

SEDIMENT/NUTRIENT MANAGEMENT MEASURES

Sediment/Nutrient Management Measures means a planned system to prevent sediment and nutrient delivery to water courses for water quality improvement. System components may include:

<u>BEST MANAGEMENT PRACTICES</u>	<u>PAGE</u>
Field Border	V-91
Filter Strip	V-92
Grade Stabilization Structure	V-93
Grassed Waterways	V-94
Nutrient Management	V-95
Rock-Lined Outlet	V-97
Sediment Basin	V-98
Water Control Structure	V-99
NC-ACSP-WCS (Addendum to NC-ACSP-2)	V-103
Riparian Buffer	V-105
Streambank and Shoreline Protection	V-106
Stream Restoration	V-107
Level III Inventory	V-109
Agricultural Road Repair/Stabilization	V-110
Abandoned Well Closure	V-111
Agricultural Pond Restoration/Repair	V-112
Precision Nutrient Management	V-114

Policies

1. Silt fences are to be used only in conjunction with Animal Waste Management facilities and Sediment Control Structures. Silt fences and any retained sediment must be removed from the site once vegetation has been established. All silt fence installations shall conform to standards and specifications contained in the North Carolina Sedimentation Control Commission manual, "Erosion and Sediment Control Planning and Design Manual", Section 6.62. Silt fence posts will be a maximum of 8 feet apart with fabric trenched in a minimum of 8 inches deep. All silt fences must be maintained in working order until satisfactory vegetation is established.

2. For practices requiring vegetation the following policies are applicable:
 - (a) Mulch includes the cost of materials and labor for installing any approved mulch material from the N.C. Technical Guide, Section IV, standard 341-II, at a rate of 2 tones per acre. Use of clean small grain straw is highly recommended. The average cost used is based on 125 bales of small grain straw per acre at 32 lbs. per bale. Hydro-mulch used by hydro-seeders is not to be used as a substitute for small grain mulch at any rate.
 - (b) Where mulch netting is required, use as needed 10, 12 or 15 feet wide netting. The Area Office will decide if respective NRCS Area is approved to use 10 feet wide netting and overlap in channels exceeding 10 feet wide (any overlap must exceed 18 inches). Netting must be wide enough to cover at least 6 inches from the bottom of the waterway up the side slopes. Price includes cost of netting, staples, and labor for installation.
 - (c) Where mulch is not required, use of netting is at the discretion of the person planning the practice.
 - (d) Fescue is used as base vegetation for establishing average cost. Other vegetative types may be used if they meet site specification but must use base average cost developed for fescue.
 - (e) Cooperator may use other than 10-10-10 fertilizer and the NC Agriculture Cost Share Program will pay 75% of \$.22 per lb. of plant food based on soil test.
3. Animal guards are required for all practices which have a subsurface drain outlet (grassed waterway, diversion, rock-lined waterway, etc.). These guards are needed to satisfy the subsurface drain standard.
4. Structural geotextiles shall meet the requirements of "Construction Specification 592 - Geotextiles". Drainage geotextiles shall meet the requirements of N.C. Technical Guide, Section IV Practice Standard 606, as shown in paragraph 606-8-
5. Except for Supervisors' contracts, Districts may approve contracts for vegetative practices in the amount of \$3,500 or less. This is limited to 1 contract per cooperator per year. Installation may begin on these contracts prior to the District's receipt of Division approval. However, Districts assume any responsibility for accuracies in the CPOs.
6. Land smoothing for stripcropping, terraces, diversions and grassed waterways is intended to be used only where existing terraces, diversions or other minor landscape features must be removed prior to initiating a terrace, stripcropping, diversion or grassed waterway system.
7. For other components required as an integral part of a BMP, use cost values for the appropriate practice provided elsewhere in the average cost.

Field Border

Definition/Purpose

A Field Border means a strip of perennial vegetation established at the edge of the field that provides a stabilized outlet for row water to improve water quality. Benefits may include reduced soil erosion, sedimentation and pollution from dissolved and sediment-attached substances. (DIP)

Policies

1. Wildlife plantings are acceptable cover for field borders.
2. All NRCS standards and NC Agriculture Cost Share Program policies relative to vegetation must be followed.
3. BMP soil, nitrogen and phosphorus impacts are required on the contract.
4. Minimum life of BMP is 10 years.

Specifications

N. C. NRCS Technical Guide, Section IV, Specification #386 (Field Border).

Filter Strip

Definition/Purpose

A Filter Strip means an area of permanent perennial vegetation for removing sediment, organic matter, and other pollutants from runoff and waste water to improve water quality. Benefits may include reduced soil erosion, sedimentation and pathogen contamination and pollution from dissolved, particulate, and sediment-attached substances. (DIP)

Policies

1. All NRCS standards and NC Agriculture Cost Share Program policies relative to vegetation must be followed.
2. BMP soil, nitrogen, and phosphorus impacts are required on the contract.
3. Minimum life of BMP is 10 years.

