS:				
	RECERTIFICATION DATE/INITIALS:				

Additional Notes/Documentation about RI:

RI-13,14: CONVERSION TO PASTURE OR HAYLAND Resource Improvement Practice Definition

Reportable Units: Acres

DEFINITION

Conversion of cropland to pasture or hayland for the purpose of forage production through the establishment of native or introduced forage species.

PURPOSES

This practice may be applied to establish forage species for the purposes of forage production, primarily intended for grazing or harvesting, which may balance forage supply, reduce soil erosion and improve water quality.

CONDITIONS WHERE PRACTICE APPLIES

This practice may be applied on cropland or other agricultural lands where forage production is feasible or desired. This only applies where grazing or harvesting is the primary consideration.

CRITERIA

Select forage species for planting based on the intended use, realistic yield goals, maturity stages, compatibility with other species, and level of management that the client is willing and able to provide. This is intended for multi-year hay crops with a minimum life span of at least 3 years.

Select plants that will provide adequate ground cover of at least 75% cover, root mass, and resistance to water flow when site conditions require erosion protection.

Removal of herbage should be consistent with site production limitations, rate of plant growth, and the physiological needs of specific forage plants to maintain plant reserves for regrowth, winter survival, and drought survival.

OPERATION AND MAINTENANCE

Inspections of the plantings are required at least every 3 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

NRCS Comparison Practice: 512 Forage and Biomass Planting

RI-13,14: Conversion to Pasture or Hayland Example Checklist Verification Date:

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	SCD	Inspection Type ☐ Initial Inspection ☐ QA Spot Check ☐ Re-verify ☐ Other _____

	RI-13,14 Practice: Conversion to Pasture or Hayland				Supporting Data & Documentation:
	Life span: 3 years	Y	N	N/A	
	RI-13,14 Visual Indicators				
1	Lime & fertilizer rates are applied according to state regulations				Owner Interview
2	75% cover is established and maintained as “pasture or hayland in good condition"				Visual Inspection
3	Plants are either native or non-invasive introduced				Visual Inspection
	Meets RI-13,14 Visual Indicators				
	RI Installation Date:				
	RI-13,14 Reportable Units: Acres				
	RI-13=Conversion to Pasture Acres:				
	RI-14=Conversion to Hayland Acres:				
	CERTIFICATION DATE/INITIALS:				
	RECERTIFICATION DATE/INITIALS:				

Additional Notes/Documentation about RI:

RI-15: Rotational Grazing Resource Improvement Practice Definition

Reported Units: Acres

DEFINITION

Managing the controlled harvest of vegetation with grazing animals.

PURPOSES

This practice utilizes a range of pasture management and grazing techniques to improve the quality and quantity of the forages grown on pastures and reduces the impact of animal travel lanes, animal concentration areas or other degraded areas.

CONDITIONS WHERE PRACTICE APPLIES

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

- Improve or maintain desired species composition and vigor of plant communities.
- Improve or maintain quantity and quality of forage for grazing 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.

CRITERIA

Frequency and intensity of grazing shall be managed to promote ecologically and economically stable plant communities (of at least 75% cover) that meet the producer's objectives. Use stubble height target levels in conjunction with monitoring to help ensure that resource conservation and producer objectives are met.

Minimize concentrated livestock areas, trailing, and trampling to reduce soil compaction, excess runoff and erosion. Pasture fencing layouts shall provide laneways that are least prone to livestock trail erosion and provide protection to sensitive areas, such as wetlands.

Provide all livestock on pasture with free access to clean water.

OPERATION AND MAINTENANCE

Apply prescribed grazing on a continuing basis throughout the occupation period of all grazing units. Adjust intensity, frequency, timing and duration of grazing and/or browsing to meet the desired objectives for the plant communities and the associated resources, including the grazing and/or browsing animal.

Manage kind of animal, animal number, grazing distribution, length of grazing and/or browsing periods and timing of use to provide grazed plants sufficient recovery time to meet planned objectives. The recovery period of non-grazing can be provided for the entire year or during the growing season of key plants.

