



King County

Department of Natural Resources and Parks Water and Land Resources Division

Farm Management Plans

SECTION I: Purpose

- A. The purpose of this administrative rule is to implement K.C.C. chapters 21A.24 (Critical Areas), 16.82 (Clearing and Grading), and 9.04 (Stormwater Management), by describing how landowners may obtain and use King Conservation District (KCD) approved Farm Management Plans to meet compliance as allowed by these codes. The intent is to protect critical areas by allowing agricultural landowners to undertake a specified set of activities using the proven standards, best management practices and planning systems developed by the Natural Resources Conservation Service (NRCS). The goal of the federally designed NRCS system is parallel to that of the Critical Areas Ordinance: to sustain the five resource systems on any property - soil, water, air, plant and animal - while also providing viability for agricultural operations. These practices are tailored to northwest Washington and applied by the local staff at the NRCS and KCD to meet the site characteristics and needs of the landowner. The NRCS practices include those that protect wetlands, wildlife and aquatic areas; those that enhance these resources; and those that manage drainage, groundwater and soils for sustainability, based on site slope, soils, precipitation and irrigation.
- B. The rule describes how landowners may work with the KCD, the Department of Development and Environmental Services (DDES) and the Water and Land Division (WLRD) of the Department of Natural Resources and Parks to develop Farm Management Plans cited in the above codes including:
1. The minimum requirements of a plan;
 2. Additional standards and practices to those of the NRCS Field Office Technical Guide developed mutually by the KCD, DDES, and WLRD and listed in the Best Management Practices Supplement. These limited number of practices are to allow landowners with farm plans to
 - a. implement a set of essential agricultural activities in accordance with King County Code and federal, state and local flood hazard regulations; or
 - b. to obtain an exception from a permit that is otherwise required;
 3. The process for initiating, submitting, approving and registering a plan;
 4. How King County will indicate to the landowner and the public that compliance with relevant aspects of the above listed codes has been achieved through the implementation of an approved farm management plan;
 5. Provisions for monitoring and enforcement.

SECTION II: Definitions

- A. **Best Management Practice.** A practice determined appropriate for existing or proposed farm site conditions and related agricultural activities, and that is consistent with the NRCS Field Office Technical Guide or with specific practices that have been mutually developed by the KCD and the County as documented in the Best Management Practices Supplement to this rule.
- B. **Dairy Nutrient Management Plan.** A Farm Management Plan developed according to R.C.W. Chapter 90.64 guidance for dairy nutrient management.
- C. **DDES.** Department of Development and Environmental Services. The County department, or its successor, that issues permits through which development activities are conditioned to meet county development regulations and standards.
- D. **Farm Management Plan.** A long-term plan developed under the conservation planning process of the Natural Resources Conservation Service (NRCS) and including the standards in the Field Office Technical Guide as adapted for the Pacific Northwest Region and used by the King Conservation District. In order to be used for purposes of this rule, the plan shall contain the elements described in K.C.C. 21A.24. (Section 138 E Ordinance 15051) and include an overall plan for the entire site including existing and anticipated agricultural uses and appropriate best management practices assembled from one or more of the following NRCS planning elements:
- a. livestock management system;
 - b. horticultural management system;
 - c. site development plan (agricultural construction plan, for purposes of this rule);
 - d. agricultural drainage system;
 - e. fish and wildlife system; and
 - f. dairy nutrient management plan.
- The plan may also include best management practices as agreed upon by the KCD, WLRD, and DDES such as those for installing field access roads, livestock bridges, manure lagoons, livestock flood sanctuaries, covered manure compost bins, and maintaining agricultural ditches with salmonids.
- E. **Field Office Technical Guide (FOTG).** Guide developed and maintained by the United States Department of Agriculture Natural Resources Conservation Service, or its successor, and where applicable, the modified FOTG adapted to Northwest Washington pursuant to the Agriculture, Fish and Water statewide process.
- F. **Forested.** A site that has been cleared under a class I, II, III, IV-S, or IV-G forest practice permit or that exceeds 10,000 square feet with a uniform density of tree cover totaling more than ninety trees per acre and with an average stem diameter at least 4 inches at breast height, not including areas that are actively managed as agricultural crops for pulpwood, Christmas trees or ornamental nursery stock.
- G. **KCD.** The King Conservation District a state authorized special purpose district. For

purposes of this rule, the King Conservation District refers not only to the managers and staff of the district, but also to the local employees of the federal Natural Resource Conservation Service whose expertise, standards and work are reflected in the work of the District.