Specifications

N. C. NRCS Technical Guide, Section IV, Specification #393 (Filter Strip).

Grade Stabilization Structure

Definition/Purpose

A Grade Stabilization Structure means a structure (earth embankment, mechanical spillway, detention-type, etc.) used to control the grade and head cutting in natural or artificial channels to improve water quality. Benefits may include reduced soil erosion and sedimentation. (DIP)

Policies

1. BMP soil impacts are required on the contract.
2. Minimum life of BMP is 10 years.

Specifications

N. C. NRCS Technical Guide, Section IV, Specification #410 (Grade Stabilization Structure).

Grassed Waterways

Definition/Purpose

A Grassed Waterway means a natural or constructed channel that is shaped or graded to required dimensions and established in suitable vegetation for the stable conveyance of runoff to improve water quality. Benefits may include reduced soil erosion, sedimentation and pollution from dissolved and sediment-attached substances. (DIP)

Policies

1. This is a sediment control practice and must not be used if the primary purpose is to drain wet areas in a field.
2. As a condition for cost sharing, the field or treatment unit draining into the waterway must have installed, or the farmer must agree to install as part of the agreement, erosion control measures necessary to prevent damage from washout or excessive sedimentation in the waterway.
3. Land smoothing for grassed waterways is intended to be used only where existing terraces, diversions or other minor landscape features must be removed prior to initiating a grassed waterway system.
4. All NRCS standards and NC Agriculture Cost Share Program policies relative to vegetation must be followed.
5. BMP soil, nitrogen, and phosphorus impacts are required on the contract.
6. Minimum life of BMP is 10 years.

Specifications

N. C. NRCS Technical Guide, Section IV, Specification #412 (Grassed Waterway).

Nutrient Management

Definition/Purpose

A Nutrient Management Practice means a definitive plan to manage the amount, form, placement and timing of the application of nutrients to minimize entry of nutrients to surface and groundwater and improve water quality. (DIP)

Policies

1. Cooperator must agree to implement practice for three years. A payment of \$18 per acre will be paid when the practice is initiated. Cost Share funds may be used for any acres not already under nutrient management with no limit per applicant. No cost share payments may be made for nutrient management on land receiving animal waste.
2. Soils shall be tested every two years and soil samples must be taken in accordance with NCDA site specific recommendations or CES general recommendations. Soil samples must be used as a guide, and followed as deemed "reasonable" by both the nutrient management planner and the farmer. Soil samples must be documented by a ledger and/or map showing field size, shape, and soil sample locations.
3. Nutrient worksheets must be used annually for the crop rotation and acres planned to demonstrate a "reasonable" nutrient balance has been achieved (NCDA site specific recommendation, NRCS Worksheet, Nutrient Management #590). In cases where agronomic rates are not specified in the Nutrient Management standard for a specific crop or vegetative type, application rates may be determined using the best judgment of the nutrient management planner after consultation with CES or NCDA.
4. The same acreage must be used during this period. Consolidated Farm Service Agency (CFSA) map or equivalent, indicating location and acreage of field and location of soil samples and a soils map must be included with the CPO.
5. There is no minimum acreage required.
6. The local District has the authority to set additional limitations on acreage and/or maximum payment in accordance with the Cost Share Program policies and regulations.
7. Records are to be kept on farm and made available upon request and must include chemicals, animal waste, commercial fertilizers (dates & amounts applied), soils and waste analysis reports, "trips over field" narratives, general description of practices, crops grown and crop rotation.

8. Acceptable nutrient management planners are: NRCS, District, NCDA, Cooperative Extension Service and other agency personnel with nutrient management experience and who have been assigned nutrient management job approval authority by their respective agency. A cooperator may serve as his or her own planner; however, an acceptable nutrient management planner must review the plan and sign a verification statement certifying the plan meets technical standards (see Section VI for applicable form).
9. The cooperator must sign a statement (NC-ACSP-1D) to follow the nutrient recommendations as prescribed by the plan. The NC-ACSP-1D form must also be signed by the District to certify that an appropriate nutrient management plan has been developed and is a part of the cooperator's District file. A copy of this statement must be included in the CPO.
10. The cooperator must certify the timing, amount and location of nutrient application events and provide a copy to the District Office in order to receive payment.
11. Five percent of all nutrient management plans will be spot checked annually by the local District.
4. BMP soil impact is not required. Nitrogen and phosphorus impacts are required on the contract.
5. When determining the acreage for which payments can be made for this practice, only the acreage actually planted shall be considered. The area occupied by farm roads, best management practices, ditches, structures, etc. shall not be included in planted acreage.
14. Minimum life of BMP is 3 years.

