NON COST-SHARED BEST MANAGEMENT PRACTICE

VERIFICATION PROCEDURES MANUAL

Maryland Department of Agriculture

Office of Resource Conservation

Quality Assurance and Accountability

(This page left blank intentionally)

TABLE OF CONTENTS

(This page left blank intentionally)

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 Maryland's agricultural land is critical to ensure that appropriate nutrient load reductions are being credited in the Bay Watershed Model. Traditionally, the Maryland Department of Agriculture (MDA) has relied upon both State and Federal Cost-Share Programs as the source of conservation implementation data. This data is currently reported through MDA's Conservation Tracker System.

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 certain Best Management Practices that have been implemented without public cost-share provided they are "functionally equivalent" to the USDA-NRCS standard.

Objective

The objective is to develop a sustainable protocol for the collection and verification of non-cost-shared agricultural best management practices. The goal is to credit the agricultural sector for all verified conservation practice implementation that results 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 using Maryland's Conservation Tracker Program and then transmitted to the Chesapeake Bay Program via the National Environmental Information Exchange Network.

District staff are encouraged to contact cooperators and landowners to fully document all conservation practices and to try to assist in correcting any potential environmental concerns that may arise during site visits. It is extremely important for the District to establish a dialogue with cooperators to encourage the proper use and maintenance of all BMPs. It is the intent of the program to ensure that all conservation practices are documented. The program relies heavily on the Districts to ensure that the intent of the program is carried out.

Non Cost-Shared Practices Meeting NRCS Standards and Functional Equivalents

When evaluating non cost-shared practices, technical staff may identify practices installed by a farmer that do not meet NRCS standards, but are installed in such a way that the practice could be determined to be a Functional Equivalent. Since these practices are completely funded by a farmer, they may not have used the same designs, materials or certified seed as required by NRCS, but when evaluated, can be determined to function similarly to a NRCS designed practice. Therefore a Functional Equivalent (FE) practice is: **"A non-cost shared agricultural conservation practice that provides an environmental benefit on an annual basis that is equivalent to an existing approved Chesapeake Bay Program (CBP) BMP of similar function that is defined to meet an NRCS Standard and Specification. The recognized physical life-span of an agricultural functional equivalent BMP shall in nearly all cases represent a significantly reduced timeframe compared to an existing approved CBP BMP of similar function. It is assumed that the design criteria and/or construction materials may not be as comprehensive as currently defined by an NRCS Standard and Specification".**

Why Is It Important To Report Functional Equivalents?

- **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, Mennonite Farmers
  - ✓ Farms owned by corporations that cannot accept federal funding due to the payment limitations.
- **Maryland Nutrient Regulations** require farmers to install practices that provide water quality protection and need to be verified for compliance with state laws. These practices are not required to meet NRCS Standards and Specifications:
  - ✓ Stream Exclusion (fencing)
  - ✓ 10' and 35' buffers for fertilizer and manure application
- **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:
  - ✓ Chesapeake Bay Foundation - Stream exclusion fencing with narrow width tree plantings
  - ✓ Nanticoke Watershed Association – 10' Buffers on Drainage Ditches
  - ✓ Chester River Association - Switch grass plantings for field buffers
  - ✓ Middle Choptank River Association - Water Control Structures on Field Ditches

Maryland Department of Agriculture (MDA) is interested in capturing as much data as possible to demonstrate all the good actions Maryland farmers are doing to protect the environment and the Chesapeake Bay.

How Are Functional Equivalent Design Criteria Determined?

Over the past two years, through the review of practices that farmers have installed without cost sharing, MDA determined there were fourteen NRCS practices that would be considered to be MDA Functional Equivalents. It was determined that Districts needed to understand what design criteria would be required to be a FE. To determine the critical design criteria for a Functional Equivalent practice the following actions were taken:

1) All critical NRCS Standard design components for 14 BMPs were listed and initially considered for a Functional Equivalent practice.
2) Critical Design Components of FE Practices were determined by the following filters:
   a) Is it required by Federal or State Law? (State Law criteria may be in addition to, or more stringent than NRCS design criteria).
   b) Is it required for safe functioning of the practice for humans or animals?
   c) Is it required for the practice to provide water quality or resource protection?
   d) Some FE standards will have more than one reportable code to record the appropriate buffer widths or type of animal.
   e) FE practices will have different (but similar) names to distinguish them from Non-cost shared practices that meet a NRCS standard.
   f) All FE practice standards have a reduced lifespan and will be recertified at the end of FE lifespan to ensure they are being properly maintained and functioning.
   d) Owner Certification is required for satisfaction of design criteria of components that are not obvious, and for adequate operations and maintenance of the practice.

Review Procedure

1) An on-farm evaluation of **all** non cost-shared Best Management Practices should be performed under the following situations:
   a. Developing or updating a Conservation Plan
   b. MACS Spot Check / Federal Program Quality Assurance Review

c. Nutrient Trading Evaluation
d. Farm Stewardship Certification Assessment Program Evaluation
e. Maryland Agricultural Certainty Evaluation
f. At the request of owner/operator

2) The Soil Conservation District will assign a technically proficient trained, certified person(s) from their staff to perform the verification.
3) Do an on-site evaluation of the BMP.
4) Use the appropriate verification worksheet for the identified practice. Each worksheet has the design criteria for a NRCS standard and a FE practice on the same page.
5) The field will look at each design criteria and determine: if it is present (mark Y); not present (mark N); not applicable (mark N/A) for the appropriate practice. Since there is only one set of Y-N-N/A columns- they will be checked to correspond with the type of BMP reported (i.e. Meets NRCS Spec or Meets FE Spec).
6) **If the BMP meets NRCS standard**,
    a. All the appropriate highlighted criteria in the NRCS column must be present to meet a NRCS BMP Standard. (Refer to Section IV of NRCS Technical Guides more information is needed);
    b. After noting the appropriate design criteria are present (Y, N or N/A) circle the appropriate finding "**Meets NRCS Spec**";
    c. Fill in the date the practice was installed by the farmer. (Installation date);
    d. Fill in or check the appropriate reportable code information for the practice.
    e. Take a picture of the BMP;
    f. Document any additional information that you feel is important for verification, such as: the % of coverage of vegetation; width of buffer (must be at least 35'), etc.;
    g. Document BMP in Conservation Plan: If owner agrees to complete and sign an NRCS Operation and Maintenance Plan, the BMP may be recorded and reported in a NRCS Toolkit Plan; If they do not sign and O&M Plan, document the BMP in Plan folder and report in Conservation Tracker.
    h. Keep worksheet and picture in Conservation Plan folder in the District Office;
    i. Report BMP in Conservation Tracker.
7) **If the BMP does not meet NRCS standard,** review Functional Equivalent Practice design Criteria for a FE BMP.
    a. All the appropriate highlighted criteria in the FE column must be present to meet a MDA FE BMP;
    b. After noting the appropriate design criteria are present (Y, N or N/A) circle the appropriate finding "**Meets FE Spec**";
    c. Fill in the date the practice was installed by the farmer. (Installation date);
    d. Fill in or check the appropriate reportable code information for the practice.
    e. Take a picture of the FE BMP;
    f. Document any additional information that you feel is important for verification, such as: the % of coverage of vegetation; actual width of buffer (less than 35'), etc.
    g. Document any design criteria (materials, etc.) that the owner certifies were used in the installation of the FE BMP;
    h. Inform the farmer when you will be back to re-certify the practice; and any operation and maintenance actions you think are appropriate or needed;
    i. Document FE BMP in Conservation Plan. Keep the worksheet and picture in the Conservation Plan folder in the District Office;
    j. Report FE BMP in Conservation Tracker.

8) All verified practices must be reported in Conservation Tracker (See Conservation Tracker Manual).
    a. Those that meet a NRCS practice standard should be reported with appropriate NRCS BMP code (i.e. 316 – Animal Mortality Facility)
    b. Those that do not meet NRCS standard but meet the Functional Equivalent standard should be reported under the Functional Equivalent code (i.e. 316FE – Animal Compost Structure)
    c. In some cases there will be additional information that you will report In Conservation Tracker, such as: Type of Animal, Animal Units (AU), Buffer Width Category, etc.;
    d. Report **date implemented or installed** by owner/operator, **not date verified**;
    e. Indicate "Farmer Installed" as technician;
    f. Federal and State cost-share programs should remain unchecked
9) At any point at which the BMP is brought up to NRCS standard, the change in status should be documented by completing a new worksheet and the change the BMP reported in Conservation Tracker.
10) In July of each year, the District will be provided a list of FE Practices that will need to be re-certified at the end of their FE lifespan. During the next calendar year the District will review the non cost-shared FE practice worksheets and the FE practice in the field and re-certify the practice. If the FE practice is no longer present or it cannot meet the FE design specification it will be removed from Conservation Tracker.
11) All non cost-shared BMPs identified and reported may be subject to review during MACS Spot Checks or Quality Assurance Reviews.