Inspections of the grazing system are required at least every 3 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

NRCS Comparison Practice: 528 Prescribed Grazing

RI-15: Rotational Grazing Example Checklist Verification Date:

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	SCD	Inspection Type ☐ Initial Inspection ☐ QA Spot Check ☐ Re-verify ☐ Other _____

	RI-15 Practice: Rotational Grazing				Supporting Data & Documentation:
	Life span: 3 years	Y	N	N/A	
	RI-15 Visual Indicators				
1	75% perennial cover is maintained in all grazing areas				Visual Inspection
2	Livestock have limited (restricted) access to streams, seeps, ponds, and other surface waters in compliance with state regulations				Visual Inspection
3	Livestock have close access to clean water, which meets their average daily water requirements				Visual Inspection
4	Grazing system (watering, feeding and HUA's) minimizes erosion and protects sensitive areas				Visual Inspection
5	Nutrient Management is applied in accordance with state regulations				Owner Interview
6	Owner has a grazing objective for all grazing units and manages the grass height				Visual Inspection of grass height and owner interview
	Meets RI-15 Visual Indicators				
	RI-15 Installation Date:				
	RI-15 Reportable Units:				
	Acres:				
	CERTIFICATION DATE/INITIALS:				
	RECERTIFICATION DATE/INITIALS:				

Additional Notes/Documentation about RI:

RI-16: BARNYARD CLEAN WATER DIVERSION Resource Improvement Practice Definition

Reported Unit: Number of Systems

DEFINITION

This practice includes the installation of practices to control clean water runoff from barnyard areas, such as roof runoff control, diversion of clean water from entering the barnyard and control of runoff from barnyard or poultry barn areas. This is not associated with dirty water that requires treatment before release.

PURPOSES

To prevent roof runoff water from mixing with barnyard wastes and/or to divert clean water away from the barnyard or areas of heavy animal concentration to prevent erosion or pollutants (nutrients, sediment, and animal wastes) from reaching the waters of the State.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to situations where roof runoff or clean water needs to be diverted away from structures, poultry houses or contaminated areas, such as barnyards or other concentrated animal areas. Such structures include, but are not limited to, erosion-resistant channels or subsurface drains with rock-filled trenches along building foundations below eaves, roof gutters, downspouts, and appurtenances.

CRITERIA

Roof gutters should have a minimum top width of 5 inches and supports no greater than 24 inch spacing.

All downspouts, gutters and outlets should be protected from damage by livestock and equipment.

The water from roof runoff structures may empty into surface drains or underground outlets, or onto the ground surface and should be directed away from foundations, structures or contaminated areas.

Stone filled trenches with an underground outlet, under the roof drip line, may be used in lieu of roof gutter. Locate the trench so the trench centerline follows the roof drip line.

OPERATION AND MAINTENANCE

Inspect collection and storage devices, valves, outlets and pipelines at least biannually. Make repairs as needed.

Inspect valves, automatic water level devices, and overflow pipes for proper operation.

Inspections of the barnyard or poultry barn runoff control structures are required at least every 3 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

NRCS Comparison Practice: 558 Roof Runoff Structure

RI-16: Barnyard Clean Water Diversion Example Checklist Verification Date:

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	SCD	Inspection Type ☐ Initial Inspection ☐ QA Spot Check ☐ Re-verify ☐ Other _____

	RI-16 Practice: Barnyard Clean Water Diversion				Supporting Data & Documentation:
	Life span: 5 years	Y	N	N/A	
	RI-16 Visual Indicators				
1	Surface outlet is stable; downspouts have elbow and dissipation device directed away from buildings, as appropriate.				Visual Inspection
2	Gutter-less system has stone-filled, collection trench under entire roof drip line: width ≥ 24", depth ≥ 24"*				Visual Inspection + Owner interview
3	Drip line stone extends along sides of and over pipe				Visual Inspection
4	Gutter is K-style, half-round or box-type on good-condition vertical fascia board, free floating on supports, and ≥ 5" top width. Roof rafter ends are sound				Visual Inspection
5	Downspout avoids mix with waste				Visual inspection
6	The system is sound and functioning				Visual Inspection
7	Downspouts are securely fastened @ top & bottom, with intermediate supports ≤ 10', installed appropriately				Visual Inspection
8	Gutter & downspout are protected from livestock. Otherwise made of steel pipe, Sch40, or similar				Visual inspection
9	Clean surface runoff is directed away from barnyard area				Visual inspection
	Meets RI-16 Visual Indicators				
	RI-16 Installation Date:				
	RI-16 Reportable Units:				
	Number of Systems:				
	CERTIFICATION DATE/INITIALS:				
	RECERTIFICATION DATE/INITIALS:				