Specifications

N. C. NRCS Technical Guide, Section IV, Specification #590 (Nutrient Management) and #633 (Waste Utilization).

Rock-Lined Outlet

Definition/Purpose

A Rock-lined Outlet means a waterway having an erosion-resistant lining of concrete, stone or other permanent material where an unlined or grassed waterway would be inadequate to improve water quality. Benefits may include safe disposal of runoff, reduced erosion and sedimentation. (DIP)

Policies

1. BMP soil impact is required on the contract.
2. Minimum life of BMP is 10 years.
3. Structural geotextiles shall meet the requirements of "Construction Specification 217 - Geotextiles". Drainage geotextiles shall meet the requirements of N.C. Technical Guide, Section IV Practice Standard 606, as shown in paragraph 606-8-5.

Specifications

N. C. NRCS Technical Guide, Section IV, Specification #468 (Lined Waterway or Outlet).

Sediment Basin

Definition/Purpose

A Sediment Basin means a basin constructed to trap and store waterborne sediment where physical conditions or land ownership preclude treatment of a sediment source by the installation of other erosion control measures to improve water quality. (DIP)

Policies

1. BMP soil, nitrogen, and phosphorus impacts are required on the contract.
2. This BMP must not be used for the purpose of building a farm pond.
3. Minimum life of BMP is 10 years.

Specifications

N. C. NRCS Technical Guide, Section IV, Specification #378 (Ponds), #638 (Water and Sediment Control Basin) and #350 (Sediment Basin).

Water Control Structure

Definition/Purpose

A Water Control Structure means a permanent structure placed in a farm canal, ditch, or subsurface drainage conduit (drain tile or tube), which provides control of the stage or discharge of surface and/or subsurface drainage. The management mechanism on the structure may be flashboards, gates, valves, risers, or pipes.

The primary purpose of the water control structure is to improve water quality by elevating the water table and reducing drainage outflow. A secondary purpose is to restore hydrology in riparian buffers to the extent practical. Elevating the water table promotes denitrification and lower nitrate levels in drainage water from cropping systems and minimizes the effects of short-circuiting of drainage systems passing through riparian buffers. Other benefits may include reduced pollution from other dissolved and sediment-attached substances, reduced downstream sedimentation and reduced stormwater surges of fresh water into estuarine area. (DIP)

This practice is not intended to be used to control water inflow from tidal influence (i.e., no tide gates).

Considerations

Management of drainage water is most effective where the topography is relatively uniform and flat to gently sloping. Water control structures can be used routinely where land slopes are less than 0.5 percent. As slopes exceed 0.5 percent, consideration should be given to the amount of land area that will be influenced by the structure and the resulting cost effectiveness of installing a water control structure under steeper slope conditions.

Slope considerations are also influenced by the intended purpose. Under cropland conditions, it will usually be cost prohibitive and insufficient water quality benefits derived from controlling water table elevations where slopes exceed 0.5 %. For managing short-circuiting through riparian buffers, water table control may be practical on steeper slopes because the control elevation at the structure can be raised to the surface thereby extending the zone of influence of the structure over a larger upslope area. When the water table will be maintained near the soil surface, vegetation suited to wet conditions must be planted in the areas with high water table.

Consideration must be given to the impact of the water control structure on land areas outside the intended zone of influence, especially neighboring landowners. The water table elevation should not be significantly raised on lands of adjacent landowners without written permission of the affected landowner.

When the land in the vicinity of the structure is cropped, the design head on the structure should not exceed 0.5 feet. The capacity of the structure shall be adequate to discharge the design flowrate of the drainage system with a maximum 0.5-foot head.

When the structure is located within a riparian buffer the design head should be limited only by conditions that result in excessive ponding in the vicinity of the structure. In general, the objective is to raise the water table as high as practically possible and make the riparian buffer as wet as possible to encourage denitrification. With proper vegetative cover around the

structure to control erosion resulting from concentrated surface runoff, ponding should not be a concern within a riparian buffer.

Recommended water control structure management elevations during cropped conditions are provided on the maintenance and management agreement (NC-ACSP-WSC). These management guidelines apply to water table conditions in the cropped area. The actual control elevation at the structure should take into account differences in elevation between the structure and the cropped area. Consequently, on sloping land where the control structure is installed in a downslope natural or riparian area, the control elevation at the structure may be raised to the land surface without adversely impacting the upslope crops. The values given on the maintenance agreement should be considered the target elevations at the edge of riparian buffer/cropped field interface.

Drainage beyond that necessary to provide adequate root zone aeration for an agricultural crop shall be kept to a minimum. During fallow periods or on non-cropped areas (riparian buffers), the water table elevation should be maintained near the land surface or to a designated maximum elevation to reduce the rate of soil organic matter oxidation and encourage denitrification.

