

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

WASTE TRANSFER

(No.)

CODE 634

DEFINITION

A system using structures, conduits or equipment to convey byproducts (wastes) from agricultural operations to points of usage.

PURPOSE

To transfer agricultural material associated with production, processing, and/or harvesting through a hopper or reception pit, a pump (if applicable), a conduit, and/or hauling equipment to:

- a storage/treatment facility,
- a loading area, and/or
- agricultural land for final utilization as a resource.

CONDITIONS WHERE PRACTICE APPLIES

The transfer component is a part of a planned waste management or comprehensive nutrient management system.

Material is generated by livestock production or agricultural product processing and a conveyance system is necessary to transfer the byproducts from the source to a storage/treatment facility and/or a loading area, and/or from storage/treatment to an area for utilization. This includes hauling nutrients from one geographical area with excess nutrients to a geographical area that can utilize the nutrients in an acceptable manner.

This practice does not include land application or other use of wastes. Criteria for land application of wastes are included in Alabama NRCS

conservation practice standards Nutrient Management, Code 590; or Waste Utilization, Code 633.

CRITERIA

General Criteria Applicable to All Purposes

Waste transfer components shall comply with all federal, state, and local laws, rules and regulations. The Alabama Department of Environmental Management (ADEM) Rules require owners/operators of animal feeding operations (AFO's) and associated waste management systems to fully implement and regularly maintain effective best management practices (BMP's) that meet or exceed NRCS technical standards and guidelines to prevent discharges and to ensure groundwater and surface water quality.

All construction activities must implement adequate stormwater management BMP's. In addition, to comply with the National Pollutant Discharge Elimination System (NPDES) Phase II Rule, all construction activities involving one acre or more of land disturbance shall have and follow a construction best management practices plan (CBMPP) until construction is complete and all disturbed areas are stabilized.

ADEM AFO/CAFO rules require that operators retain records documenting that (1) all designs and plans for any structures were prepared and certified by a professional engineer registered in the State of Alabama (PE), (2) construction was supervised by a PE, and (3) once construction was completed, a PE certified that the completed facility was constructed in accordance with the approved plans and met or exceeded good engineering practices and NRCS technical standards and guidelines, and (4) any modifications or repairs made to the structures were supervised and certified by a PE.

Cultural Resources. Ground disturbing activities such as excavation and site preparation for animal waste facilities and pipelines have the potential to

affect significant cultural resources. Complete a cultural resources review prior to ground disturbing activities to assure that existing cultural resources will not be adversely impacted.

Structures. Design all structures, including those that provide a work area around pumps, to withstand the anticipated static and dynamic loading. Design structures to withstand earth and hydrostatic loading in accordance with Alabama NRCS conservation practice standard Waste Storage Facility, Code 313. Design covers, when needed, to support the anticipated dead and live loads.

Size reception pits to contain a minimum volume of one full day's waste production. Size reception pits receiving runoff to also contain at least the volume of runoff from the 25-year, 24-hour storm, plus any required freeboard and emergency storage.

Size openings to structures that receive material from alley scrape collection for a minimum of 9 square feet of opening with one dimension no smaller than 4 feet. Equip the opening with a grate designed to support the anticipated loads.

Construct curbs, when needed in conjunction with structures, of either concrete or wood. Design curbs to be adequately anchored and of sufficient height to ensure all materials flow into the structure.

Pipelines. Design pipelines in accordance with sound engineering principles considering the waste material properties, management operations, exposure, etc. Design the minimum pipeline capacity from collection facilities to storage/treatment facilities for the maximum peak flow anticipated.

The minimum pipeline capacity from storage/treatment facilities to utilization areas shall ensure the storage/treatment facilities can be emptied within the time limits stated in the management plan for nutrient utilization.

Design underground pipelines used for transferring material to an irrigation system to meet the requirements of Alabama NRCS conservation practice standard Irrigation Water Conveyance, Pipeline, Code 430.

Design all pipes for the type of material and total solids content and to convey the required flow without plugging. Design pipes for flow velocities between 3 to 6 ft/sec to minimize settling of solids in the pipeline and for flow velocities of 5 ft/sec or less if pipe is not buried or securely tied down.

Provide clean-out access for gravity pipelines at a maximum interval of 150 feet unless an alternative design is approved by the design engineer. Design gravity pipelines to avoid horizontal curves or bends except minor deflections (less than 10 degrees) in the pipe joints unless special considerations are used.

In a gravity flow pipe system, a minimum head is required depending upon the consistency of the material: 4 feet for heavily bedded wastes, 2 feet for slurry or semi-solid wastes, and 1 foot for liquids and liquid wastes.

Provide a minimum of two gates or valves for gravity discharge pipes used for emptying a storage/treatment facility. One must be manually operated.

Install pipelines with appropriate connection devices to prevent contamination of private or public water supply distribution systems, ground water, and surface water.

Other Conduits. Design concrete lined ditches in accordance with Alabama NRCS conservation practice standard Lined Waterway or Outlet, Code 468. Use a minimum design velocity of 1.5 feet per second.

Pumps. Select pumps for transfer that meet the requirements of Alabama NRCS conservation practice standard Pumping Plant, Code 533. Size pumps to transfer material at the required system head and volume. Base the type of pump on the consistency of the material and the type of solids. Use manufacturer's recommendations for pump installation.

Solid/liquid waste separation. If needed to separate a portion of solids from the liquid waste stream, design a filtration or screening device, settling tank, settling basin, or settling channel in accordance with Alabama NRCS conservation practice standard Solid/Liquid Waste Separation Facility, Code 632.