- H. Rural Stewardship Plan. A long-term plan developed by an Applicant and approved by King County under K.C.C.21A.24. (§ 139, Ord. 15051).
- I. WLRD. The Water and Land Resources Division a division of the King County Department of Natural Resources and Parks or its successor. The King County Agriculture Program is located at WLRD.

SECTION III: Applicability

- A. Provisions of this rule apply to landowners who are:
 - 1. predominantly engaged in the practice of agriculture as determined through discussions between the landowner and staff of the King Conservation District or King County and including a site visit if needed, or
 - 2. developing a property for multiple use that includes a Farm Management Component of a Rural Stewardship Plan (PUT- 8-20 PR)
- B. The provisions of a farm plan apply when a landowner as defined above is proposing one or more of the following items:
 - 1. Alterations to a critical area or its buffer, including
 - a. building a residential structure within a grazed or tilled wet meadow;
 - b. building or expanding a non-residential agricultural structure within the buffer of a critical area or within a grazed or tilled wet meadow, wildlife habitat conservation area, critical aquifer recharge area, or coal mine, seismic, or flood hazard area;
 - c. construction of a farm field access road or livestock bridge that
 - i. requires grading, placement of fill, surface compaction or otherwise creates fill or impervious surfaces within the buffers of wetlands or aquatic areas or within a wildlife habitat conservation area, a grazed or tilled wet meadow, or a flood hazard area, or that
 - ii. requires grading or compacting for the maintenance of any existing farm field access road in any of these locations.
 - d. installation of a new drainage facility such as a tile, drain, or ditch;
 - e. maintenance of drain tiles that discharge into waterways used by salmonids if the maintenance includes
 - i. flushing the tiles or
 - ii. replacement or repair of a tile at its outlet to the waterway;
 - f. a livestock flood sanctuary or a livestock manure storage facility built to the standards in the Best Management Practices Supplement that will be constructed or within a grazed wet meadow, floodplain, or a critical area buffer and the structure will require a building permit;

1. An exception from a clearing and grading permit for
 - a. cumulative clearing of over 7,000 square feet of invasive vegetation anywhere in the county except in wetlands, streams, wildlife areas or their buffers or
 - b. cumulative clearing of under 7,000 square feet of invasive vegetation in wetland, aquatic area or wildlife areas and their buffers if removal is not limited to hand labor;
 - c. maintenance of
 - i. an agricultural drainage used by salmonids,
 - ii. a livestock watering pond, farm pond or fish pond
 - iii. a bridge or culvert
 - iv. a farm field access drive;
 - d. practices described in the Best Management Practices Supplement including
 - i. accepted designs and best management practices for livestock bridges
 - ii. small manure storage facilities that do not require a permit under K.C.C 16.82

3. Eligibility for the small site drainage review process at DDES for an agricultural project that will install over 2,000 square feet of any new impervious surface as defined by the King County Surface Water Design Manual and that meets one of the following criteria:
 - a. The project will result in no more than 10,000 of total impervious surface added on or after January 8, 2001 and no more than 70,000 square feet of pervious surface or 35% of the site whichever is greater (thresholds only apply to parcels zoned A or RA); or
 - b. The project will result in less than 4% total impervious surface and less than 15% new pervious surface (thresholds only apply to single parcel sites zoned RA, F or to multiple parcel sites zoned A), and all impervious surface area, except 10,000 square feet of it, must be set back from any down-slope site boundary, drainage system, or critical area, at least 100 feet for every 10,000 square feet of total impervious surface.

- C. The provisions of this Rule also implement the animal and livestock provisions of K.C.C. Chapter 21A.30 if the landowner involved in livestock management is also intending to implement a new development activity and intends to use the provisions of a farm plan instead of the standard requirements of the code.

- D. A dairy nutrient management plan as required under R.C.W. 90.64, Dairy Nutrient Management, may be substituted for any livestock management system provided that:
 1. Dairy activities are the primary activity on the site; and
 2. The dairy meets the minimum standards set forth in K.C.C. 21A.30 with respect to exclusion of livestock from aquatic areas and wetlands.