NRCS and MDA Functional Equivalent Practice Design Criteria and Reportable Codes

NRCS Code	NRCS BMP Name	MDA FE Code	MDA FE BMP Name	Additional Reporting Code Options
313	Waste Storage Facility	313FE	Waste Storage Structure	None
316	Animal Mortality Facility	316FE	Animal Compost Structure	
327	Conservation Cover	327FE	Alternative Crop/Switchgrass	
382A	Fence	382FE1	Watercourse Exclusion	10'-34' Width Buffer, Planted to Grass or Trees
382B	Fence	382FE2	Watercourse Exclusion	35'+ Width Buffer, Planted to Grass
382C	Fence	382FE3	Watercourse Exclusion	35'+ Width Buffer, Planted to Trees
None	None*	390FE1	Grass Buffer for Stream	10'-34' Width Buffer
390	Riparian Herbaceous Cover	390FE2	Grass Buffer for Stream	35'+ Width Buffer
None	None*	391FE1	Forest Buffer for Stream	10'-34' Width Buffer
391	Riparian Forest Buffer	391FE2	Forest Buffer for Stream	35'+ Width Buffer
422A	Hedgerow Planting	422FE1	Vegetative Environmental Buffer for Poultry	Warm Season Grass
422B	Hedgerow Planting	422FE2	Vegetative Environmental Buffer for Poultry	Trees
512	Forage and Biomass Planting	512FE	Pasture and Hayland Planting	None
528	Prescribed Grazing	528FE	Rotational Grazing	
558	Roof Runoff Structure	558FE	Barnyard Runoff Control	
561	Heavy Use Area Protection	561FE	Concentrated Area Protection	
587	Structure for Water Control	587FE	Water Control Structure	
614	Watering Facility	614FE	Watering Trough	
657	Wetland Restoration	657FE	Wetland Development	

* A smaller width may not be reported for the practice if BMP meets the NRCS Standard Design Criteria.

313FE – WASTE STORAGE STUCTURE (MDA Functional Equivalent Definition)

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

DEFINITION
A waste storage impoundment made by constructing an embankment and/or excavating a pit or dugout, 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 wastes such as manure, wastewater, and contaminated runoff as a storage function component of an agricultural waste management system.

CONDITIONS WHERE PRACTICE APPLIES
To temporarily store wastes such as manure, wastewater, and contaminated runoff as a storage function component of an agricultural waste management system.

CRITERIA
Size of the facility should be large enough to store all accumulated animal manure, including bedding, wash water, and needed dilution water, if applicable, for the maximum period during which such wastes cannot be processed or applied to the land for reasons such as operational restrictions, weather, or crops.

Exclude clean runoff to the fullest extent practical except where its storage is advantageous to the operation of the agricultural waste management system.

Waste handling equipment shall be available to remove waste materials from agricultural waste storage facilities and processing it or applying it to the land at the locations, times, and rates shown in the overall Nutrient Management Plan or the Waste Management Plan.

OPERATION AND MAINTENANCE
Inspections of animal waste structures are required at least every 5 years for practices meeting FE specifications.

SUPPORTING DATA AND DOCUMENTATION
Complete accompanying worksheet; take a picture of the practice; and document on conservation plan map.

NRCS BMP PRACTICE NAME
313 Waste Storage Facility

313 Waste Storage Facility / 313FE Waste Storage Structure Worksheet

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	District	Inspection Type ☐ Initial Inspection ☐ Q.A.R. ☐ Nutrient Trading ☐ Recheck ☐ Other _____

	NRCS Specification: 313 Waste Storage Facility MDNRCS Spec Date: 2-08		MDA Specification: 313FE Waste Storage Structure MDAFE Spec Date: 11-13				FE Supporting Data & Documentation:
	Life span: 15 years		**FE Life span: 5 years**				
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
1	Does facility operate without polluting air or waters?	**1**	Does facility operate without polluting waters?				Visual inspection
2	Facility is located >≥ 100' from wells.	**2**	Facility is located ≥ 100' from wells, unless there is a Health Dept waiver.				Estimate by paces
3	Facility is outside 100-yr floodplain, or is permitted by MDE/ACOE	**3**	Facility is outside 100-yr floodplain, or is permitted by MDE/ACOE				Est. by stream size + FIRM or MdMERLIN
4	Volume ≥ # AU's * Time/AU (Table 1&2) + direct precipitation and maintenance. schedule	**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	**5**	Offsite runoff is excluded or accounted for in storage				Visual inspection
6	Facility provides ≥ 1' freeboard for non-roofed liquid storage + 25-yr event	**6**	Facility provides ≥ 1' freeboard for non-roofed liquid storage + 25-yr event				Computation
7	Karst (limestone) area has liner + 2' fine grain material, or GCL over 2' fine grain material, Watertight concrete over 2' fine grain material	**7**	Karst (limestone) area has liner + 2' fine grain material, or GCL over 2' fine grain material, Watertight concrete over 2' fine grain material				Owner interview*
8	Platform or ramp is provided, for emptying (≥ 4:1 for liquids, ≥ 10:1 for solids)	**8**	Platform or ramp is provided, for emptying (≥ 4:1 for liquids, ≥ 10:1 for solids)				Observation and measurement
9	Facility is safe, with fences, signs & structures to prevent falling, explosion, poisoning or asphyxiation.	**9**	Facility is safe, with fences, signs & structures to prevent falling, explosion, poisoning or asphyxiation.				Visual observation
10	Flexible membranes meet Code 521A						

	NRCS Specification: 313 Waste Storage Facility MDNRCS Spec Date: 2-08		MDA Specification: 313FE Waste Storage Structure MDAFE Spec Date: 11-13				FE Supporting Data & Documentation:
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
11	Non-covered manure is either poultry in conical stack, or horse manure is ≤ 50:50 manure:straw-bedding.	**10**	Non-covered manure is either poultry in conical stack, or horse manure is ≤ 50:50 manure:straw-bedding or sawdust or other carbon source.				Visual observation
12	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 by Wastewater Treatment Strip (Code 365) or Structure (Code 313)	**11**	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 by Wastewater Treatment Strip (Code 365) or Structure (Code 313)				Visual observation
13	Pond is within impervious soils, or has liner *	**12**	Pond is within impervious soils, or has liner *				Visual observation
14	Pond is ≥ 2' above water table, or has liner	**13**	Pond is ≥ 2' above water table, or has liner or provisions have been made for hydraulic pressure*				Visual observation
15	Pond berm top width meets/exceeds Table 3	**14**	Pond berm top width meets/exceeds Table 3				Visual observation
16	Pond slopes are stable, and ≥ 2:1, and sum to ≥ 5	**15**	Pond slopes are stable, and ≥ 2:1, and sum to ≥ 5				Visual observation
17	Structure meets or exceeds Table 5 and pressure≤ 65 lbs/ft^2						
18	Slab on grade ≥ 4” w/ joints ≤ 10'	**16**	Slab on grade ≥ 4" thick w/ joints ≤ 10'				Visual observation
19	Concrete Field pad ≥4” thick w/10’sp.joints, and meets all other Code 313 minimum requirements for fabricated structures 1-6, or Synthetic liner ≥20mil thick under 1’soil, or Clay liner ≥ 1’ thick	**17**	Field pad is impermeable, with no cracks, gaps, holes or tears				Soil boring, Owner certification
20	Waste is conically shaped to shed precipitation, minimize percolation	**18**	Waste is conically shaped to shed precipitation, minimize percolation				Visual inspection
	Materials Test:						
21	Precast Structure meets ASTM C-913 and C-478						
22	Flexible membranes meet Code 521A						
23	Materials meet minimum requirements for Steel(AISC), Timber(NDSWC), Concrete(ACI 318), Masonry(ACI 530)						

	NRCS Specification: 313 Waste Storage Facility MDNRCS Spec Date: 2-08		MDA Specification: 313FE Waste Storage Structure MDAFE Spec Date: 11-13				FE Supporting Data & Documentation:
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
	Maintenance Test:						
24	Owner has and follows maintenance plan.						
			*-per owner's certification				
	MEETS NRCS SPEC		**MEETS FE SPEC**				**CIRCLE APPROPRIATE FINDING**
	Installation Date:						
	NRCS Reportable Units:		**FE Reportable Units:**				
	Number of Systems:		Number of Systems:				
	Animal Type: AU:		Animal Type: AU:				
	CERTIFICATION DATE/INITIALS:						
	RECERTIFICATION DATE/INITIALS:						

ADDITIONAL DOCUMENTATION:

316FE – ANIMAL COMPOST STRUCTURE (MDA Functional Equivalent 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.

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 both normal and catastrophic animal mortality; however, it does not apply to catastrophic mortality resulting from disease.

CRITERIA
The facility shall be designed to handle normal mortality and/or catastrophic 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 FE specifications.

SUPPORTING DATA AND DOCUMENTATION
Complete accompanying worksheet; take a picture of the practice; and document on conservation plan map.