Safety. Design the system to safeguard humans and animals during construction and operation.

Provide open structures with covers or barriers such as gates, fences, etc. Provide ventilation and warning signs for transfer systems as necessary to warn of the danger of entry and to reduce the risk of explosion, poisoning, or asphyxiation.

Provide pipelines from enclosed buildings with water-sealed traps and vents or similar devices where necessary to control gas entry into buildings.

Place barriers on push-off ramps to prevent tractors or other equipment from slipping into waste collection, storage, or treatment facilities.

Biosecurity. Handle products from diseased animals in accordance with the recommendations of the state veterinarian.

Sanitize equipment leaving the farm as appropriate to prevent the spread of disease.

Additional Criteria in Support of Agricultural Land for Final Utilization

Waste utilization. Apply nutrients to the utilization area in amounts, uniformity, rates, and at a time consistent with the requirements of Alabama NRCS conservation practice standard Nutrient Management, Code 590; or Waste Utilization, Code 633 as appropriate.

Adequately agitate liquid or slurry wastes prior to transfer for the purpose of land application both on and off the farm.

Hauling equipment. When transporting material from one geographical area to another, use equipment capable of hauling the material without spillage, leakage, or wind-blown losses during transport.

Meet all applicable local, state, and federal laws regarding highway transportation for hauling equipment. Follow weight limits of roads and bridges used for hauling wastes.

CONSIDERATIONS

General

Waste transfer systems can represent a significant capital investment. When determining the appropriate system consider the costs and benefits of each alternative (including design life) and how the overall waste management system plan will function.

Consider the timing and location of agitation and transfer activities to minimize odor formation and transport and to minimize the breeding of insects within the material.

Consider covering and/or minimizing the amount or number of times the material is disturbed to reduce the likelihood of air emissions of particulate matter, volatile organic compounds, and ammonia air emissions formation and release.

Transfer Operations

When determining structure location and layout, consider locating structures so that gravity can be

used to move wastes and reduce pumping requirements.

Provide sufficient operating space for loading and unloading of equipment in the vicinity of the waste transfer components. Provide safety barriers (posts, curbs, guard rails, etc.) between waste transfer equipment and sensitive areas or objects.

Depth to bedrock, water table, and other subsurface conditions can affect the design and installation of waste transfer equipment. Consider these factors in the design.

When applicable and compatible, consider the joint use of waste transfer with irrigation system pipelines and components.

Waste temperature can affect the pressure in pipelines. Consider this when determining the required pipe pressure rating.

The transfer of wastes can present a very corrosive environment. Consider corrosion resistance and water tightness in the selection of pipe material and joints.

Salt deposition (struvite) can be a significant problem in pipes transferring wastewater. Consider designing all pipelines for a flow velocity of 3 to 5 feet per second and a minimum diameter of 1.5 inches.

Check valves, anti-siphon protection, and open air breaks should be considered in all pipelines.

Good route selection and timing of waste transfer can minimize the impact of nuisance odors on neighbors and the public.

Particulate matter generation during transport can be minimized by covering the wastes.

Equipment rollover can be a real danger when transporting wastes. Properly size the equipment for the loads and terrain that will be encountered.

Where material is to be spread on land not owned or controlled by the producer, a nutrient management plan is recommended to establish environmentally acceptable utilization of the material.

PLANS AND SPECIFICATIONS

Plans and specifications for installing waste transfer systems shall be in accordance with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. As a minimum this shall include the following:

- a map or aerial photograph showing the location of the facility
- detail drawings showing the facility, necessary appurtenances (such as foundations, pipes and valves) and stabilization of any areas disturbed by the installation of the facility
- construction specifications describing the installation of the facility

OPERATION AND MAINTENANCE

An Operation and Maintenance (O&M) plan must be prepared and reviewed with the landowner or operator responsible for the application of this practice. The O&M plan shall provide specific instructions for regular inspection and proper O&M of each component of this practice and shall detail the level of repairs needed to maintain the effectiveness and useful life of the practice.

The O&M plan shall describe what actions will be taken to minimize flies, other insects, and odor to the extent practicable during the transfer of material.

Provisions should be made for removing solids from conveyance conduits such as concrete lined ditches, etc.

Flush pipelines used for transferring waste material with clean water after use to reduce the risk of gas build up and pipeline explosion.

Where wastes are to be spread on land not owned or controlled by the producer, inform the receiver of the wastes of the proper storage and/or utilization requirements. The waste management plan, as a minimum, shall document:

- the amount of wastes to be transferred
- the nutrient content of the wastes
- the date of transfer
- the party responsible for the environmentally acceptable use of the wastes

For the hauling of wastes from one geographical area to another, record keeping by the producer, the hauler or certified vendor, and the receiver of the wastes will be required and may include such items as:

- the type, nutrient content, and amount of wastes transferred
- the solids percentage of the wastes
- the date of the transfer
- the name and address of the source and destination of the wastes
- the name, address, and phone number of the hauler or certified vendor
- the condition of the wastes as left at the destination (spread, stockpiled and covered, etc.)

REFERENCES

ADEM Administrative Code
AFO/CAFO Rule, Chapter 335-6-7, as amended
Construction Stormwater Rule, Chapter 335-6-12, as amended

Alabama Cooperative Extension Service
Controlling Salt Buildup in Wastewater Recycling Systems, Circular ANR-860, 1994
Poultry Litter/Animal By-Product Responsibility Liability Transfer Form R-9

NRCS National Engineering Handbook
Agricultural Waste Management Field Handbook, Part 651

NRCS Cultural Resources Handbook