- E. Any farm management plans developed by the King Conservation District that are not developed or submitted to the County to meet the requirements of K.C.C. 21A.24 (Critical Areas), 16.82 (Clearing and Grading) or 9.04 (Stormwater Management) are not subject to the provisions provided in this rule.

SECTION IV: Minimum Requirements of a Farm Management Plan

- A. For purposes of this rule, the contents of Farm Management Plans should be based upon:
1. The best management practices that result from the KCD staff and the landowner together utilizing the conservation planning process for resource management systems as outlined in the NRCS Field Office Technical Guide;
 2. Any additional applicable agricultural standards or conditions as mutually determined by the KCD and the County including:
 - a. Animal densities;
 - b. Cover and placement of manure storage piles;
 - c. Exclusion of animals from aquatic areas or wetlands;
 - d. Confinement areas;
 - e. Livestock Flood Sanctuaries in a Flood Hazard Area;
 - f. Manure Storage Facilities in a Flood Hazard Area;
 - g. Small Manure Storage Facilities;
 - h. Farm field access roads and livestock bridges;
 - i. Thresholds for agricultural buildings to remain in small site drainage review or
 - j. Any other future best management practices developed in the future by the KCD and the County to assist agricultural operations in maintaining viability while protecting critical areas.
 3. Other provisions of King County Code and regulations that affect the siting of structures or roads including but not limited to:
 - a. Zoning setbacks from lot lines,
 - b. Septic system or well requirements,
 - c. Safety standards for traffic entering or exiting a property,
 - d. Standards for eligibility in the National Flood Insurance Program (NFIP) and the County's rating under the Community Rating System administered by the Insurance Services Office of the NFIP;
 - e. Adjacent geological hazards to the site,
 - f. Deeds and Covenants of the Farmlands Preservation Program, or
 - g. Easements.
- B. All Farm Management Plans should be written in the format used by the King Conservation District.
- C. In addition to the requirements of the NRCS and KCD, any Farm Management Plan that accompanies the siting of a structure in order to obtain a permit now or intended to obtain a permit in the future should contain:
1. A map or drawing indicating
 - a. The location and size of
 - i. all impervious surfaces and the percentage cover of the site,
 - ii. all pervious surfaces and the percentage cover of the site,
 - iii. any forested area (see definition) to be cleared and percentage coverage of the site, and
 - iv. any breeding site of a species of concern;

- v. all flood hazard areas on the site;
- b. Stream courses and topographical contour lines at an appropriate scale for
 - i. any area forested area to be cleared including slope
 - ii. any farm that proposes a structure on a grazed or tilled wet meadow;
- c. Direction of sub-surface flow for those structures or roads proposed on a grazed or tilled wet meadow;
- d. Ponds, closed depressions, gutters, pipes, ditches, swales, tiles, outfalls, septic systems, wells, drainage courses – whether natural or constructed;
- e. Best management practices for flow control, infiltration, treatment or dispersion of runoff from new impervious surfaces over 2,000 square feet or new pervious surfaces over 7,000 square feet;
- 2. At least two photographs or other information documenting:
 - a. the type of vegetation in the proposed clearing area, and
 - b. any breeding site of a listed species or species of concern;
- 3. Proposed construction schedule with inspection procedures outlined if needed;
- 4. Written documentation as needed to explain:
 - a. why there is no practical alternative to siting roads or structures in critical areas or their buffers;
 - b. how the siting of a structure complies with the following locational priorities the hierarchy outlined in K.C.C. 21.24A Section 137 D. 3 by siting the proposal
 - i. on or adjacent to existing nonresidential impervious areas, additional impervious surface area is not created waterward of any existing impervious surface areas and the area was not used for crop production;
 - ii. higher in elevation and no closer to the critical area than its existing position; or
 - iii. at a location away from existing impervious surface areas that is determined to be the optimum site; and
 - c. how all applicable federal, state and local flood hazard regulations have been met.