Additional Notes/Documentation about RI:

RI-17: WATER CONTROL STRUCTURE Resource Improvement Practice Definition

Reported Unit: Number of Systems

DEFINITION

A structure in a water management system that conveys water, controls the direction or rate of flow, maintains a desired water surface elevation in **drainage ditches for water de-nitrification purposes.**

PURPOSES

The purpose of this practice is to reduce nutrient loading from agricultural drainage systems into downstream receiving waters.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies wherever a permanent structure is needed as an integral part of a water control system to serve one or more of the following functions:

1. To control the elevation of water in drainage or irrigation ditches. Typical structures: checks, flashboard risers, check dams.

2. To control the water table level, remove surface or subsurface water from adjoining land, flood land for frost protection or manage water levels for wildlife or recreation. Typical structures: water level control structures flashboard risers, pipe drop inlets, and box inlets

3. To provide silt management in ditches or canals. Typical structure: sluice.

CRITERIA

Structures should be designed and installed consistent with all federal and state rules and regulations.

The structure capacity shall be appropriate for the intended practice or purpose.

The structure shall be fenced, if necessary, to protect the vegetation from grazing livestock.

Protect outlets to the extent that design flows will not result in erosion downstream of the structure.

OPERATION AND MAINTENANCE

Structures will be checked and necessary maintenance, including removal of debris, shall be performed after major storms and at least semiannually. Water level management and timing shall be adequately described wherever applicable.

Inspections of the water control structure are required at least every 5 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

NRCS Comparison Practice: 587 Structures for Water Control

RI-17: Water Control Structure Example Checklist Verification Date:

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	SCD	Inspection Type ☐ Initial Inspection ☐ QA Spot Check ☐ Re-verify ☐ Other _____

	RI-17 Practice: Water Control Structure				Supporting Data & Documentation:
	Life span: 5 years	Y	N	N/A	
	RI-17 Visual Indicators				
1	No active erosion on ditch banks or at the structure				Visual Inspection
2	Structure has no effect on septic filter fields				Visual Inspection
3	No un-approved backwater on neighbors				Visual Inspection
4	Structure complies with applicable federal, state and local regulations				Visual Inspection
5	Outlet is protected if necessary				Visual inspection
6	Inlets have non-clog trash rack if needed				Visual Inspection
7	Structure is function correctly and managed for intended use				Visual Inspection
	Meets RI-17 Visual Indicators				
	RI-17 Installation Date:				
	RI-17 Reportable Units:				
	Number of Systems:				
	CERTIFICATION DATE/INITIALS:				
	RECERTIFICATION DATE/INITIALS:				

Additional Notes/Documentation about RI:

RI-18: WATERING TROUGH Resource Improvement Practice Definition

Reported Unit: Number of Systems

DEFINITION

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

PURPOSES

To provide watering facilities which will bring about the desired protection of vegetative cover to prevent erosion and pollutants (nutrients, sediment, and animal wastes) from reaching the waters of the State. The primary purpose is not to provide livestock water, but to improve animal distribution to protect water quality.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all land uses where there is a need for alternative watering facilities for livestock. The source of water supplied to the facilities can be from any source including pipelines, spring developments, water wells, and ponds.

CRITERIA

Locate facilities to promote even grazing distribution and reduce grazing pressure on sensitive areas.

Provide fencing as necessary to exclude livestock from sensitive areas and encourage use of facility.

Locate as far away from streams and drainage ways as practical.

Design the watering facility to provide adequate access for the animals planned to use the facility.

Install troughs on sites that are well drained, or provide drainage.

OPERATION AND MAINTENANCE

Inspect collection and storage devices, valves, outlets and pipelines at least biannually. Make repairs as needed.

Check valves, automatic water level devices, and overflow pipes for proper operation as appropriate.