NRCS BMP PRACTICE NAME
316 Animal Mortality Facility

316 Animal Mortality Facility / 316FE Animal Compost Structure Worksheet

Cooperator Name, Address, and Phone #	FSA Farm / Tract FIELD NUMBER:	District	Inspection Type ☐ Initial Inspection ☐ Q.A.R. ☐ Nutrient Trading ☐ Recheck ☐ Other _____

	NRCS Specification: 316 Animal Mortality Facility MDNRCS Spec date: 2/08		MDA Specification: 316FE Animal Compost Structure MDAFE Spec Date: 11/13				FE Supporting Data & Documentation:
	Life span: 15 years		**FE Life span: 5 years**				
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
1	Facility meets pollution control requirements of state & local agencies	**1**	Facility meets pollution control requirements of state & local agencies				Visual inspection
2	Facility is located downgrade and ≥ 100' from wells, spring	**2**	Facility is located downgrade and ≥ 100' from wells, spring or for FE adequately buffered with 50' minimum				Estimate by paces
3	Facility is located 100’ from watercourses & ponds	**3**	Facility is located 100’ from watercourses & ponds or for FE adequately buffered with 50' minimum				Estimate by paces
4	Facility is located outside 100' floodplain or designed w/MDE &ACOE permits to withstand the 25-yr flood from inundation & damage	**4**	Facility is located outside 100' floodplain or designed w/MDE &ACOE permits to withstand the 25-yr flood from inundation & damage				Estimate by stream size + FIRM or MdMERLIN
5	Facility volume is sized per Code 316, animals x DLF table and maintenance schedule						
6	Facility is properly covered and incineration ash properly handled						
7	Facility is designed to handle normal and/or catastrophic mortality						
8	Facility conforms with all federal, state & local laws, rule & regulations, including closing and removal where required	**5**	Facility conforms with all federal, state & local laws, rule & regulations, including closing and removal where required				Visual inspection and comparison
9	Area around facility meets HUA requirements Code 561, and free of ruts or standing water	**6**	Area around facility is stabilized and free of ruts or standing water				Visual inspection
10	Roofless facility is treated with treatment strip per Code 635	**7**	Roofless facility is treated with treatment strip (leachate doesn't create a pollution problem)				Visual inspection, comparison with spec
11	No leachate occurs						

	NRCS Specification: 316 Animal Mortality Facility MDNRCS Spec date: 2/08		MDA Specification: 316FE Animal Compost Structure MDAFE Spec Date: 11/13				FE Supporting Data & Documentation:
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
12	Facility is ≥ 2' above water table	**8**	Facility is ≥ 2' above water table*				Soil boring, Soil survey, Owner certification
13	Facility is as close to source of mortality as possible						
14	Facility is safeguarded from hazards	**9**	Facility is safeguarded from hazards				Evidence of guard railings or other as needed
15	Mix meets necessary Carbon-Nitrogen ratio						
16	Mix meets 40-60 moisture content						
17	Mix is ≥ 130 degrees for 5 days						
18	Freezing is performed per Code 316						
19	Disposal pit shall meet Code 316						
20	Incinerators shall meet Code 316						
21	Burial pit shall meet Code 316, ≥ 4' wide, cover ≥ 2', level bottom						
22	Composting shall occur in piles or rows per NEH 637, Ch2						
	Materials Test:						
23	Materials meet minimum requirements for Steel (AISC), Timber (NDSWC), Concrete (ACI 318), Masonry (ACI 530) and other relevant specifications						
24	Structure meets Code 313, unless otherwise designated						
	Maintenance Test:						
25	Owner has and follows a maintenance plan						
			*-per owner's certification				
	MEETS NRCS SPEC		**MEETS FE SPEC**				**CIRCLE APPROPRIATE FINDING**
	Installation Date:						
	NRCS Reportable Units:		**FE Reportable Units:**				
	Number of Systems:		Number of Systems:				
	Animal Type: AU:		Animal Type: AU:				
	CERTIFICATION DATE/INITIALS:						
	RECERTIFICATION DATE/INITIALS:						

ADDITIONAL DOCUMENTATION:

327FE – ALTERNATIVE CROP/SWITCHGRASS (MDA Functional Equivalent Definition)

(Reported Unit: Acres)

DEFINITION

Conversion of cropland to an 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 FE specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying worksheet; take a picture of the practice; and document on conservation plan map**.**

NRCS BMP PRACTICE NAME

327 Conservation Cover

327 Conservation Cover / 327FE Alternative Crop/Switchgrass Worksheet

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	District	Inspection Type ☐ Initial Inspection ☐ Q.A.R. ☐ Nutrient Trading ☐ Recheck ☐ Other _____

	NRCS Specification: 327 Conservation Cover MDNRCS Spec date: 7/02		MDA Specification: 327FE Alt. Crop/Switchgrass MDAFE Spec date: 11/13				FE Supporting Data & Documentation:
	Life Span: 15 years		**FE Life Span: 5 years**				
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
1	Switchgrass + one other species is provided	**1**	Pure switchgrass planting				Visual inspection
2	Fertilizer & lime are applied per soil tests & nutrient management plan	**2**	Fertilizer & lime are applied per soil tests & nutrient management plan*				Owner interview*
3	Livestock are excluded	**3**	Livestock are excluded				
	Materials Test:		**Materials Test:**				
4	Plants are native to MD (preferred) or are introduced and non-invasive, per Code 327 Table 2, and of viable, high quality planting stock	**4**	Plants are native to MD (preferred) or are introduced and non-invasive, per Code 327 Table 2, and of viable, high quality planting stock				Owner interview*
	Maintenance Test:						
5	Owner has and follows a maintenance plan						
			*-per owner's certification				
	MEETS NRCS SPEC		**MEETS FE SPEC**				**CIRCLE APPROPRIATE FINDING**
	Installation Date:						
	NRCS Reportable Units:		**FE Reportable Units:**				
	Acres:		Acres:				
	CERTIFICATION DATE/INITIALS:						
	RECERTIFICATION DATE/INITIALS:						

ADDITIONAL DOCUMENTATION:

382FE – WATERCOURSE EXCLUSION (MDA Functional Equivalent Definition)

Reported Units: Feet

NRCS Code	NRCS BMP Name	MDA FE Code	MDA FE BMP Name	Additional Reporting Code Options
382A	Fence	382FE1	Watercourse Exclusion	10'-34' Width Buffer, Planted to Grass or Trees
382B	Fence	382FE2	Watercourse Exclusion	35'+ Width Buffer, Planted to Grass
382C	Fence	382FE3	Watercourse Exclusion	35'+ Width Buffer, Planted to Trees

DEFINITION
A constructed barrier to livestock. A field border will be present of either herbaceous materials or trees between the stream and the fence. The FE 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 needed 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 at least 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.

OPERATION AND MAINTENANCE
Fencing materials shall be new, of high quality and durability, and constructed to meet the intended purpose of the practice.

Inspections of the fencing are required at least every 5 years for practices meeting FE specifications.

SUPPORTING DATA AND DOCUMENTATION
Complete accompanying worksheet; take a picture of the practice; and document on conservation plan map**.**

NRCS BMP PRACTICE NAME
382 Fence

382 Fence / 382FE Watercourse Exclusion Worksheet

Cooperator Name, Address, and Phone #	FSA Farm / Tract FIELD NUMBER:	District	Inspection Type ☐ Initial Inspection ☐ Q.A.R. ☐ Nutrient Trading ☐ Recheck ☐ Other _____

	NRCS Specification: 382 Fence MDNRCS Spec date: 7-03		MDA Specification: 382 Watercourse Exclusion MDAFE Spec date: 11/13				FE Supporting Data & Documentation:
	Life span: 20 years		**FE Life span: 5 years**				
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
1	Fence controls the intended animals	**1**	Fence controls the intended animals				Owner interview* Visual Observation
		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
2	Posts are located below frost line						
3	Posts are secure in compact earth or cement and cannot be moved by hand						
4	Areas around fence are stabilized	**4**	Areas around fence are stabilized				Visual observation, note date
5	Fence is determined to be critical confinement/exclusion from environmental area	**5**	Fence is determined to be critical confinement/exclusion from environmental area				Visual inspection
6	Fence meets minimum type, # of strands/boards, spacing, height, & visibility per Table 1, 2						
7	High Tensile Wire is ≥ 12.5 gauge, ≥ 180000 psi tensile strength, and 1300 lbs. breaking strength						
8	Woven Wire is ≥ 12.5 gauge, with bottom wire ≤ 3" from ground						
9	Barbed Wire is double strand, ≥ 12.5 gauge w/ 4pt barbs @ 6" sp, 15.5 gauge for high tensile, no horses						
10	Posts are wood or steel						
11	Wood posts meet Table 3, and ≥ 4" dia/sq, in ground ≥ 2.5'(no concr) or ≥ 12" (w/ concr =3xd), per Table 3						

	NRCS Specification: **382 Fence** **MDNRCS Spec date: 7-03**		**MDA Specification:** **382 Watercourse Exclusion** **MDAFE Spec date: 11/13**				**FE Supporting Data & Documentation:**
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
12	Steel posts are studded or punched T, U, or Y w/ anchor plates, weigh 1.3 lbs./ft., galvanized or painted per Table 3						
13	Post spacing ≤ 16' for non-elect high-tensile o/c if no battens, ≤ 30' o/c with battens @ 10' and 20'						
14	Battens = 1.75" x 1.75" x 3.5' ≤ 10' o/c						
15	Corner wood posts meet table 3, and ≥ 6" dia, w/ brace posts ≥ 5", set ≥ 3.5' in ground (no concr) or ≥ 24" (w/ concr = 3xd) per Table 3						
16	Brace posts are spaced at 7' ≤ s ≤ 10' from corner, gate, or end						
17	Brace provided at all alignment changes ≥ 40^{o}						
18	Brace meets type per spacing of table 3						
19	Fasteners for wood posts ≥ 9 gua. galvanized staples, 1.25"long (softwood), 1"long (hardwood)						
21	Wood boards meet height Table 1, & posts size & spacing meet table 4						
22	Wood boards are 1" x 6" min., 8' staggers of 16' w/lengths w/2 12d (3.25") galv nails or 3" deck screws						
23	Chain link meets Table 5						
	Materials Test:						
24	Materials meet Table 8						
	Maintenance Test:						
25	Owner has and follows a maintenance plan						
			*-per owner's certification				
	MEET NRCS SPEC		**MEETS FE SPEC**				**CIRCLE APPROPRIATE FINDING**
	Installation Date:						
	NRCS Reportable Units: Feet		**FE Reportable Units:** Feet				
	382A=10'-34' Width Buffer, Grass or Trees		**382FE1**=10'-34' Width Buffer, Grass or Trees				
	382B=35'+ Width Buffer, Grass		**382FE2**=35'+ Width Buffer, Grass				
	382C=35'+ Width Buffer, Trees		**382FE3**=35'+ Width Buffer, Trees				
	CERTIFICATION DATE/INITIALS:						
	RECERTIFICATION DATE/INITIALS:						