SECTION V: Submission, Review and Approval

- A. When the County Code allows the landowner the option of using a Farm Management Plan in lieu of the standard code requirements in the code, a landowner may investigate their options by:
 - 1. Discussing their existing farm plan with the King Conservation District
 - 2. Contacting the KCD to speak with a farm planner or take a class
 - 3. Talking with the staff of DDES permit counter, of the WLRD Agriculture or Rural Stewardship Program or of the Health Department.
- B. When it becomes clear that a farm plan is being developed to meet the requirements of King County Code for either a property predominantly involved in the use of agriculture or for a farm plan component of a Rural Stewardship Plan, the property owner shall contact the Agricultural Program at WLRD in order to obtain a farm plan tracking number. The landowner shall provide the assessors parcel number.
- C. The landowner will work with the KCD (using its classes, technical assistance, or on-line resources as applicable) to develop a Farm Management Plan. A Farm Management Plan may be

developed concurrent with or subsequent to Rural Stewardship Plan if it is to be a component of the Rural Stewardship Plan.

- D. The KCD or the landowner may contact the Agricultural Program at WLRD or the designated agricultural lead at DDES for technical assistance on any issues arising out of the interpretation or application of King County Code or to answer questions related to local wetlands, fish, wildlife, or geology.
- E. Before initiating a site alteration that requires a Farm Management Plan the landowner shall submit the final KCD-approved plan to WLRD for review and approval and registration.
- F. Once the KCD approved plan is submitted to WLRD, the plan will be reviewed to determine if:
 - 1. The plan is complete;
 - 2. Aspects of code that are not normally related to farm management plan development may affect the proposal addressed by the plan;
 - 3. Compliance with the following King county codes has been achieved for those parts of each code where farm plans may be used: K.C.C. 21A.24 (Critical Areas); K.C.C. 16.82 (Clearing and Grading); K.C.C. 9.04 (Surface Water Management)
 - 4. All flood hazard regulations are addressed; and
 - 5. Any actions proposed in the plan should be implemented prior to undertaking a proposed alteration.
- G. For a Farm Management Plans related solely to proposed alterations that do not require a county permit or a permit from the Washington State Department of Fish and Wildlife, WLRD shall review and make a decision regarding approval of the plan within 10 working days of receiving the KCD-approved farm plan. For those Farm Management Plans related to alterations that do require a county permit or a permit from the Washington State Department of Fish and Wildlife, WLRD shall review and make a decision related to approval of the plan within 30 days of receiving the Farm Plan.
- H. The Water and Land Resources Division shall indicate that an approved Farm Management Plan that is implemented as approved complies with King County Code and will notify affected parties by:
 - 1. Attaching the following statement to all such plans: "As of this date, an approved Farm Management Plan is registered with King County and, when properly implemented, the plan complies with the following King County Codes K.C.C. 21A.24 (Critical Areas); K.C.C. 21A30 (Livestock Management); K.C.C. 16.82 (Clearing and Grading); K.C.C. 9.04 (Surface Water Management)."
 - 2. Filing the official copy of the Farm Management Plan with the WLRD Agriculture Program or its successor;
 - 3. Distributing a copy of the registered plan to the KCD, DDES and the landowner;
 - 4. Placing the farm plan tracking number on permits plus and I-map or successive documentation programs;
 - 5. Notifying the landowner and cooperating agencies in writing that the plan has been registered.
- I. Once approved by WLRD, the landowner may submit the registered Farm Management

Plan to:

1. DDES for permit review; and
 2. DNRP for incentive programs such as cost share, grants, and the Public Benefit Rating System.
- J. Farm Management Plans and Rural Stewardship Plans jointly developed for properties with multiple uses should be developed, reviewed and approved concurrently unless King County determines that the goals of the landowner and of critical areas protection will be better served if the final Farm Management component of a Rural Stewardship Plan is developed at a later date, such as within a certain time period after the landowner is in residence on the property.
- K. If at the conclusion of farm plan review, WLRD determines that the Farm Management Plan does not meet the requirements of King County Code, the plan shall be returned to the landowner. Within the 30 days of the return of the plan, KCD and King County will work with landowner to determine whether or not compliance with King County Code may be achieved. WLRD shall review and make a decision related to approval of the plan within 30 days of receiving the revised KCD approved plan.
- L. If WLRD is not able to recommend a method for achieving compliance with code through the use of a farm plan, it shall return the plan to the applicant and or preparing agent documenting:
1. How the plan does meet the requirements of the King County Code;
 2. Whether actions may be taken meet compliance;
 3. Whether the proposed alteration may not be allowed under any conditions; and
 4. The departments, agencies or types of private sector institutions where the applicant may locate the appropriate expertise to proceed with other permit options.
- M. With the exception of alterations required for an emergency, the landowner shall not proceed with the alterations to critical areas allowed with a farm plan until WLRD has notified the owner that the farm plan is approved. If the alteration requires a permit, the landowner shall not proceed with the alteration until the permit has been issued.
- N. If site conditions or development activities necessitate a change in the Farm Management Plan, the landowner may request approval of proposed amendments by contacting the KCD and submitting the amended plan to WLRD through the same review and approval processes set forth in this appendix.
- O. If the KCD states in writing that the agency is unable to develop a farm plan for a particular landowner, the landowner may develop a farm plan through a private consultant or through WLRD. Any such plan must meet the conditions described in this rule, including approval by the KCD.

