Natural Resources Conservation Service

CONSERVATION PRACTICE STANDARD

ANIMAL MORTALITY FACILITY

Code 316

(No.)

DEFINITION

An on-farm facility for the treatment or disposal of animal carcasses due to routine mortality.

PURPOSE

This practice may be applied to achieve one or more of the following purposes:

- reduce pollution impacts to surface water and groundwater resources
- reduce the impact of odors
- decrease the spread of pathogens

CONDITIONS WHERE PRACTICE APPLIES

This standard applies to livestock and poultry operations where routine animal carcass storage, treatment, or disposal is needed.

This standard does not apply to catastrophic animal mortality.

CRITERIA

General Criteria Applicable to All Purposes

Include the facility in the waste management system plan for the operation.

All buildings and structures shall comply with the NC State Building Code. Auxiliary components such as grinders, blowers, piping systems, etc. shall be sized in accordance with the waste management plan developed for the operation. All components shall be certified by the manufacturer or supplier to comply with the site specific plans and specifications developed for the project.

Meet the structural and foundational requirements of NRCS CPS Code 313, Waste Storage Facility, when designing slabs, walls, and support structures.

Use NRCS CPS Code 367, Roofs and Covers, for animal mortality storage facility covers and roofs.

Use NRCS CPS Code 342, Critical Area Planting, to revegetate all areas disturbed by construction.

Include provisions for closing and/or removing the facility where required.

Safety. Provide warning signs, fences, refrigeration unit locks, and other devices as appropriate, to ensure the safety of humans and livestock.

Address biosecurity concerns in all aspects of planning, installation, operation, and maintenance of an animal mortality facility.

Utilities and Permits. The landowner/contractor is responsible for locating all buried utilities in the project area, including drainage tile and other structural measures.

Location. Locate animal mortality facilities in accordance with required setbacks in conservation practice standard 313, Waste Storage Facility, unless noted otherwise.

Locate the facility so that prevailing winds and landscape elements minimize odors and protect visual resources.

Locate the animal mortality facility above the 100-year floodplain elevation unless site restrictions require location within the floodplain. If located in the floodplain, protect the facility from inundation or damage from a 25-year flood event.

Locate the facility down-gradient from springs or wells where possible or take steps necessary to prevent contamination of groundwater supply sources. Investigate hydrogeological conditions.

Direct surface runoff away from the animal mortality facility. Direct contaminated runoff from the animal mortality facility to an appropriate storage or treatment facility for further management.

Select a location for the animal mortality facility that is consistent with the overall site plan for the livestock or poultry operation. Locate the onsite mortality facility for acceptable ingress and egress and where it will not interfere with other travel patterns on the farm, such as livestock pathways and feed lanes.

Locate the facility as close to the source of mortality as practical, considering biosecurity issues and the need to keep the facility out of sight of the general public.

Seepage Control. Where seepage will create a potential water quality problem, provide a liner which meets the requirements of the National Engineering Handbook (NEH), Part 651, Agricultural Waste Management Field Handbook (AWMFH), Appendix 10D, for clay liner design criteria or other acceptable liner technology.

Temporary Storage. Where the mortality management system depends on periodic or cyclic operation (including, but not limited to, offsite disposal such as rendering), provide a facility with adequate capacity for temporary storage of carcasses until they can be processed or picked up. The temporary storage may be implemented as a pad or bin, a refrigeration unit, or other.

Disposal Timeframe. Proper disposal of animal carcasses shall be within 24 hours of knowledge of death in accordance with North Carolina state law, GS 106-403, Disposition of dead domesticated animals.

Electrical Installation. Electrical components and installation shall meet the requirements of the National Electrical Code (NEC) and state and local codes for outdoor installation. All electrical wiring shall be in a conduit. Installation shall be certified in writing by a qualified licensed electrician or a licensed electrical inspector.

Additional Criteria Applicable to Composters.

General. Design facilities for composting animal mortality to conform to NRCS conservation practice standard Composting Facility (317).

Additional Criteria Applicable to Incinerators and Gasifiers.

General. Use a Type 4 (human and animal remains) (as defined by the Incinerator Institute of America) incinerator that has been approved for use within the state. Gasification, which is a high temperature method of vaporizing the biomass with no direct flame with oxidation of the fumes in an after-burning chamber, gasifiers shall meet all applicable state air quality/emissions requirements.

Capacity. Size the incinerator/gasifier to handle the average maximum daily animal mortality during a growing cycle. Refrigeration units may be used in conjunction with the incinerator/gasifier to improve the loading cycle and fuel use efficiency of the incineration/gasification unit.

Ashes. Remove ashes daily or according to manufacturer recommendations. Spread ash according to NRCS conservation practice standard CPS Code 590, Nutrient Management, or provide for other acceptable means of disposal.

Location. Locate the incinerator/gasifier a minimum of 20 feet from any structure. Place the unit(s) on a concrete pad (minimum 4" thick) with the fuel source as distant as practical. The concrete pad shall extend sufficient distance on all sides of the unit(s) to accommodate management of the facility. The top of the concrete pad shall be a minimum of 6 inches above natural ground. If the incinerator/gasifier is covered with a roof, provide a minimum air space between the chimney and any combustible roof part of at least 6 inches, or as recommended by the manufacturer, whichever is greater.