Inspections of the watering facilities are required at least every 5 years for practices meeting RI specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying checklist; Visual Documentation of the practice (picture or drawing); and document on conservation plan map or aerial photo of farm.

NRCS Comparison Practice: 614 Watering Facility

RI-18: Watering Trough Example Checklist Verification Date:

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	SCD	Inspection Type ☐ Initial Inspection ☐ QA Spot Check ☐ Re-verify ☐ Other _____

	RI-18 Practice: Watering Trough				Supporting Data & Documentation:
	Life span: 5 years	Y	N	N/A	
	RI-18 Visual Indicators				
1	There is an adequate water supply				Owner interview
2	Area around trough does not create a resource concern				Visual Inspection
3	Automatic water level control is functioning without overtopping				Visual Inspection
4	Overflow is piped to acceptable outlet				Visual Inspection
5	Backflow prevention is installed and working, where connected to wells, domestic or municipal water systems and meets state and local regulations				Visual inspection
	Meets RI-18 Visual Indicators				
	RI-18 Installation Date:				
	RI-18 Reportable Units:				
	Number of Systems:				
	CERTIFICATION DATE/INITIALS:				
	RECERTIFICATION DATE/INITIALS:				

Additional Notes/Documentation about RI:

Appendix A: USDA, NRCS Letter of Support

USDA
United States Department of Agriculture

MAR 20 2014

SUBJECT: Chesapeake Bay Functional Equivalent Technical Review Panel

TO: Jack Bricker, Virginia State Conservationist — File Code: 120
Denise Coleman, Pennsylvania State Conservationist
Jon Hall, Maryland State Conservationist
Don Pettit, New York State Conservationist
Kasey Taylor, Delaware State Conservationist
Kevin Wickey, West Virginia State Conservationist

The issues surrounding counting and assigning value to conservation treatments and practices in the Chesapeake Bay Model are important. Clearly all efforts towards conservation on the land have some value. The outcome of this effort, as we understand it, is to further define and credit voluntary non-cost shared treatment on the land by accurately assessing and accounting for this treatment. Establishing a measure of credit in the Bay Model for voluntary non-cost shared treatment would be the next step.

The NRCS members of the review panel are being tasked with:

A) Reporting of non-cost shared practices that meet NRCS standards:
   1) How do you develop a distinct definition for a non-cost shared practice that meets NRCS standards that is more descriptive than what the Bay program currently has?

   2) How do you document that it has been verified?

B) Defining "functionally equivalent" practices. Once you settle on the "definition", each state will also have to develop a method to verify these and document procedure.

Guidance: NRCS Standards are described in the "Field Office Technical Guide." Conservation practices identified as implemented in Toolkit meet NRCS standards. At a minimum this requires NRCS employees or partners with specific Job Approval Authority (JAA). NRCS fully support the jurisdictions effort to identify freestanding non-cost shared conservation practices that meet NRCS standards and allowing them to receive "credit" in the Bay model in the same manner as cost-shared practices.

Specific conservation practices require significant engineering or management with technical assistance. After the fact installation (without technical assistance) of conservation practices, would seriously hamper any effort to verify if a conservation treatment meets standards and specs. This does not disallow some form of credit and it is within the full purview of the jurisdiction to determine the credit. These conservation treatments should not be associated as meeting NRCS standard and specs.

Natural Resources Conservation Services
1400 Independence Ave., SW Room 5204
Washington, DC 20250
Voice: 202-690-2196
An Equal Opportunity Provider and Employer

Summary:

- We believe that this proposal is in alignment with Executive Order 12508 on the Chesapeake Bay in which USDA agreed to assist states to get a full accounting of conservation practices both cost and non-cost shared practices (sometimes called voluntary practices) that have been implemented in the Bay Region.

- NRCS is not funded or staffed appropriately to have an authentication or validation role for freestanding conservation treatments.

- We are willing to discuss this effort in an advisory capacity to achieve comprehensive Bay model credit for applied conservation treatment of identified resource concerns. This includes the consideration of human concerns toward achieving sustainable agriculture; consideration for the effects of planned actions on interrelated geographical areas within Bay watershed; and identifying areas where knowledge, science, and technology need to be advanced.