SECTION VI: Monitoring and Inspection

- A. A landowner undertaking any regulated activity in a critical area or its buffer shall make the parcel available for a site visit prior to approval and for post alteration inspection of the site to insure implementation of the plan. Before visiting a property, the County shall notify the landowners and schedule the site visit(s).

- B. If King County determines that a violation of the farm management plan has occurred, WLRD shall work with the landowner and the KCD to correct the violation within 90 days. If, after 90 days, WLRD determines that the landowner is unwilling to comply, King County may begin Code Enforcement proceedings under K.C.C. Title 23. The landowner shall either come into compliance with the King County Code and the farm plan, or shall remove any uses or structures not authorized without a farm management plan. The landowner may also be required to provide mitigation for impacts to critical areas and critical areas buffers.



King County

Best Management Practices Supplement

Small Manure Compost Facility

Best Management Practices 1

Definition

A small manure compost facility is one that is under 250 sq. ft. and is therefore not a permitted structure under King County Code. It may be covered with a roof and walled completely or partially. It would generally consist of three adjacent 8 ft. x 10 ft. bins.

Purpose

The purpose of this Best Management Practices (BMP) is to provide a covered manure storage facility that will protect critical areas and be compliant with federal, state and local flood hazard area regulations, but that will not require a grading permit.

Siting

The facility should be sited to:

1. protect water quality
2. avoid requiring any compensatory flood storage if possible,
3. follow the requirements of the livestock ordinance, and
4. avoid the need to level the ground within more than a 2 ft. soil horizon.

Grading

If the facility must be sited in a critical area buffer or a floodplain, the following standards apply:

1. The ground may not be graded, or fill brought in, only to level a pad within 2 ft. variation of the existing soil horizon.
2. All excavated materials must be removed from the riparian area or the floodplain.
3. Grading should be conducted in the dry season if possible.

Compensatory Storage

If the facility is in a floodplain, compensatory storage must be provided at the same elevation, equivalent to the volume of the facility that is in the 100-year flood elevation.

Livestock Flood Sanctuaries in Flood Hazard Areas Best Management Practices 2

Definition

A livestock flood sanctuary (pad) is a mound of earth placed within the flood hazard area and constructed to an elevation that is above the base flood elevation to provide an area of refuge for livestock during flood events.

Purpose

The purpose of the Best Management Practices (BMP) is to provide a livestock flood refuge area of high ground within a flood hazard area and prevent an increase in flooding as a result of this construction.

Site Selection

1. The pad is not allowed within the FEMA floodway;
2. The pad is allowed within a flood hazard area only if there is no location outside a flood hazard area where livestock will have safe and reasonable access during flood events;
3. The pad should be located in close proximity to where animals are normally kept to provide easy access during inclement weather and darkness;
4. The pad is not allowed along a property line unless the adjacent property is under the same ownership or written approval is received from the adjacent property owner;
5. The pad must be set back one hundred feet from any existing residences on adjacent properties;
6. The pad should be located where it will have the least impact to upstream and downstream properties, such as in the hydraulic shadow of existing structures;
7. The pad should be located where it will be least subject to high velocities and depths;
8. Avoid siting the pad on the most fertile soils; and
9. Avoid siting the pad where clearing mature trees and other extensive areas of native vegetation would be required.