Policies

1. The following policies apply to half-round, flash board risers installed in drainage canals or ditches:
 - a. Flash board riser, cost of welding pipe to riser, installation and vegetation are included in average cost of riser
 - b. Average cost includes a one (a) foot open well below the invert of the pipe and with the option of using a closed bottom without a well on 18" and 24" risers.
 - c. Risers 48" wide to 84" wide will have a "H" Beam 3" wide with a 3: web welded vertically on the vertical centerline of the riser.
 - d. Risers 96" wide and wider will have two (2) "H" Beams 3" wide with a 3" web equally spaced and welded vertically to the riser.
 - e. All risers in excess of six (6) feet high will have a 3" x 3" channel welded horizontally and located half-way between the top of the riser and the invert of the pipe for lateral support.
 - f. Cost share rate, gauges, and corrugations apply to all flashboard risers, whether corrugated aluminum or corrugated steel. All corrugated steel to be asphalt coated.
 - g. Risers 102" and larger are built from structural plate (thickness – 0.175 in.)
2. The following policies apply to structures installed in-line with subsurface drainage tile or tubing referred to herewith as "in-line" structures:

- a. In-line structure, solid pipe, cost of attaching pipe to riser, installation, and vegetation for stabilization are included in average cost of structure
 - b. A minimum of 20 feet of the perforated subsurface drain pipe shall be replaced with a corresponding length of non-perforated pipe connected to the water control structure. The 20 feet may be upslope or down slope or some combination of both and should installed with an anti-seep collar.
 - c. Non-perforated pipe can be ductile iron, welded steel, corrugated steel, corrugated aluminum, or plastic. Average costs shall be based on corrugated plastic pipe. All buried steel pipe shall have protective coatings of asphalt, polymer over galvanizing, aluminized coating, or coal tar enamel as appropriate for the pipe type.
 - d. Coupling between the water control structure and the non-perforated pipe shall be secure and water tight.
 - e. Plastic risers should not be used where there is a danger of fire.
 - f. Where multiple drain lines discharge to a common submain, the water control structure should be installed on the submain to minimize the number of structures and costs. However, if this is not possible due to topography, a cost analysis should be performed considering the amount of land area influenced by the structure to determine the most cost effective placement of the in-line structure, i.e., individual drain line versus submain.
 - g. Where in-line structures are installed on single drains lines, the length of drain pipe upslope of the structure should exceed 500 feet.
3. Average cost for corrugated pipe includes the pipe, installation and vegetation (in accordance with PS 342.)
 4. Concrete may be used in lieu of sand-cement bag headwall and for anti-floatation.
 5. Structural geotextiles shall meet the requirements of "Construction Specification 217 – Geotextiles" and "Interim Material Specification 592 – Geotextiles". Drainage geotextiles shall meet the requirements of NC Technical Guide, Section IV Practice Standard 606, as shown in paragraph 606-8-5.
 6. BMP soil impact is not required on the contract. Nitrogen and phosphorus loading is required on the contract.
 7. Where an in-line water control structure is used to manage the water table elevation in a riparian buffer, a monitoring well may be installed at the upslope boundary of the buffer to ensure that water table elevation established at the structure does not result in excessively high water table elevations in the upslope cropped fields.
 8. Although the expected design life of this practice is 20 years, the contractual maintenance period shall be 10 years.

9. An operation and maintenance plan shall be developed that define the intended purposes of this practice and describe the requirements for applying the practice to achieve its intended purposes. A maintenance and management agreement (NC-ACSP-WCS or comparable form) is required and must be attached to the contract (CPO).
10. Operational records indicating date and elevation of water control structure adjustments shall be maintained and made available for inspection by district staff for the duration of the contract period.

Specifications

N.C. NRCS Technical Guide, Section IV, Specification #587 (Structures for Water Control) applies to flash board riser type structures and Specification #378 (Ponds) applies to in-line structures. Specification #554 (Drainage Water Management) applies in both cases.

Water Control Structure Maintenance and Management Agreement

Addendum to NC-ACSP-2

This is an agreement between _____ and the _____ Soil and Water Conservation District for the purpose of managing the water level in a drainage system with a water control structure(s). Contract number: _____. Structure location: see attached map.

The objective for installing and managing water control structure(s) is to reduce the amount of agricultural pollutants leaving the farm through the drainage system. Controlled drainage may also improve crop yields and reduce short-circuiting through riparian buffers. In order to protect water quality and to ensure that the structures are being maintained and performing the function for which they were originally designed, the requirements listed below must be met.

1. Under cropped conditions, maintain the water level within 30 inches of the ground surface along at least 50% of the ditch reach immediately upstream of the structure all year in order to reduce nitrate losses and maximize water quality benefits. Short-term adjustments shall be permitted to accommodate field access (trafficability) and unusually high rainfall.