ADDITIONAL DOCUMENTATION:

390FE – GRASS BUFFER FOR STREAM (MDA Functional Equivalent Definition)

Reported Units: Acres

MDA FE Code	MDA FE BMP Name	Additional Reporting Code Options
390FE1	Grass Buffer for Stream	10'-34' Width Buffer
390FE2	Grass Buffer for Stream	35'+ Width Buffer

DEFINITION

Grasses, grass-like plants, and forbs that are **established on cropland** and managed to provide a herbaceous buffer located adjacent to and up-gradient from water bodies or a strip or area of herbaceous vegetation that removes contaminants from overland flow located adjacent to cropland. This includes areas that function as riparian herbaceous buffers and/or filter strips.

PURPOSES

This practice is to 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, lakes, ponds, wetlands and areas with ground water recharge**. It may only be reported on cropland without a fence. Otherwise see 382FE Watercourse Exclusion.** Buffers will be either 10 to 34 feet, or 35 feet or greater.

CRITERIA

To 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. 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.

Livestock shall be controlled or excluded as necessary to achieve and maintain the intended purpose.

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 natural grassed buffer are required at least every 5 years for practices meeting FE specifications.

Control concentrated flow or mass soil movement up gradient of the buffer to maintain buffer function.

Species shall have stiff stems and high stem density near the ground surface.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying worksheet; take a picture of the practice; and document on conservation plan map**.**

NRCS BMP PRACTICE NAME

390 Riparian Herbaceous Cover

390 Riparian Herbaceous Cover / 390FE Grass Buffer for Stream Worksheet

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	District	Inspection Type ☐ Initial Inspection ☐ Q.A.R. ☐ Nutrient Trading ☐ Recheck ☐ Other _____

	NRCS Specification: 390 Riparian Herbaceous Cover MDNRCS Spec date: 1/09		MDA Specification: 390FE Grass Buffer for Stream MDAFE Spec date: 11/13				FE Supporting Data & Documentation:
	Life span: 10 years		**FE Life span: 5 years**				
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
1	Horizontal buffer width ≥ 20', measured perpendicular to top-of-bank (stream) and wetland edge	**1**	Horizontal buffer width ≥ 10', measured perpendicular to top-of-bank (stream) and wetland edge				Estimate by paces
2	Width is ≥ 35' if receiving dissolved contaminants (e.g. nutrients, pesticides)	**2**	Width is ≥ 35' if receiving concentrated dissolved contaminants (e.g. nutrients, pesticides)				Estimate by paces and Owner interview*
3	Overland flow through buffer is maintained as sheet flow	**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	**4**	All excessive sheet-rill and concentrated flow are controlled in areas immediately adjacent & up gradient of buffer, before entering				Visual inspection
5	Livestock are controlled or excluded	**5**	Livestock are controlled or excluded*				Owner interview*
	Materials Test:						
6	Plant species are native (preferred), or introduced and non-invasive, with stiff stems and high stem density	**6**	Plant species are native (preferred), or introduced and non-invasive, with stiff stems and high stem density				Visual inspection Owner interview *
7	Plants are compatible in growth rate, tolerant of flooding/saturation and shade	**7**	Plants are compatible in growth rate, tolerant of flooding/saturation and shade				Visual inspection
8	Plants meet Code 327, Conservation Cover						
	Maintenance Test:						
9	Owner has and follows a maintenance plan						
			*-per owner's certification				
	MEETS NRCS SPEC		**MEETS FE SPEC**				**CIRCLE APPROPRIATE FINDING**
	Installation Date:						
	NRCS Reportable Units: Acres		**FE Reportable Units:** Acres				
	390=35'+ Width Buffer		**390FE1=**10'-34' Width Buffer				
			390FE2=35'+ Width Buffer				
	CERTIFICATION DATE/INTIALS:						
	RECERTIFICATION DATE/INITIALS:						

ADDITIONAL DOCUMENTATION:

391FE – FOREST BUFFER FOR STREAM (MDA Functional Equivalent Definition)

Reportable Units:

MDA FE Code	MDA FE BMP Name	Additional Reporting Code Options
391FE1	Forest Buffer for Stream	10'-34' Width Buffer
391FE2	Forest Buffer for Stream	35'+ Width Buffer

DEFINITION
An area of predominately trees and/or shrubs located adjacent to and up-gradient from water bodies.

PURPOSES
This practice is to 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 stable areas adjacent to permanent or intermittent streams, lakes, ponds, wetlands and areas with ground water recharge. **It may only be reported on cropland or pasture without a fence. Otherwise see 382FE Watercourse Exclusion.** Buffers will be either 10 to 34 feet, or 35 feet or greater.

CRITERIA
To 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.

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.

Livestock shall be controlled or excluded as necessary to achieve and maintain the intended purpose.

OPERATION AND MAINTENANCE
Inspections of the forest buffer are required at least every 10 years for practices meeting FE specifications.

Control concentrated flow or mass soil movement up gradient of the forest buffer to maintain buffer function.

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

SUPPORTING DATA AND DOCUMENTATION
Complete accompanying worksheet; take a picture of the practice; and document on conservation plan map**.**

NRCS BMP PRACTICE NAME
391 Riparian Forest Buffer

391 Riparian Forest Buffer / 391FE Forest Buffer for Stream Worksheet

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	District	Inspection Type ☐ Initial Inspection ☐ Q.A.R. ☐ Nutrient Trading ☐ Recheck ☐ Other _____

	NRCS Specification: 391 Riparian Forest Buffer MDNRCS Spec date: 11-06		MDA Specification: 391FE Forest Buffer for Stream MDAFE Spec date: 11-13				FE Supporting Data & Documentation:
	Life span: 15 years		**FE Life span: 10 years**				
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
1	Dominant vegetation consists of existing, naturally regenerated, or planted trees and/or shrubs	**1**	Dominant vegetation consists of existing, naturally regenerated, or planted trees and/or shrubs				Visual inspection
2	Perpendicular distance from top-of-bank and wetland edge ≥ 10'	**2**	Perpendicular distance from top-of-bank and wetland edge ≥ or = 10' minimum average for width of buffer				Estimate by paces
3	Perpendicular distance from top-of-bank and wetland edge ≥ 35'						
4	Overland/sheet flow through buffer is maximized	**3**	Overland/sheet flow through buffer is maximized (no concentrated flow)				Visual observation
5	Excessive erosion is controlled before entering buffer						
6	Trees/shrubs are only native for buffer ≤ 15' of top-of-bank, and consist of mixture ≥ 2 species						
7	Trees/shrubs ≥ 15' are either native (preferred) or non-invasive introduced, and consist of mixture ≥ 2 species						
8	Natural regeneration factors have been evaluated, per Code 391, pp2						
9	Site is conducive to survival & growth, livestock are excluded or controlled	**4**	Site is conducive to survival & growth, livestock are excluded or controlled				Visual inspection
10	Crossings & watering facilities, if needed, are located to minimize impacts to buffer	**5**	Crossings & watering facilities, if needed, are located to minimize impacts to buffer				Visual inspection
11	Pests (plant & animal) & noxious weeds are controlled to max. extent						
12	Herbaceous filter ≥ 24' is added along uphill side of buffer in areas of excess sediment, per Code 393						
13	Structural measures are present where vegetation practice is insufficient to control erosion	**6**	Structural measures are present where vegetation practice is insufficient to control erosion				Visual inspection

	NRCS Specification: **391 Riparian Forest Buffer** **MDNRCS Spec date: 11-06**		**MDA Specification:** **391FE Forest Buffer for Stream** **MDAFE Spec date: 11-13**				**FE Supporting Data & Documentation:**
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
14	Wildlife habitat, if sought, meets minimum buffer widths of Table 1, pp 3 of Code 391						
15	Water temperature moderation, if sought, provides buffer on south & west sides of watercourse. Crown cover is ≥ 50% and canopy height ≥ width of watercourse to max. 30'						
	Materials Test:						
16	All species are suited to surrounding seasonal variation in soil & hydrology, with compatible growth rate, shade tolerance, and other characteristics						
17	Natural regeneration species have adequate seed source in adjacent areas, have favorable conditions for good & timely distribution, are resistant to noxious or invasive species						
	Maintenance Test:						
18	Owner has and follows a maintenance plan						
			*-per owner's certification				
	MEETS NRCS SPEC		**MEETS FE SPEC**				**CIRCLE APPROPRIATE FINDING**
	Installation Date:						
	NRCS Reportable Units: Acres		**FE Reportable Units:** Acres				
	391=35'+ Width Buffer		**391FE1**=10'-34' Width Buffer				
			391FE2=35'+ Width Buffer				
	CERTIFICATION DATE/INITIALS:						
	RECERTIFICATION DATE/INITIALS:						

ADDITIONAL DOCUMENTATION:

422FE – VEGETATIVE ENVIRONMENTAL BUFFER FOR POULTRY (MDA Functional Equivalent Definition)

Reportable Units: Feet

NRCS Code	NRCS BMP Name	MDA FE Code	MDA FE BMP Name	Additional Reporting Code Options
422A	Hedgerow Planting	422FE1	Vegetative Environmental Buffer for Poultry	Warm Season Grass
422B	Hedgerow Planting	422FE2	Vegetative Environmental Buffer for Poultry	Trees

DEFINITION
Windbreaks or shelterbelts are single or multiple rows of trees; shrubs or warm season grasses in linear configurations adjacent to poultry house or 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 areas where linear plantings of woody plants or warm season grasses are desired and are suitable for the intended purpose.