Livestock Flood Sanctuary Design within a Flood Hazard Area

1. Compensatory storage must be provided on-site in equivalent volume and at equivalent elevation to that being displaced by the pad;
2. The compensatory storage area must be hydraulically connected to the source of the flooding to avoid stranding of fish as flood waters retreat and to provide hydraulic relief in the same location as the impact;
3. Calculations are required to demonstrate there is no measurable rise (“zero-rise”) in the base flood elevation, as measured at the upstream boundary of the property, as a result of the pad; if the pad cannot meet the zero-rise standard, an increase is allowed if:
 - a. Any resultant increase in base flood elevation is submitted to and adopted by FEMA for a revision to the Flood Insurance Rate Map, in accordance with 44 CF R 70; and
 - b. Appropriate legal documents are prepared in which all property owners

affected by the increased flood elevations consent to the impacts on their property. These documents should adhere to the template included in this BMP. These documents shall be filed with the title of record for the affected properties.

4. Calculations are required to demonstrate that the base flood depth will not exceed three feet above adjacent ground at any point along the perimeter of the pad;
5. Calculations are required to demonstrate that the base flood velocity will not exceed three feet per second at any point along the perimeter of the pad;
6. Steepness of the side slopes shall be no greater than 2:1;
7. The ramp slope shall be no less than 8:1;
8. The ramp width should be no greater than eighteen feet and should not exceed five hundred feet in length;
9. The ramp may be composed of concrete, wood, or earth material;
10. If the ramp is constructed on fill, it should run parallel to the river flow; if it is constructed on pilings, it may be either parallel or perpendicular to the river flow;
11. The height of the pad should be one foot above the 100-year flood elevation; and
12. The upper surface of the pad should be enclosed by a fence built to Soil Conservation Services specifications.

Total Size Limitations

1. The maximum size of the pad shall not exceed fifty square feet per animal unit (1,000 pounds) plus the area created by adding fourteen feet of width along two adjacent sides to be used for farm vehicle access;
2. The total footprint of the pad plus other structures and improvements on the property shall be less than five percent of the entire site;
3. The width, as measured perpendicular to the river, of the pad shall not exceed fifteen percent of the total floodplain width on the property; and
4. Herd growth may be accommodated by either:
 - a. allowing the pad to be built up to twenty-five percent larger than what is needed for the herd size at the time of construction; or
 - b. constructing the pad to accommodate the existing herd size and receiving approval for a design that would allow a subsequent expansion of up to twenty-five percent without amending the farm management plan.

Site Preparation

1. During construction, place temporary erosion control silt fences around the perimeter of the pad site;
2. Strip pad foundation area to a depth of four inches; stockpile this topsoil layer. If topsoil will not be replaced within twenty-four hours, cover or stabilize this soil using erosion control measures.
3. This topsoil shall be replaced on the surface of the pad which will be revegetated and reseeded; and
4. Construction should take place during the dry months of the year.

Soil Standards

1. Soil may be extracted from non-sensitive areas on-site. If possible, it should come from the area that will provide compensatory storage;
2. If the area from which the fill will be obtained is on property protected by the

Farmland Preservation Program, strip the A and B soil horizon layers and stockpile each horizon layer separately prior to extraction of the fill. After the fill is extracted, replace these soil horizons in the same order they were prior to extraction; and

3. If the soil is not obtained from on-site, the imported soil should be composed of clean compactable fill and should have no rock or similar irreducible material with a maximum dimension greater than eighteen inches.
4. The maximum soil layer thickness before compaction shall not exceed two feet;
5. Compaction should be performed by the routing back and forth of construction equipment; and
6. The upper eighteen inches should not be compacted to allow for vegetation planting.

Pad Surfacing

1. Disturbed areas of soil on the upper surface of the pad shall be reseeded in accordance with recommendation of the Natural Resources Conservation Service;
2. Side slopes should be protected from erosion. In low velocity zones, erosion protection can be provided by reseeded with an appropriate grass mix. In higher velocity zones, erosion protection may require placing erosion control fabric, planting native vegetation, or using other methods outlined in the King County *Guidelines For Bank Stabilization Projects*;
3. At the discretion of the department, side slopes may be required to be armored with rock to prevent erosion when the pad is located in areas of high velocities;
4. Newly planted vegetation should be protected from grazing animals until well established; and
5. A straw covering shall be spread over the pad surface prior to animal use. The straw and manure collected on the surface of the pad should be removed and treated as animal waste following the flood event.

Manure Storage Facilities in a Flood Hazard Area Best Management Practices 3

Definition

Any impoundment constructed within a flood hazard area made by constructing an embankment, excavating a pit or dugout, or by fabricating a structure that allows for the storage of manure in an environmentally benign manner.