The chart below gives recommended depths from ground surface to water level for typical crops. Other crops may require a different schedule.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Corn	12-18"		24-36"		18-24"			24-36"		12-18"		
Wheat	12-24"		24-36"		18-24"			24-36"				
Soybeans							24-36"	18-24"			24-36"	

2. When used to minimize short circuiting of a drainage system through a riparian buffer, the objective is to raise the water table as high as physically possible and make the riparian buffer as wet as possible in order to reduce drainage through the buffer and encourage denitrification within the buffer. Under this objective, the control level should be as near the surface as possible without elevating the water level in the upslope cropped fields above the values given in the above table.

3. An operation and maintenance plan shall be developed and included with this contract that defines the intended purpose(s) of this practice and describes the requirements for applying the practice to achieve its intended purpose(s). At a minimum, the operation and maintenance plan shall include:

- a. Maximum, minimum, and normal water control elevations.
- b. Guidelines on structure inspection.
- c. Guidelines for clean out of the ditch as it fills with sediment.

- d. Use of vegetated borders to reduce the input of sediment.
- e. Guidelines covering removal of boards so as to not develop excessive head losses near drain tiles or ditch banks in unstable soils that would result in bank sloughing.

I agree to manage the water level in my drainage system as stated above, and as outlined in the attached operation and maintenance plan, and in accordance with recommendations and specifications outlined in NRCS Conservation Practice Standard #554. With the exception of maintenance and repairs, there will always be ____ inches of boards in the flashboard riser above the sediment level in the bottom of the ditch or ____ inches of boards in the in-line structure above the top of the subsurface drain pipe. The zone of influence for my water control structure extends _____ feet upstream of the structure

Applicant _____

Date _____

Landowner _____

Date _____

Chairperson _____

Date _____

Riparian Buffer

Definition/Purpose

A Riparian Buffer means a permanent, long-lived vegetative cover (grass, shrubs, trees, or a combination of vegetation types) established adjacent to and up-gradient from watercourses or water bodies to improve water quality. Benefits may include reduced soil erosion and nutrient delivery, sedimentation, pathogen contamination and pollution from dissolved, particulate and sediment-attached substances. (DIP)

Policies

1. For purposes of the ACSP only, riparian buffers are applied on stable areas adjacent to permanent or intermittent streams, rivers, lakes, ponds, and types of wetlands that flood or pond. Field staff shall determine the need and suitability of this practice using visual observation.*
2. The width of riparian buffers must be a minimum of 20 feet.
3. Minimum life of BMP is 10 years.
4. Elements and items already a part of average cost paid at 75% of average cost; includes grading, vegetation, pipe drops and surface inlets, and animal guards. Also allows the incorporation of other approved BMPs such as cropland conversion to grass or trees, filter strips, and field borders.
5. Cropland conversion shall not be used in conjunction with a CREP CP22 Riparian Buffer when the cropland conversion eliminates the pollutants source. Agricultural pollutant sources can include unbuffered crop, hay, pasture, or other non-forested areas that could contribute to sediment, nutrients, or chemicals to receiving waters.
6. BMP soil, nitrogen, and phosphorus impacts are required on the contract.

Specifications

For riparian buffers that are forested and greater than or equal to 35 feet, follow Practice Standard 391 (Riparian Forest Buffer); otherwise, follow Practice Standard 393 (Filter Strip).

*Additional references can include:

- The most recent version of the 1:24,000 scale (7.5) minute quadrangle topographic maps prepared by the United States Geological Survey (USGS).
- The most recent printed version of the soil survey map prepared by NRCS.
- The most recent version of the NCDENR, DWQ Identification Methods for the Origins of Intermittent and Perennial Streams (<http://portal.ncdenr.org/web/wq/swp/ws/pdu/protocol>).

(Revised March 2010)

Streambank and Shoreline Protection

Definition/Purpose

Streambank and Shoreline Protection means the use of vegetation to stabilize and protect banks of streams, lakes, estuaries, or excavated channels against scour and erosion. This practice should be used to prevent the loss of land or damage to utilities, roads, buildings, or other facilities adjacent to the banks, to maintain the capacity of the channel, to control channel meander that would adversely affect downstream facilities, to reduce sediment load causing downstream damages and pollution, or to improve the stream for recreation or fish and wildlife habitat. (DIP)

Policies

1. The use of this BMP for ACSP funding is intended for sites where the natural streambank has been severely damaged by human or animal access, other activities, or natural processes.
2. This practice is not intended to address ocean shoreline erosion problems.
3. A minimum setback of 20 feet of undisturbed native vegetation or restored riparian area adjacent to the installed practice is mandatory in all situations.
4. This practice may further be supported by other BMPs such as filter strips, critical area planting, riparian forest buffer, use exclusion, and stream crossings
5. Additional measures to minimize or manage access or traffic may be necessary to ensure the long-term stability of the streambank/shoreline.
6. This practice is not intended to address situations where in-stream work or armoring of the shoreline or streambank are required.
7. Estimates of streambank/shoreline erosion in tons/yr. may be substituted for soil loss calculations on the contract.