Windbreaks/shelterbelts 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 quality benefits may arise from using hedgerows to intercept airborne particulates and to trap sediment-attached substances. Hedgerows 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 windbreak, preferences of the client, and conditions of the site.

Use staggered spacing in multiple row plantings. Hedgerows 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 FE specifications.

SUPPORTING DATA AND DOCUMENTATION
Complete accompanying worksheet; take a picture of the practice; and document on conservation plan map**.**

NRCS BMP PRACTICE NAME
422 Hedgerow Planting

422 Hedgerow Planting / MDA 422FE Veg. Env. Buffer for Poultry Worksheet

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	District	Inspection Type ☐ Initial Inspection ☐ Q.A.R. ☐ Nutrient Trading ☐ Recheck ☐ Other _____

	NRCS Specification: 422 Hedgerow Planting MDNRCS Spec date: 11/10		MDA Specification: 422FE Veg. Env. Buffer for Poultry MDAFE Spec date: 11/13				FE Supporting Data & Documentation:
	Life span: 15 years		**FE Life span: 3 years grass or 5 years trees**				
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
1	Plant species are trees, shrubs, and/or perennial bunch grasses ≥ 3' tall	**1**	Plant species are trees, shrubs, and/or perennial bunch grasses ≥ 3' tall				Visual inspection
2	Used for poultry house ventilation-outlet filtering	**2**	Used for poultry house ventilation-outlet filtering and air quality improvement				Visual inspection
3	Hedgerow is ≥ 6' wide if seeded, or ≥ 2 rows wide. 1 row= 1'-2' (bunch grass), 2'-4' (shrubs), 6'-12' (decid.trees), 6'-10' (evrgr.trees)	**3**	Hedgerow is ≥ 6' wide if seeded, or ≥ or = 2 rows wide. 1 row= 1'-2' (bunch grass), 2'-4' (shrubs), 6'-12' (decid.trees), 6'-10' (evrgr.trees)				Visual inspection
4	Livestock are controlled or excluded	**4**	Livestock are controlled or excluded				Owner interview*
5	Noxious weeds are controlled						
6	Hedgerow is close to perpendicular to prevailing wind, and is located between poultry house and sensitive areas	**5**	Hedgerow is close to perpendicular to prevailing wind, and is located between poultry house and sensitive areas				Visual inspection
7	Upwind hedgerow is ≥ 50% plant density, & downwind hedgerow is ≥65% plant density	**6**	Upwind hedgerow is ≥ 50% plant density, & downwind hedgerow is ≥65% plant density				Visual inspection
8	If used for visual screen the plant mix must include evergreens per Spec 422						
	Materials Test:						
9	Woody plants meet Codes 327 & 380 for appropriate spacing and species						
10	Plants are native to MD (preferred) or are introduced and non-invasive						

	NRCS Specification: **422 Hedgerow Planting** **MDNRCS Spec date: 11/10**		**MDA Specification:** **422FE Veg. Env. Buffer for Poultry** **MDAFE Spec date: 11/13**				**FE Supporting Data & Documentation:**
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
	Maintenance Test:						
11	Owner has and follows a maintenance plan						
			*-per owner's certification				
	MEETS NRCS SPEC		**MEETS FE SPEC**				**CIRCLE APPROPRIATE FINDING**
	Installation Date:						
	NRCS Reportable Units: Feet		**FE Reportable Units:** Feet				
	422A=Warm Season Grass		**422FE1**=Warm Season Grass				
	422B=Trees		**422FE2**= Trees				
	CERTIFICATION DATE/INITIALS:						
	RECERTIFICATION DATE/INITIALS:						

ADDITIONAL DOCUMENTATION:

512FE – PASTURE AND HAYLAND PLANTING (MDA Functional Equivalent Definition)

Reportable Units: Acres

DEFINITION

Conversion of cropland to pasture or hayland 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, 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. It does not apply to planting primarily intended for wildlife or where grazing and/or harvesting is a secondary 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.

Select plants that will provide adequate ground cover, canopy 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 FE specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying worksheet; take a picture of the practice; and document on conservation plan map**.**

NRCS BMP PRACTICE NAME

512 Forage and Biomass Planting

512 Forage and Biomass Planting / 512FE Pasture and Hayland Planting Worksheet

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	District	Inspection Type ☐ Initial Inspection ☐ Q.A.R. ☐ Nutrient Trading ☐ Recheck ☐ Other _____

	NRCS Specification: 512 Forage & Biomass Planting MDNRCS Spec date: 5/13		MDA Specification: 512FE Pasture & Hayland Planting MDAFE Spec date: 11/13				FE Supporting Data & Documentation:
	Life span: 5 years		**FE Life span: 3 years**				
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
1	Plants are non-invasive	**1**	Plants are non-invasive				Visual inspection
2	Lime & fertilizer rates are based on soil tests	**2**	Lime & fertilizer rates are based on soil tests*				Owner interview*
3	Area complies with state nutrient management regulations	**3**	Area complies with state nutrient management regulations*				Owner interview*
4	All areas utilize certified seed						
		4	75% cover is established and maintained as "pasture in good condition"				Visual inspection
5	Noxious weeds are controlled						
	Materials Test:						
6	Plants are either native or non-invasive introduced	**5**	Plants are either native or non-invasive introduced				Visual inspection
7	Legume seed has been inoculated with viable Rhizobium bacteria						
	Maintenance Test:						
8	Owner has and follows a maintenance plan						
9	Maintenance plan includes means of management including mowing, prescribed burning, mechanical harvesting, prescribed grazing, over seeding, nutrient management, pest management, and other appropriate actions						
			*-per owner's certification				
	MEETS NRCS SPEC		**MEETS FE SPEC**				**CIRCLE APPROPRIATE FINDING**
	Installation Date:						
	NRCS Reportable Units:		**FE Reportable Units:**				
	Acres:		Acres:				
	CERTIFICATION DATE/INITIALS:						
	RECERTIFICATION DATE/INITIALS:						

ADDITIONAL DOCUMENTATION:

528FE – ROTATIONAL GRAZING (MDA Functional Equivalent 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 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 FE specifications.

SUPPORTING DATA AND DOCUMENTATION
Complete accompanying worksheet; take a picture of the practice; and document on conservation plan map**.**

NRCS BMP PRACTICE NAME
528 Prescribed Grazing

528 Prescribed Grazing / 528FE Rotational Grazing Worksheet

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	District	Inspection Type ☐ Initial Inspection ☐ Q.A.R. ☐ Nutrient Trading ☐ Recheck ☐ Other _____

	NRCS Specification: 528 Prescribed Grazing MDNRCS Spec date: 10-12		MDA Specification: 528FE Rotational Grazing MDAFE Spec date: 11/13				FE Supporting Data & Documentation:
	Life span: 1 year		**FE Life span: 3 years**				
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
1	Duration of grazing period deferment and/or rest cycles are planned per forage productivity/limitations vs. forage demand of animals (MD-RES-528-WS-1 through 7)	**1**	Duration of grazing period deferment and/or rest cycles are planned per forage productivity/limitations vs. forage demand of animals (MD-RES-528-WS-1 through 7). See FE Fencing Spec also for necessary fence requirements				Owner interview*
2	Biosecurity safeguards are in place to prevent spread of disease						
3	Owner addresses feed supplements, endophytes, bloat, poisonous plants, grass tetany, cyanogenic forages, shade, shelter, and sanitation criteria of Code 528, pp3 *						
4	Livestock have limited (not unrestricted) access to streams, seeps, ponds, and other surface waters	**2**	Livestock have limited (restricted) access to streams, seeps, ponds, and other surface waters in compliance with state law				Visual inspection
5	Livestock have close access to clean water, which meets their average daily water requirements, per tables, Code 528 pp4	**3**	Livestock have close access to clean water, which meets their average daily water requirements				Visual inspection
6	Livestock concentration and grazing are minimized in riparian,(wetland, floodplain, stream) areas	**4**	Livestock concentration and grazing are minimized in riparian, (wetland, stream) areas				Visual inspection
7	Pasture fencing layout provides laneways that minimize erosion, and protect sensitive areas	**5**	Pasture fencing layout provides laneways that minimize erosion, and protect sensitive areas				Visual inspection
8	Wildlife areas are rested during nesting season (April 15- August 15), lightly grazed to maintain ≥ 8" height in winter, ≥ 6" for rest of year						
9	Wildlife areas are only 1/3 grazed per year, or ≥ 35' along field edges						