The facility must be located on a farm and is owned and operated by the farm owner or by the farm operator. The facility is used solely to dispose of animals or poultry originating on the farm where the facility is located. Incinerators and gasifiers shall only be used for the cremation of dead animals.

Installation. Gas hook-up must be certified in writing by a licensed fuel piping contractor to meet applicable National Fire Protection Association (NFPA) codes, all other national, state and local codes, and in conformance with the manufacturer's recommendations. Fuel storage for diesel powered units shall be installed in accordance with manufacturer's recommendation and shall meet all applicable state and local codes, rules, and regulations.

Additional Criteria Applicable to Refrigeration Units.

General. Refrigeration units used shall be compatible with the emptying mechanism. Protect the refrigeration unit from precipitation and direct sun as deemed appropriate.

Unit design, construction, power source, and installation shall be in accordance with manufacturer's recommendations and all applicable building and electrical codes. Refrigeration units shall be constructed of durable material, be leak proof, and have has a life expectancy compatible with other aspects of the waste management system.

Place the refrigeration units on a concrete pad (minimum 4" thick) of suitable strength to withstand loads imposed by vehicular traffic used to load or remove the box or tray.

Temperature. The refrigeration units will be self-contained units designed to freeze animal carcasses before decomposition occurs. Carcasses to be rendered should be maintained between 22° and 26° F. Carcasses that will be composted, incinerated, or gasified should be stored a few degrees above freezing in order to facilitate burning and to reduce the composting time or amount of fuel needed to incinerate or gasify the carcasses.

Capacity. Size the refrigeration units to accommodate the normal maximum volume of mortality to be expected in the interval between emptying. When calculating the volume required, include the expected daily mortality rate of the animal, the period of time between emptying, the average weight of the animal,

and a conversion factor for weight to volume. Use a weight to volume conversion of 45 pounds per cubic foot unless a local volume conversion factor has been documented.

Power Source. Provide an alternative source of power, where available, to maintain the integrity of the freezing process during power outages. Where an alternative power source is not available, identify the contingencies for disposal of the animal carcasses in the Operation and Maintenance plan.

CONSIDERATIONS

Major considerations in planning animal mortality management are:

- The management capabilities of the operator,
- Available equipment and land application area at the operation,
- The economics of the available alternatives,
- The degree of pollution control required by state and local agencies,
- Effect on wildlife and domestic animals

Take measures to maintain appropriate visual resources, reduce odor, and provide dust control. Vegetative screens and topography can be used to shield the animal mortality facility from public view, to reduce odors, and to minimize visual impact.

For facilities that are organic producers or that sell compost to organic producers, ensure that the treated lumber used in the facility meets the requirements for organic production. It may be best to have the producer consult with the organic certifier as to the use and acceptability of treated lumber.

PLANS AND SPECIFICATIONS

Prepare plans and specifications for animal mortality facilities that describe the requirements for applying the practice according to this standard. As a minimum the plans and specifications shall include:

- A plan view showing the location and extent of the practice.
- Description of facility.
- Size, type and number of animals that will be the feedstock.
- Pertinent elevations of the facility, if applicable.
- Soil and foundation findings, interpretations, and reports.
- Location of electrical lines, gas lines, water supply and other utilities
- Quality of materials.
- Drainage/grading plan, if needed.
- Structural details of all components.
- Temporary erosion control measures during construction.
- Vegetative requirements.
- Safety requirements for the facility.

OPERATION AND MAINTENANCE

The Operation and Maintenance (O&M) Plan developed for the animal mortality facility will become part of the overall CNMP. The plan should document needed actions to ensure that the practice performs adequately throughout the expected life.

As a minimum, include the following information in the O&M plan:

- Method and procedures of mortality disposal for normal losses
- Odor management or minimization requirements
- Biosecurity protocols
- Safety measures and procedures

- Periodic inspections
- Need for prompt repair or replacement of damaged components
- Site references and/or manufacturer or installer for trouble shooting

Additional O&M for Incinerators and Gasifiers

Use the incinerator and gasifier only for the disposal of animal carcasses.

Operate the unit properly to maximize equipment life and minimize emission problems.

Load the unit according to the manufacturer's recommendations. An operator, trained by the manufacturer's representative or an equivalent organization, must be on-site when the facility is in operation.

Remove ashes frequently to maximize combustion and prevent damage to equipment. Include methods for collecting and disposing of the ash material remaining after incineration. The facility shall include a dedicated metal ash collection box or container. The ash shall be land applied at agronomic rates.

Inspect the unit periodically to ensure that all components are operating as planned and in accordance with the manufacturer's recommendations.

Additional O&M for Refrigeration Units

Operate the refrigeration unit properly to maximize equipment life and minimize potential problems.

Load the refrigeration unit according to manufacturer's recommendations and do not exceed the design capacity.

Use the refrigeration unit only for the dead animals associated with the planned operation.

Inspect the refrigeration unit periodically for leaks, structural integrity, and temperature.

REFERENCES

Nutsch, A., J. McClaskey, and J. Kastner, Eds., 2004. Carcass disposal: a comprehensive review, National Agricultural Biosecurity Center, Kansas State University, Manhattan, Kansas.

USDA, NRCS. National Engineering Handbook, Part 651, Agricultural Waste Management Field Handbook. Washington, D.C.

USDA, NRCS. National Engineering Handbook, Part 637, Chapter 2, Composting. Washington, D.C.