Specifications

N. C. NRCS Technical Guide, Section IV, Specifications #580 (Streambank and Shoreline Protection), #322 (Channel Bank Vegetation), #584 (Channel Stabilization), #612 (Tree/Shrub Establishment), #382 (Fence), #342 (Critical Area Planting), #472 (Use Exclusion), #393 (Filter Strip), #578 (Stream Crossing), NRCS Engineering Field Handbook Chapter 16 (available in Draft from Area Offices).

Stream Restoration

Definition/Purpose

A Stream Restoration system means the use of bioengineering practices, native material revetments, channel stability structures, and/or the restoration or management of riparian corridors in order to protect upland BMPs, restore the natural function of the stream corridor and improve water quality by reducing sedimentation to streams from streambank. (DIP)

Policies

1. The use of this BMP for ACSP funding is intended for sites where the natural streambank has been severely damaged by human or animal access, other activities, or natural processes. Each site should be reviewed by the District Board to determine the eligibility for cost share funding and prioritize the sites as to the direct effects, long term benefits and the landowners willingness to be involved, maintain, and support the practice.
2. Planned practices require a contact with the U.S. Army Corps of Engineers and the N.C. Wildlife Resources Commission for all proposed sites to determine if a Section 404 permit is needed. A Section 401 Water Quality certification may also be needed from the N. C. Division of Water Quality.
3. A minimum set-back of 20 feet of undisturbed native vegetation or restored riparian area adjacent to the installed practice is mandatory in all situations.
4. An analysis of the existing stream condition and the degree of departure for the existing stream condition from its full operating potential must be made as a part of the planning and design process for this BMP. The analysis of stream condition and departure may be made following the procedures established by Dave Rosgen in Applied River Morphology, Chapter 6 (Rosgen, 1996). Rosgen's field survey form, Summary of "Condition" Categories for Level III Inventory may be used to document the analysis.
5. If the analysis, when completed as outlined in Item No. 4, shows that the profile, pattern, and/or dimensions of the stream need to be restored in order to restore the natural stability and function of the stream, assistance will be required from a person who has successfully completed Rosgen's Restoration Course or equivalent natural channel design training.
6. Installations of this BMP will be monitored upstream and downstream as necessary to determine the effects and compare the condition of the stream before versus after the installation. Monitoring can include physical measurements, biological/water quality indicator measurements, chemical measurements (WQ sampling), and/or documentation of visual observations. If documented visual observation is the only monitoring technique used, the observations will be mandatory for the first five years after installation. Other monitoring will be conducted for a minimum of three years.
7. This practice may further be supported by other BMPs such as filter strips, critical area planting, riparian forest buffer, use exclusion, and stream crossings. In-stream

- techniques such as weirs, deflectors, and other proven practices may also be used to address the stabilization of the streambanks.
8. Additional measures to minimize or manage access or traffic may be necessary to ensure the long-term stability of the restored stream/streambank.
 9. Estimates of streambank erosion in tons/yr. may be substituted for soil loss calculations on the contract.
 10. Effects.
 - Streambank erosion (required)
 - Runoff and flooding (required)
 - Turbidity (required)
 - Surface water temperature (optional)
 - Stream fish population (optional)
 - Stream benthic invertebrates (optional)
 11. Repairs on established sites will require a new analysis to determine the suitability of repairing the BMP before the District can commit funds to a repair CPO.

Specifications

N. C. NRCS Technical Guide, Section IV, Specifications #580 (Streambank and Shoreline Protection), #322 (Channel Bank Vegetation), #584 (Channel Stabilization), #612 (Tree/Shrub Establishment), #382 (Fence), #342 (Critical Area Planting), #472 (Use Exclusion), #393 (Filter Strip), #391 (Riparian Forest Buffer), #578 (Stream Crossing), NRCS Engineering Field Handbook Chapter 16 (available in Draft from Area Offices).

LEVEL III: ASSESSMENT OF STREAM CONDITION AND DEPARTURE

SUMMARY OF "CONDITION" CATEGORIES FOR LEVEL III INVENTORY

Stream Name _____	Observers _____
Location _____	Stream Type _____ Date _____
Riparian Vegetation _____	Flow regime _____
Stream Size, Stream order _____	Depositional pattern _____
Meander pattern _____	Debris/channel blockages _____
Channel stability rating (Pfankuch) _____	Altered Channel State: _____
Sediment supply (check appropriate category):	Dimension/shape:
Extreme _____	Width _____
Very High _____	Depth _____
High _____	Width/depth ratio _____
Moderate _____	Patterns: (*show as funct. of Wbkf):
Low _____	Meander length* _____
Streambed (vertical) stability	Radius of curve* _____
Aggrading _____	Belt width* _____
Degrading _____	Sinuosity _____
Stable _____	Profile:
Width/depth ratio condition:	Water surface slope _____
Normal (stable) _____	Valley slope _____
High _____	Bed features:
Very high _____	Riffle/pool _____
Streambank erosion Potential:	Step/pool _____
Bank erodibility:	Conver./divrg. _____
Extreme _____	Plane bed _____
High _____	Other _____
Moderate _____	Spacing* _____
Low _____	Describe alterations: _____
Near-bank stress:	
Extreme _____	
High _____	
Moderate _____	
Low _____	