	NRCS Specification: **528- Prescribed Grazing** **MDNRCS Spec date: 10-12**		**MDA Specification:** **528FE Rotational Grazing** **MDAFE Spec date: 11/13**				**FE Supporting Data & Documentation:**
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
10	Nutrient Management (590) is applied, if applicable (more than 8 AUs).	**6**	Nutrient Management (590) is applied, if applicable (more than 8 AUs)*				Owner interview*
	Materials Test:						
11	All species are suited to surrounding seasonal variation in soil & hydrology, with compatible growth rate, shade tolerance, and other characteristics						
	Maintenance Test:						
12	Owner has and follows a prescribed grazing plan for all units	**7**	Owner has a grazing plan for all units and manages the grass height*				Visual inspection of grass height and owner interview*
13	Owner documents goals & objectives, map, resource inventory, forage inventory, general forage-animal balance, grazing plan, worksheet/inventory, contingency plan and monitoring plan						
			*-per owner's certification				
	MEETS NRCS SPEC		**MEETS FE SPEC**				**CIRCLE APPROPRIATE FINDING**
	Installation Date:						
	NRCS Reportable Units:		**FE Reportable Units:**				
	Acres:		Acres:				
	CERTIFICATION DATE/INITIALS:						
	RECERTIFICATION DATE/INITIALS:						

ADDITIONAL DOCUMENTATION:

558FE – BARNYARD RUNOFF CONTROL (MDA Functional Equivalent Definition)

Reported Unit: Number of Systems

DEFINITION
This practice includes the installation of practices to control 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.

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

CONDITIONS WHERE PRACTICE APPLIES
This practice applies to 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.

Check 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 FE specifications.

SUPPORTING DATA AND DOCUMENTATION
Complete accompanying worksheet; take a picture of the practice; and document on conservation plan map**.**

NRCS BMP PRACTICE NAME
558 Roof Runoff Structure

558 Roof Runoff Structure / 558FE Barnyard Runoff Control Worksheet

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	District	Inspection Type ☐ Initial Inspection ☐ Q.A.R. ☐ Nutrient Trading ☐ Recheck ☐ Other _____

	NRCS Specification: 558 Roof Runoff Structure MDNRCS Spec date: 12-11		MDA Specification: 558FE Barnyard Runoff Control MDAFE Spec date: 11-13				FE Supporting Data & Documentation:
	Life span: 10 years		**FE Life span: 5 years**				
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
1	Structures are designed to convey ≥ 10-yr, 5 min. storm						
2	Manure structures are designed to convey ≥ 25-yr, 5 min. storm						
3	Downspout capacities ≥ gutter flow rates						
4	Surface and/or underground outlet capacity ≥ design capacity and has clean out.						
5	Surface outlet is stable; downspouts have elbow and dissipation device directed away from buildings	**1**	Surface outlet is stable; downspouts have elbow and dissipation device directed away from buildings				Visual inspection
6	Rock-filled trench or pad is "poorly graded" (all same rock size)						
7	Gutter less system has stone-filled, geotextile-lined collection trench under entire roof drip line: width ≥ 24", depth ≥ 24"	**2**	Gutter less system has stone-filled, collection trench under entire roof drip line: width ≥ 24", depth ≥ 24"*				Visual inspection + Owner interview*
8	Conduit of underground outlet is perforated and ≥ 4" diameter						
9	MSHA # 57 stone extends along sides of and over pipe, and clean course aggregate per MSHA Specs Sec 901	**3**	3/4" diameter stone extends along sides of and over pipe				Visual inspection
10	Volume of trench (stone + pipe) ≥ design storm volume						
11	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	**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
12	Downspout avoids mix with waste	**5**	Downspout avoids mix with waste				Visual inspection
13	# and size of downspouts meet DG Md #1, or Ar/Ads ≤ 100 sf/si (Ar = area of roof, Ads = area of downspout)						

	NRCS Specification: **558 Roof Runoff Structure** **MDNRCS Spec date: 12-11**		**MDA Specification:** **558FE Barnyard Runoff Control** **MDAFE Spec date: 11-13**				**FE Supporting Data & Documentation:**
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
14	Supports (hangers) are strong enough to withstand water/snow/ice, and spaced ≤ 24"	**6**	Supports (hangers) are strong enough to withstand water/snow/ice, and spaced ≤ 24"				Visual inspection
15	Supports = hidden hangers, bolts+ferrules, gutter-screws+ferrules, cradles, or othewise approved method. No spikes+ferrules are acceptable*	**7**	Supports = hidden hangers, bolts+ferrules, gutter-screws+ferrules, cradles, or othewise approved method. No spikes+ferrules are acceptable*				Visual inspection
16	Downspouts are securely fastened @ top & bottom, with intermediate supports ≤ 10', installed per manufacturer	**8**	Downspouts are securely fastened @ top & bottom, with intermediate supports ≤ 10', installed per manufacturer				Estimate by paces
17	Gutter & downspout are protected from livestock. Otherwise made of steel pipe, Sch40, or similar	**9**	Gutter & downspout are protected from livestock. Otherwise made of steel pipe, Sch40, or similar				Visual inspection
18	Wood & plastic gutters approved by engineer						
19	Lumber ≥ 2" thick (nominal)						
20	Fascia is NOT pressure treated, and is covered with aluminum, vinyl flashing, or paint (prior to gutter)						
21	Runoff is routed onto pervious landscaped areas. Areas must be capable of infiltrating without hurting plants	**10**	Runoff is adequately directed into control or treatment area or stream if fully piped from drip edge				Visual inspection
22	Runoff is directed away from structures (≥5' on expansive soils)	**11**	Runoff is directed away from structures				Visual inspection
23	Stored runoff designed per NRCS; potable stored water shall non-contaminated, treated, and tested for human consumption						
	Materials Test:						
24	Materials must be durable (aluminum, galvanized steel, wood, plastic,) with design lf ≥10yr						
25	Aluminum thickness ≥ .027" for gutters, ≥ .020" for downspouts. Galvanized steel gutters & downspouts ≥ 28 ga. Wood is free/clear of knots and preserved (unless redwood, cedar or cypress). Plastic has UV stabilizers. Dissimilar metals do not touch						
26	Concrete = type 1, 28 day strength ≥ 4000 psi, 5%-7.5% air-entrained slump 1.5" ≤ S ≤ 3"						

	NRCS Specification: **558 Roof Runoff Structure** **MDNRCS Spec date: 12-11**		**MDA Specification:** **558FE Barnyard Runoff Control** **MDAFE Spec date: 11-13**				**FE Supporting Data & Documentation:**
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
27	Rock, gravel, aggregates meet SHA specs 901.01 & 301.02, or AASHTO, or recycled concrete						
28	Geotextile is woven or non-woven, and meets SHA specs 921.09, Class SE						
	Maintenance Test:						
29	Owner has and follows a maintenance plan						
			*-per owner's certification				
	MEETS NRCS SPEC		**MEETS FE SPEC**				**CIRCLE APPROPRIATE FINDING**
	Installation Date:						
	NRCS Reportable Units:		**FE Reportable Units:**				
	Number of Systems:		Number of Systems:				
	CERTIFICATION DATE/INITIALS:						
	RECERTIFICATION DATE/INITIALS:						

ADDITIONAL DOCUMENTATION:

561FE – CONCENTRATED AREA PROTECTION (MDA Functional Equivalent Definition)

Reported Units: Acres; Animal Type; Animal Units

DEFINITION

The stabilization of areas frequently and intensively used by animals or vehicles by establishing vegetative cover, surfacing with suitable materials, and/or installing needed structures.

PURPOSES

The purpose of this practice is to provide a stable non-eroding surface for areas frequently used by: animals (barnyards) or vehicles (barnyard or poultry houses), to improve water quality.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to agricultural areas requiring treatment to address one or more resource concerns. This practice does not apply to cattle walkways.

CRITERIA

Surface treatment should be appropriate to the purpose and use of the heavy use area.

Any structure associated with the heavy use area should have appropriate roof runoff controls to divert clean water away from area.

Surface and subsurface drainage should be managed sufficient to control the disposal of runoff without causing erosion or water quality impairment and to exclude runoff from entering the heavy use area. Treatment areas should prevent ponding of water.

Treated areas should extend an appropriate distance from facilities such as hay rings, water troughs, feeding troughs, mineral boxes and other facilities where livestock concentrations cause resource concerns.

In the case of poultry house pads, the typical dimension will be between 400 and 1600 square feet.

Manure accumulations and contaminated runoff should be collected, stored and utilized in an environmentally sound manner.

OPERATION AND MAINTENANCE

Inspections of the concentrated area protection sites are required at least every 5 years for practices meeting FE specifications.