- As stated above, the issues surrounding counting and assigning value to conservation treatments and practices in the Chesapeake Bay Model are important. All efforts achieving conservation on the land have some value and should be identified by the jurisdictions.

Richard Sims
Regional Conservationist, Northeast

James E. Tillman, Sr.
Regional Conservationist, Southeast

cc:
Leonard Jordan, Associate Chief for Conservation, Washington, DC
Martin Lowenfish, Team Leader, Initiatives, Washington, DC

APPENDIX B: Verification Methods/RI Practices and Documentation

Agricultural BMP Verification Methods	Assessment Method	Verification Expectation	Resource Improvement (Non-Spec)	Eligible RI Practices	Documentation Necessary
1.) Permit Issuing Programs	Verified compliance with federal NPDES (CAFO) or state agricultural operational permit program requirements.	Non-annual frequency of permit compliance inspections for all or sufficient statistical percentage of permitted operations during permit life span. Review of office/farm records.	Not Eligible	N/A	
2.) Regulatory Programs	Verified compliance with federal or state agricultural regulatory requirements (non-operational permit).	Non- annual frequency of regulatory compliance inspections for all or sufficient statistical percentage of regulated operations. Review of office/farm records.	Not Eligible	N/A	
3.) Financial Incentive Programs	Verified compliance with federal program contractual requirements.	Non- annual frequency of contractual compliance inspections for all or sufficient statistical percentage of contracted operations during contractual life span. Review of office/farm records.	Not Eligible	N/A	
4.) Financial Incentive Programs	Verified compliance with state or county program contractual requirements.	Non-annual frequency of contractual compliance inspections for all or sufficient statistical percentage of contracted operations during contractual life span. Review of office/farm records.	Potentially Eligible	All RI Practices are eligible if done in accordance with state or county funding requirements and meet RI Visual Indicators.	Visual Indicator Checklist; photo/description; Location documentation

5.) Financial Incentive Programs	Verified compliance with NGO program contractual requirements.	Non-annual frequency of contractual compliance inspections for all or sufficient statistical percentage of contracted operations during contractual life span. Review of office/farm records.	Potentially Eligible	All RI Practices are eligible if done in accordance with NGO funding requirements and meet RI Visual Indicators.	Visual Indicator Checklist; photo/description; Location documentation provided to certifying entity.
6.) Farm Inventory	Farm inventory by trained and certified federal, state, and/or county agency personnel.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span. Review of office/farm records.	Eligible	All RI Practices are eligible if they meet RI Visual Indicators.	Visual Indicator Checklist; photo/description; Location documentation
7.) Farm Inventory	Farm inventory by trained and certified NGO personnel.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span. Review of office/farm records.	Eligible	All RI Practices are eligible if they meet RI Visual Indicators.	Visual Indicator Checklist; photo/description; Location documentation provided to certifying entity.
8.) Farm Inventory	Farmer completes self-certified inventory survey and trained and certified federal, state and/or county personnel verify on-site.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span. Review of office/farm records.	Eligible	All RI Practices are eligible if they meet RI Visual Indicators.	Visual Indicator Checklist; photo/description; Location documentation provided to certifying entity.
9.) Farm Inventory	Farmer completes self-certified inventory survey and trained and certified NGO personnel verify on-site.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span. Review of office/farm records.	Eligible	All RI Practices are eligible if they meet RI Visual Indicators.	Visual Indicator Checklist; photo/description; Location documentation provided to certifying entity

10.) Farm Inventory	Farmer completes in-office self-certified inventory with assistance of trained and certified federal, state and/or county agency personnel. No on-site verification.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span. Review of office/farm records.	Not Eligible	N/A	
11.) Farm Inventory	Farmer completes in-office self-certified inventory with assistance of trained and certified NGO personnel. No on-site verification.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span. Review of office/farm records.	Not Eligible	N/A	
12.) Farm Inventory	Farmer with training and certification completes self-certified inventory survey.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span.	Not Eligible	N/A	
13.) Farm Inventory	Farmer without training and certification completes self-certified inventory survey.	Non-annual frequency of inventories for all or sufficient statistical percentage of operations during BMP life span.	Not Eligible	N/A	
14.) Office Records	Review of existing office records by trained and certified federal, state and/or county agency personnel. No on-site verification.	Non-annual frequency of office records review and verification for all or sufficient statistical percentage of operations during BMP life span.	Not Eligible	N/A	
15.) Farm Records	Review of existing on-farm records by trained and certified federal, state and/or county agency personnel. No on-site verification.	Non-annual frequency of on-farm records review and verification for all or sufficient statistical percentage of operations during BMP life span.	Not Eligible	N/A	