General Remarks

Attach photographs taken mid-stream looking up and downstream. Make site map.

Attach vicinity map of reach and/or aerial photo for specific location.

Note any permanent cross-section for level IV verification of cross-section stability, actual erosion rates, change in pebble counts, deposition studies, sediment sampling, etc.

Attach copy of: stream classification field form, channel Stability rating form, bank erosion rating form, profiles, cross-sections, pebble counts, etc.

Signature: _____

Agricultural Road Repair/Stabilization

Definition/Purpose:

Repair or stabilization of existing access roads utilized for agricultural operations, including roads to existing crop fields, pastures, and barns.

Policies:

1. The road shall be for agricultural use only.
2. The road must be an existing road eroding in excess of 5T or a segment of a road delivering sediment directly to a stream.
3. Structural geotextiles shall meet the requirements of "Construction Specification 217 – Geotextiles" and "Interim Material Specification 592 – Geotextiles"
4. Minimum life of the practice is 10 years
5. BMP Soil impact is required
6. If the land is converted to residential or commercial uses during the maintenance period, the cost share contract shall be considered out of compliance.
7. The district shall inspect the site at least every two years during the maintenance period.

Specifications:

NC NRCS Technical Guide, Section IV, Specification #342 (Critical Area Planting), #561 (Heavy Use Area Protection), #560 (Access Road)

Abandoned Well Closure

Definition/Purpose:

An abandoned well closure is the sealing and permanent closure of a supply well no longer in use. This practice serves to prevent entry of contaminated surface water, animals, debris, or other foreign substances into the well. It also serves to eliminate the physical hazards of an open hole to people, animals, and farm machinery. Cost share for this practice is limited to \$1,500 per well. (DIP)

Policies:

1. Bored, hand dug, and drilled wells may be closed.
2. A well abandonment record (GW-30) must be completed by certified well contractor and submitted to the NC Division of Water Quality. The well closure must comply with all applicable state and local requirements for well abandonment and closure.
3. Payment will be based on actual cost with receipts, with the cost to the NCACSP not to exceed \$1,500.
4. The BMP must be inspected by district technical staff within 9-12 months following closure, to ensure surface water is properly diverted and closure is adequate.
5. Minimum life of BMP is one year.

Specifications:

NRCS Practice Standard 351 – Well Decommissioning
NC Administrative Rule: 15A NCAC 2C.0113
NC General Statutes 87-83 through 87-99

Agricultural Pond Restoration/Repair

Definition/Purpose

Restore or repair existing agricultural pond systems. Benefits may include water supply, erosion control, flood control, and sediment and nutrient reductions from farm fields for better water quality. This practice is only applicable to low hazard classification ponds. (DIP)

Policies

1. The pond shall be for agricultural use only.
2. The District shall verify prior to payment that the pond meets the criteria for low hazard classification and that the dam structure is free of holes, woody vegetation, and obvious signs of erosion and seepage.
3. ACSP funds can be used to fund the replacement of pipes, erosion control of spillways, removal of trees on slopes, and removal of accumulated sediment to increase retention time.
4. For restoration projects involving dam, spillway, or overflow pipe upgrades:
 - a. The design and final restoration must be certified by a professional engineer or an individual with job approval authority for the particular class of ponds.
 - b. Reimbursement is based on 75% of actual cost. Total charge to NCACSP is restricted to a total of **\$15,000** per pond, plus engineering costs up to **\$12,000**. Receipts are required for reimbursement.
5. For restoration projects involving removal of accumulated sediment only:
 - a. The applicant shall be encouraged, but not required, to remove woody vegetation from the dam.
 - b. No activities that may threaten the integrity of the dam; no removal of sediment from the face, base, or vicinity of the dam; and no deposition of spoil on the dam shall be permitted.
 - c. total charge to NCACSP is restricted to a total of \$3,000 per pond. Receipts are required for reimbursement.
6. Operation and Maintenance Plan Statement (NC-ACSP-OMP) is required.
7. Except for installations where it is technically infeasible to provide off-pond watering tanks or where the pond is a dug pond with no embankment and no outlet to surface waters, livestock shall be excluded from the pond. For installations where it is infeasible to provide off-pond watering tanks, one controlled access point for drinking can be allowed. Any controlled access point must be managed to allow access for livestock drinking, but not to allow livestock to otherwise enter the pond.
8. BMP soil impact is required on the contract.
9. Cooperators are responsible for all required permits.
10. Minimum life of BMP is 10 years.