Purpose

The purpose of the Best Management Practices (BMP) is to prevent the increase in flooding as a result of constructing a manure storage facility in a flood hazard area.

Best Management Practices (BMP)

In addition to the Natural Resources Conservation Service (NRCS) Conservation Practice Standard:

Waste Storage Facility (Code 313), a manure storage facility constructed within a flood hazard area must meet these additional BMPs:

Site Selection

1. The manure storage facility is not allowed within the FEMA floodway;
2. The manure storage facility is allowed within a flood hazard area only if there is no practical location on the site outside the flood hazard area;
3. The manure storage facility is not allowed along a property line unless the adjacent property is under the same ownership or written approval is received from the adjacent property owner;
4. The manure storage facility must be set back a minimum of one hundred feet from any existing residences on adjacent properties;
5. The manure storage facility should be located where it will have the least impact to upstream and downstream properties, such as in the hydraulic shadow of existing structures;
6. The manure storage facility should be located where it will be least subject to high velocities and depths;
7. Avoid siting the manure storage facility on the most fertile soils; and
8. Avoid siting the manure storage facility where clearing mature trees and other extensive areas of native vegetation would be required.

Manure Storage Facility Design Within a Flood Hazard Area

1. Compensatory storage must be provided on-site in equivalent volume and at equivalent elevation to that being displaced by the manure storage facility;

2. The compensatory storage area must be hydraulically connected to the source of the flooding to avoid stranding of fish as flood waters retreat and provide hydraulic relief in the same location as the impact;
3. Calculations are required to demonstrate there is no measurable rise (“zero-rise”) in the base flood elevation, as measured at the upstream boundary of the property, as a result of the manure storage facility; if the manure storage facility cannot meet the zero-rise standard, an increase is allowed if:
 - a. Amendments to the Flood Insurance Rate Map are adopted by FEMA, in accordance with 44 CFR 70, to incorporate the increase in the base flood elevation; and
 - b. Appropriate legal documents are prepared in which all property owners affected by the increased flood elevations consent to the impacts on their property. These documents should adhere to the template included in this BMP. These documents shall be filed with the title of record for the affected properties.
4. Calculations are required to demonstrate that the base flood depth will not exceed three feet above adjacent ground at any point along the perimeter of the manure storage facility;
5. Calculations are required to demonstrate that the base flood velocity will not exceed three feet per second at any point along the perimeter of the manure storage facility; and
6. The elevation of the top of the settled embankment should be one foot above the 100-year flood elevation.

Livestock Bridge Best Management Practices 4

Definition

A livestock bridge is a component of a farm field access road drive. It has a width no greater than 8 ft. and a span no greater than 20 ft. and is constructed to support livestock crossing a small stream or agricultural waterway.

Purpose

The purpose of this Best Management Practices (BMP) is to improve stream bank integrity, stream habitat and water quality by allowing livestock access to portions of a property. The bridge is not intended to be used for cars, trucks or heavy equipment.

Siting

The bridge should be sited to reflect consideration of the following factors as practical:

1. provide safe access by livestock on level ground
2. provide equivalent flow conveyance
3. cause the least disturbance to existing intact riparian vegetation
4. result in the minimum amount of grading to establish supports
5. avoid areas where any spawning may occur

Compensatory Storage

Compensatory storage equivalent to the volume of any fill and/or the bridge materials supports must be provided at the same elevation as the potential displacement of floodwaters in the floodplain.

Zero-Rise Floodway

The bridge should not cause a measurable rise in the base flood elevation. This should be verified by conducting a hand calculation, using Chow's conveyance equation ($K+1.49/nAR^{2/3}$), showing that flood conveyance will equal or exceed existing values or by application of a HEC-RAS analysis. Alternatively, if limited to areas outside the FEMA floodway, a rise may be acceptable if written permission is granted by all neighboring affected properties.

Erosion Control

The construction of the bridge should minimize erosion and sedimentation by:

1. using construction practices such as seasonal timing, filter fabric, temporary straw bales on the banks, etc.
2. installing and establishing soil stabilization (i.e., filter strips, hog fuel, gravel, etc.) along the bridge approach prior to construction.
3. Disposing of any excess excavated materials that result from grading activities at an allowable disposal site outside of the stream buffer or floodplain.