16.) Farm Records	Review of existing on-farm records by trained and certified NGO personnel. No on-site verification.	Non-annual frequency of on-farm records review and verification for all or sufficient statistical percentage of operations during BMP life span.	Not Eligible	N/A	
17.) Transect Survey	Statistically designed and recognized transect survey completed by trained and certified federal, state and/or county personnel.	Non-annual frequency of statistical transect surveys for a sufficient statistical percentage of operations during BMP life span.	Not Applicable	N/A	
18.) Transect Survey	Statistically designed and recognized transect survey completed by trained and certified NGO personnel.	Non-annual frequency of statistical transect surveys for a sufficient statistical percentage of operations during BMP life span.	Not Applicable	N/A	
19.) CEAP Survey	CEAP statistical survey conducted in-person at field-level scale following NASS verification protocols.	Non-annual frequency of statistical CEAP surveys for a sufficient statistical percentage of operations during BMP life span may limit verification.	Potentially Eligible	All RI Practices are eligible if they meet RI Visual Indicators.	NRCS/NASS provide Visual Indicator Checklist; photo/description; Location documentation certifying entity.
20.) NASS Survey	NASS statistical survey conducted at farm-level scale following NASS verification protocols.	Non-annual frequency of statistical NASS surveys for all or sufficient statistical percentage of operations during BMP life span.	Potentially Eligible	All RI Practices are eligible if they meet RI Visual Indicators.	NASS provides Visual Indicator Checklist; photo/description; Location documentation to certifying entity.
21.) NRI Point (NRCS) or some other statistically selected sites	Statistical survey conducted in-person at field-level with NASS trained and certified personnel.	Non-annual frequency of statistical NRI surveys for a sufficient statistical percentage of operations during BMP life span may limit verification.	Potentially Eligible	All RI Practices are eligible if they meet RI Visual Indicators.	NRCS provides Visual Indicator Checklist; photo/description; Location documentation to certifying entity.

22.) Remote Sensing	Statistically designed and recognized remote sensing surveys with supporting field-level scale ground-truthing verification.	Non-annual frequency of statistical remote sensing surveys implemented by trained and certified agency personnel, for all or sufficient statistical percentage of operations during BMP life span.	Potentially Eligible	All RI Practices are eligible if RI Visual Indicators and can be identified by approved methodology and remote sensing signatures.	Inventory Entity provides Visual Indicator Checklist; photo/description; Location documentation to certifying entity
23.) Remote Sensing	Statistically designed and recognized remote sensing surveys with supporting field-level scale ground-truthing verification.	Non-annual frequency of statistical remote sensing surveys implemented by trained and certified NGO personnel, for all or sufficient statistical percentage of operations during BMP life span.	Potentially Eligible	All RI Practices are eligible if RI Visual Indicators and can be identified by approved methodology and remote sensing signatures.	Inventory Entity provides Visual Indicator Checklist; photo/description; Location documentation to certifying entity

APPENDIX C:

ANIMAL UNIT EQUIVALENCIES

One animal unit is generally defined as 1,000 pounds of live animal weight. The numbers given below represent averages for different types of livestock. It may serve as a guideline for the number of animals of a certain type that would constitutes eight animal units for purposes of nutrient management regulations. If actual weights are available from a certified scale, use them. For animals not listed here, contact MDA for guidance on weight calculations.

Animal type	Animal weight (average in pounds)	Number of animals that would equal 8 animal units (AU)
Horses (any animal 3 months or older)	1,000	8
Feed Cattle	1,000	8
Dairy Cattle	1,000	8
Sheep	200	40
Goat	89	90
Alpaca	107	75
Llama	320	25
Emu	133	60
Ostrich	267	30
Broilers/fryers	4	2,000
Ducks	7	1,200
Geese	12	650
Turkeys	19	425

Source: MDA 2000