SUPPORTING DATA AND DOCUMENTATION

Complete accompanying worksheet; take a picture of the practice; and document on conservation plan map**.**

NRCS BMP PRACTICE NAME

561 Heavy Use Area Protection

561 Heavy Use Area Protection / 561FE Concentrated Area Protection

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	District	Inspection Type ☐ Initial Inspection ☐ Q.A.R. ☐ Nutrient Trading ☐ Recheck ☐ Other _____

	NRCS Specification: 561 Heavy Use Area Protection MDNRCS Spec date: 9-08		MDAFE Specification: 561FE Concentrated Area Protection MDAFE Spec date: 11-13				FE Supporting Data & Documentation:
	Life span: 10 years		**FE Life span: 5 years**				
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
1	Where vehicular traffic normally expected, design is for wheel load ≥ 4000 lbs						
2	Base course or geotextile type is stable						
3	Base course of stone under concrete ≥ 3", or the base course of stone under asphalt ≥ 4"						
		1	Meets minimum size requirements per MDA-MACS requirements				Measurement
4	Site has geotextile (for soft spongy areas), or membrane (for high gw area in porous soils)						
5	Surface course is concrete and designed per 313, or, the surface course compacted bituminous and subject to light use, or the surface course aggregate or other approved surfacing material ≥ 4" thick	**2**	Surface course is concrete or the surface course compacted bituminous and subject to light use, or the surface course aggregate or other approved surfacing material ≥ 4" thick				Visual inspection
6	Surface has positive drainage (no ponding)	**3**	Surface has positive drainage (no ponding)				Visual inspection
7	Area adjacent to HUA stable and no eroding	**4**	Runoff is buffered or filtered prior to leaving site				Visual inspection
8	Offsite surface and subsurface runoff is diverted around HUA	**5**	Offsite surface and subsurface runoff is diverted around HUA				Visual inspection
9	Area meets/exceeds size per 561 Table 1 (sf/AU) for livestock and maintenance schedule*	**6**	Area meets/exceeds size per 561 Table 1 (sf/AU) for livestock and maintenance schedule*				Owner interview*
10	HUA surface for livestock made of concrete ≥5" thick with 6" 6/6 gua. WWM						
11	HUA surface for livestock made of concrete ≥5" thick with 6" 6/6 gua. WWM						

	NRCS Specification: **561 Heavy Use Area Protection** **MDNRCS Spec date: 9-08**		**MDA Specification:** **561FE Concentrated Area Protection** **MDAFE Spec date: 11-13**				**FE Supporting Data & Documentation:**
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
12	HUA surface for livestock made of gravel w/ ≥6" base of No.4 stone or CR-6, and ≥3" stone dust of ≤ 1/4"						
13	HUA surface for livestock made of ≥6" of fly ash, millings, or other suitable material						
14	HUA scraped clean and well stored within 24 hrs, if applicable	**7**	HUA scraped clean and stored within 24 hrs, if applicable*				Owner interview*
	Materials Test:						
15	Does concrete meet SHA Mix #3						
16	Does asphalt meet SHA Section 504						
17	Do aggregates meet SHA section 901.01 and 901.02						
18	Does geotextile meet SHA section 921.09						
	Maintenance Test:						
19	Owner has and follows a maintenance plan						
			*-per owner's certification				
	MEETS NRCS SPEC		**MEETS FE SPEC**				**CIRCLE APPROPRIATE FINDING**
	Installation Date:						
	NRCS Reportable Units:		**FE Reportable Units:**				
	Acres:		Acres:				
	Animal Type: AU:		Animal Type: AU:				
	CERTIFICATION DATE/INITIALS:						
	RECERTIFICATION DATE/INITIALS:						

ADDITIONAL DOCUMENTATION:

587FE – WATER CONTROL STRUCTURE (MDA Functional Equivalent 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**.

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.

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 FE specifications.

SUPPORTING DATA AND DOCUMENTATION
Complete accompanying worksheet; take a picture of the practice; and document on conservation plan map**.**

NRCS BMP PRACTICE NAME
587 Structure for Water Control

587 Structure for Water Control / 587FE Water Control Structure Worksheet

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	District	Inspection Type ☐ Initial Inspection ☐ Q.A.R. ☐ Nutrient Trading ☐ Recheck ☐ Other _____

	NRCS Specification: 587 Structure for Water Control MDNRCS Spec date: 2-08		MDA Specification: 587FE Water Control Structure MDAFE Spec date: 11-13				FE Supporting Data & Documentation:
	Life span: 20 years		**FE Life span: 5 years**				
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
1	Stabilization complies with Code 342 or other protective means	**1**	Stabilization complies with Code 342 or other protective means				Visual inspection
2	Structure is fenced where necessary	**2**	Structure is fenced where necessary				Visual inspection
3	Structure has no effect on septic filter fields	**3**	Structure has no effect on septic filter fields				Visual inspection
4	No un-approved backwater on neighbors	**4**	No un-approved backwater on neighbors				Visual inspection
5	Farm-ditch is sized for per minimum required by EFH Chpt. 14						
6	Main-ditch is sized per existing ditch or 10-yr storm, if applicable	**5**	Main-ditch is sized per existing ditch or 10-yr storm, if applicable*				Visual inspection (if no evidence of erosion or size related problems count as OK)
7	All other ditches are sized per system design capacity						
8	Structure does not need MDE/COE permit or permit has been provided	**6**	Structure does not need MDE/COE permit or permit has been provided				Visual inspection
9	Freeboard provided is ≥ 0.5' from DHW						
10	Watertight 2' projection antiseep collars have been provided for pipe under embankment ≥ 4', unless pipe is ≤ 6"	**7**	Watertight 2' projection antiseep collars have been provided for pipe under embankment ≥ 4', unless pipe is ≤ 6" *				Owner interview*
11	Outlet is protected	**8**	Outlet is protected				Visual inspection
12	Drop inlet has anti-vortex device where weir control does not apply						
13	Inflow opening has trash rack w/ spacing ≥ 6" and ≤ 1/2 barrel diameter (or other means of preventing blockage)	**9**	Inflow opening has trash rack w/ spacing ≥ 6" and ≤ 1/2 barrel diameter (or other means of preventing blockage) if needed				Visual inspection
14	Pond berm top with meets/exceeds Table 3						
15	Over-top flow inlets have non-clog trash rack (or other means of preventing blockage)	**10**	Over-top flow inlets have non-clog trash rack (or other means of preventing blockage) if needed				Bar spacing's ≤ opening
16	Structure has anti-float measure (concrete to keep pipes from floating)	**11**	Structure has anti-float measure (concrete to keep pipes from floating)				Owner/builder interview or observation*

	NRCS Specification: **587 Structure for Water Control** **MDNRCS Spec date: 2-08**		**MDA Specification:** **587FE Water Control Structure** **MDAFE Spec date: 11-13**				**FE Supporting Data & Documentation:**
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
17	Gate is free-swinging or a rubber check-valve						
18	Top width of embankment ≥ 8'						Estimate by paces
19	Side slopes are ≥ 2:1 and stable	**12**	Side slopes are stable				Estimate by paces + level
20	Bottom of embankment with ditch is ≥ 8 X height, and is crowned 1' over top of lower existing ditch bank						
21	Pipe extends ≥ 2' beyond toes, covered by ≥ 12"						
	Materials Test:						
22	All material has design life ≥ 10 yrs						
23	Material of joints match pipe and are watertight*						
24	Pipe meets material specs of Code 587						
	Maintenance Test:						
25	Owner has and follows a maintenance plan						
			*-per owner's certification				
	MEETS NRCS SPEC		**MEETS FE SPEC**				**CIRCLE APPROPRIATE FINDING**
	Installation Date:						
	NRCS Reportable Units:		**FE Reportable Units:**				
	Number of Systems:		Number of Systems:				
	CERTIFICATION DATE/INITIALS:						
	RECERTIFICATION DATE/INITIALS:						

ADDITIONAL DOCUMENTATION:

614FE – WATERING TROUGH (MDA Functional Equivalent 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 from 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 protected areas, and encourage use of facility and should be located as far away from streams and drainage ways as practical.

Design the watering facility to provide adequate access to 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.

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

SUPPORTING DATA AND DOCUMENTATION
Complete accompanying worksheet; take a picture of the practice; and document on conservation plan map**.**

NRCS BMP PRACTICE NAME
614 Watering Facility

614 Watering Facility / 614FE Watering Trough Worksheet

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	District	Inspection Type ☐ Initial Inspection ☐ Q.A.R. ☐ Nutrient Trading ☐ Recheck ☐ Other _____