11. If the pond is converted to residential or commercial uses during the maintenance period, the cost share contract shall be considered out of compliance.
12. The District shall inspect the site at least every 2 years during the maintenance period.

Specifications

North Carolina NRCS Technical Guide, Section IV, Code #378 (Pond), Code #402. (Dam)

(Revised September 2008)

Precision Nutrient Management

Definition/Purpose

Precision Nutrient Management means applying nitrogen; phosphorus and lime in a site-specific manner (with specialized application equipment or multiple application events) based on the site specific recommendations for each GPS-referenced sampling point to minimize entry of nutrients to surface and groundwater and improve water quality.

Policies

1. Cooperator must agree to implement practice for three years. An annual incentive payment per acre will be paid.
2. Cost Share funds may be used for any acreage, including acres previously, but not currently, under an active cost share contract for nutrient management.
3. Payments will be made on annual basis after practice has been completed.
4. Soils shall be tested at least every two years, and soil samples must be taken in accordance with NCDA&CS site-specific recommendations or CES general recommendations. Within each soil-mapping unit, soil samples should be taken at a minimum such that the field acres divided by the number of samples does not exceed an approximate 2 ½ acre grid/zone. Soil samples within each management zone must be documented by a ledger and/or map showing field size, shape, and soil sample locations.
5. Nutrients and lime must be applied according to the site specific recommendations for each GPS-referenced sampling point. Phosphorus and lime recommendations shall be based on the soil test results. Nitrogen recommendations shall be based on state or site-specific realistic yield expectations (RYE) for the relevant soil group. Alternatively, nitrogen recommendations can be determined using the average of the three highest crop yields for the most recent five crop harvests. Yield monitoring is recommended to determine the most effective nitrogen application rates.
6. The cooperator must provide either documentation of RYE calculations for each grid/zone or documentation of the software used to develop the RYE calculations.
7. "As planned" maps and "As Applied" maps shall be included to document application recommendations and actual application rates. In cases where agronomic rates are not specified in the NRCS Nutrient Management standard 590 for a specific crop or vegetative type, application rates may be determined using the best judgment of the nutrient management planner after consultation with CES or NCDA&CS.
8. The same acreage must be used during this period. Farm Service Agency (FSA) map or equivalent indicating location and acreage of field and location of soil samples and a soils map must be included with the CPO. If field-numbering system is different from FSA, the cooperator must provide a comparative key.
9. There is no minimum acreage required.

10. Each farming operation will be limited to a single contract per his/her lifetime. These contracts will be limited to a \$15,000 lifetime cap for variable rate nutrient application. The local District has the authority to set additional limitations on acreage and/or maximum payment in accordance with the Cost Share Program policies and regulations.
11. Records are to be kept on farm and made available upon request and must include: nutrients applied (dates, amounts, and application methods), as applied maps, soils analysis reports, general application recommendations, crops grown and crop rotation.
12. Acceptable nutrient management planners are: NRCS, District staff, NCDA&CS, Cooperative Extension Service and individuals with documented experience with developing precision nutrient management plans (e.g., Certified Crop Advisor, Technical Service Provider, crop consultant). A cooperator may serve as his or her own planner; however, an acceptable nutrient management planner must review the plan and sign a verification statement certifying the plan meets technical standards (see Section VI for applicable form). The plan must be developed, discussed with the cooperator, and approved prior to planting.
13. The cooperator must sign a statement (NC-ACSP-1D) to follow the nutrient recommendations as prescribed by the plan. The NC-ACSP-1D form must also be signed by the District to certify that an appropriate nutrient management plan has been developed and is a part of the cooperator's District file. A copy of this statement must be included in the CPO.
14. The cooperator must send to the District Office an annual certification that the timing, amount and location of nutrient application events were consistent with the approved plan. *As applied* maps shall be submitted with the annual certification.
15. This practice shall be included in the five percent of all nutrient management plans to be spot checked annually by the local District.
16. BMP soil impact is not required. Nitrogen and phosphorus impacts are required on the contract.
17. A cooperator who has received cost share from EQIP for Precision Agriculture nutrient application, remains eligible for this incentive.
18. When determining the acreage for which payments can be made for this practice, only the acreage actually planted shall be considered. The area occupied by farm roads, best management practices, ditches, structures, etc. shall not be included in planted acreage.
19. Life of BMP is 3 years.

Specifications

N. C. NRCS Technical Guide, Section IV, Specification #590 (Nutrient Management).

(adopted November 2009)