	NRCS Specification: 614 Watering Facility MDNRCS Spec date: 3-12		MDA Specification: 614FE Watering Trough MDAFE Spec date: 11-13				FE Supporting Data & Documentation:
	Life span: 20 years		**FE Life span: 5 years**				
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
1	Facility meets daily water consumption requirements (gal/head/day) for target livestock	**1**	Facility meets daily water consumption requirements (gal/head/day) for target livestock*				Owner interview*
2	Firm footing (gravel, stone, concrete, paving per CODE 561) extends ≥ 6' around trough/tank (cattle & horse) or ≥ 4' for all others	**2**	Firm footing (gravel, stone, concrete, paving per CODE 561) extends ≥ 6' around trough/tank (cattle & horse) or ≥ 4' for all others				Visual inspection
3	If connected to potable water supply: materials & installation meet state health department requirements (See 17 below)	**3**	If connected to potable water supply: materials & installation meet state health department requirements* (See 9 below)				Owner interview*
4	Permits from local government have been met for joining pressurized systems	**4**	Permits from local government have been met for joining pressurized systems*				Owner interview*
5	Automatic water level control, or an overflow pipe one-size larger than inflow pipe, or capacity to pass maximum inflow without overtopping, is provided	**5**	Automatic water level control, or an overflow pipe one-size larger than inflow pipe, or capacity to pass maximum inflow without overtopping, is provided				Visual inspection
6	Overflow is non-clogging	**6**	Overflow is non-clogging				Inverted “U” or grate observed
7	Overflow is piped to acceptable outlet (per Code 606)	**7**	Overflow is piped to acceptable outlet				Visual inspection
8	Trough, outlet, and appurtenances are protected from freezing						
9	Roof (if present) is designed to withstand snow, wind, and animal activities						
10	Vegetation is maintained around facility to prevent erosion	**8**	Vegetation in the field is maintained (except for the sacrifice area around the watering trough) around facility to prevent erosion				Visual inspection
11	Material is durable (reinforced concrete, steel, fiberglass, plastic or other) for full life of facility, watertight, and in good condition						
12	Galvanized steel is ≥ 20 gauge						
13	Plastic & fiberglass is UV resistant, or durably coated from exposure to sunlight						

	NRCS Specification: **614 Watering Facility** **MDNRCS Spec date: 3-12**		**MDA Specification:** **614FE Watering Trough** **MDAFE Spec date: 11-13**				**FE Supporting Data & Documentation:**
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
	Materials Test:						
14	Concrete ≥ 3000 psi @ 28 days with steel reinforcement = 0.9 si/ft., ≥ 4" thick (≥ 3" if concrete culvert pipe is used)						
15	Gravel meets SHA Specs, section 901						
16	Pipe & valves meet Code 516, are sturdy, durable, leak-free						
17	Backflow prevention is installed and working, where connected to wells, domestic or municipal water systems	**9**	Backflow prevention is installed and working, where connected to wells, domestic or municipal water systems* (See #3)				Owner interview*
	Maintenance Test:						
18	Owner has and follows a maintenance plan						
			*-per owner's certification				
	MEETS NRCS SPEC		**MEETS FE SPEC**				**CIRCLE APPROPRIATE FINDING**
	Installation Date:						
	NRCS Reportable Units:		**FE Reported Units:**				
	Number of Systems:		Number of Systems:				
	CERTIFICATION DATE/INITIALS:						
	RECERTIFICATION DATE/INITIALS:						

ADDITIONAL DOCUMENTATION:

657FE – WETLAND DEVELOPMENT (MDA Functional Equivalent Definition)

Reported Units: Acres

DEFINITION
The creation, rehabilitation or reestablishment of a wetland so that soils, hydrology, vegetative community, and habitat are a close approximation of the original natural condition that existed prior to modification, to the extent practicable.

PURPOSES
The purpose of this practice is the restoration of wetland areas and their functions and values, which will result in removing sediment, organic, matter, pollutants and utilizing nutrients, from surface and ground water associated with agricultural operations.

CONDITIONS WHERE PRACTICE APPLIES
This standard applies to creating wetlands on sites where, historically, no natural wetlands occurred or where restoration applies to rehabilitating natural wetlands which were hydrologically and/or vegetatively manipulated, and/or to sites where hydric soils have been removed or covered by fill.

These sites may have been completely converted to non-wetland conditions by filling, draining, or other hydrologic changes, or they may still meet wetland criteria but have impaired functions due to hydrologic or vegetative modifications.

Annually flooded wildlife ponds are **NOT** included.

CRITERIA
The wetland hydrology, soils, vegetation, and habitat shall approximate as closely as possible the natural condition, or a precursor to the natural condition, of the wetland prior to modification.

A variety of structural measures, including but not limited to embankments, surface drain plugs, subsurface drain plugs, removal of fill material, and shallow excavation, may be used as needed to restore hydrology. These measures may not be needed on restoration sites where the natural hydrology has not been significantly modified.

After the site is restored, the soil shall generally remain undisturbed so that the wetland will perform its natural functions, including (but not limited to) accumulation of organic matter, nutrient and contaminant sequestration, and retention of surface and subsurface water.

OPERATION AND MAINTENANCE
Inspections of the developed wetland are required at least every 5 years for practices meeting FE specifications.

SUPPORTING DATA AND DOCUMENTATION
Complete accompanying worksheet; take a picture of the practice; and document on conservation plan map**.**

NRCS BMP PRACTICE NAME
657 Wetland Restoration

657 Wetland Restoration / 657FE Wetland Development Worksheet

Cooperator Name, Address, and Phone #	FSA Farm / Tract Field Number:	District	Inspection Type ☐ Initial Inspection ☐ Q.A.R. ☐ Nutrient Trading ☐ Recheck ☐ Other _____

	NRCS Specification: 657 Wetland Restoration MDNRCS Spec date: 2-08		MDA Specification: 657FE Wetland Development MDAFE Spec date: 11-13				FE Supporting Data & Documentation:
	Life span: 15 years		**FE Life span: 5 years**				
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
1	Site was previously a natural wetland before conversion						
2	≥ 70% of wetland area & hydrology is restored to original conditions						
3	Depth, duration & frequency of surface and/or groundwater is capable in supporting prevalence of hydrophitic vegetation	**1**	Depth, duration & frequency of surface and/or groundwater is capable in supporting prevalence of hydrophitic vegetation				Visual inspection
4	≤ 30 % of wetland area is restored & maintained as open water						
5	Size & character of watershed meets present & future hydrology needs						
6	Soil remains generally undisturbed						
7	Embankment, if provided, does not need to meet MD-378 (advisory note only).	**2**	Embankment, if provided, does not need to meet MD-378 (advisory note only)				≤ 4' high, no risk of harm due to failure, observation and measurement
8	Embankment height ≤ 4', with combined slopes ≥ 6:1, and no slope ≥ 2:1, Top-of-embankment ≥ 1' above normal pool						
9	Seep through embankment & subsoil is minimal						
10	Pipe spillway ≥ 6", designed to pass ≥ Q10, 24-hr storm with ≥ 0.5' freeboard above d10						
11	For no D.A. , volume of Q10 is dewatered in time for plant survival (≤ 5 days)						
12	Spillways for passing higher storms meet EFH Chpt 14 capacity						
13	Fill is relatively impermeable, and ≥ 1' above lower channel bank						
14	Length of each surface drain plug ≥ 6H+4						
15	Length of subsurface drain & envelope removed is ≥ 50, for ≤.6iph soil, 100' for .6 ≤ hc ≤ 2 iph soil, and 150' for ≥ 2 iph soil						

	NRCS Specification: 657 Wetland Restoration MDNRCS Spec date: 2-08		MDA Specification: 657FE Wetland Development MDAFE Spec date: 11-13				FE Supporting Data & Documentation:
	Criteria Test:		**Criteria Test:**				
	NRCS		**FE**	**Y**	**N**	**N/A**	Check for NRCS or FE Practice
16	Length of perforated subsurface drain shall be replaced with non-perforated pipe where u/s conveyance is still needed, or otherwise re-routed						
17	Site is stabilized per Code 342, Code 327, or natural sources if conditions are favorable, all with nurse crop of 20 lbs./Ac of annual ryegrass or 40 lbs./Ac of oats/wheat/barley	**3**	Site is stabilized per Code 342, Code 327, or natural sources if conditions are favorable, or with nurse crop of 20 lbs./Ac of annual ryegrass or 40 lbs./Ac of oats/wheat/barley				Visual inspection
18	Fill-site removed of fill to top of original hydric soil layer, and spoil stabilized						
19	Shallow-excavation wetland holds surface water or intercepts groundwater to level close to original natural hydrologic condition	**4**	Shallow-excavation wetland holds surface water or intercepts groundwater to level close to original natural hydrologic condition				Visual inspection
20	Buffer area (outside embankment & plugs) is established ≥ 35' from wetland with perennial vegetation						
21	Vegetative cover is ≥ 85 % of desired species of herbaceous, ≥ 7 plants/1000 sf woody veg						
22	Topsoil or organic matter is sufficient to restore & support beneficial microbes & aquatic invertebrates in shallow water areas. Value/chroma of 'A' horizon soil is ≥ 3 has ≥ 3" straw, or ≥ 4" cow/horse manure, or ≥ 4" aged hardwood chips						
	Materials Test:						
23	Plants (herbaceous and/or woody) are compatible in growth rate, shade tolerance, moisture requirements, and other characteristics (see Code 657 tables 3, 4, & 5) per hardiness zone	**5**	Plants (herbaceous and/or woody) are compatible in growth rate, shade tolerance, moisture requirements, and other characteristics				Visual observation
24	Plants are Maryland native non-invasive, and beneficial to wildlife where feasible						
25	Pipe meets Code 378, concrete meets SHA mix # 3, riprap meets 901.02, geotextile meets SHA 921.09						
	Maintenance Test:						
26	Owner has and follows a maintenance plan						
			*-per owner's certification				
	MEETS NRCS SPEC		**MEETS FE SPEC**				**CIRCLE APPROPRIATE FINDING**
	Installation Date:						
	NRCS Reportable Units:		**FE Reportable Units:**				
	Acres:		Acres:				
	CERTIFICATION DATE/INITIALS:						
	RECERTIFICATION DATE/INITIALS:						

ADDITIONAL DOCUMENTATION:

APPENDIX:

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