

**Natural Resources Conservation Service**  
**CONSERVATION PRACTICE STANDARD**  
**WASTE FACILITY CLOSURE**  
**Code 360**  
**(No.)**

## DEFINITION

The decommissioning of facilities, and/or the rehabilitation of contaminated soil, in an environmentally safe manner, where agricultural waste has been handled, treated, and/or stored and is no longer used for the intended purpose.

## PURPOSE

- Protect the quality of surface water and groundwater resources.
- Mitigate air emissions.
- Eliminate a safety hazard for humans and livestock.
- Safeguard the public health.

## CONDITIONS WHERE PRACTICE APPLIES

This practice applies to agricultural waste storage facilities that are no longer needed as a part of a waste management system and are to be permanently closed or converted for another use.

This practice applies where impoundments that are to be converted to fresh water storage meet the current Wisconsin NRCS Conservation Practice Standard (WI CPS) to which the impoundment is proposed to be converted.

This practice applies to removal of soil contaminated by agricultural wastes that have been stored at the [animal production area](#).

This practice does not apply to sites contaminated by materials that are considered hazardous wastes or are subject to specific clean-up criteria in state or federal laws, such as fuel or pesticides.

## CRITERIA

### **General Criteria Applicable to all Purposes**

The closure of waste facilities shall comply with all federal, tribal, state, and local laws, and rules or regulations including national pollutant discharge elimination system (NPDES) requirements.

Existing waste transfer components that convey waste to facilities or provide drainage from the facility area shall be removed and replaced with compacted earth material or otherwise rendered unable to convey waste.

Fill used for closure may include solid waste materials exempt for use pursuant to Wisconsin Administrative Code, Section NR 500.08, including used brick, building stone, concrete, reinforced concrete, broken pavement, and unpainted and untreated wood. If these materials are used, they shall be covered with at least 3 feet of clean mineral soil. The backfill height shall exceed the design finished grade by a minimum of 5 percent to allow for settlement. The top one foot of the backfill shall be constructed of the most impervious soil material readily available and mounded to shed rainfall runoff. If the area will have a soil surface, it shall also be covered with at least 3 inches of topsoil and be vegetated.

Precautions (fencing and warning signs) shall be used where necessary to ensure that the facility is not used for purposes incompatible with the facility modification.

Entry into an enclosed waste storage or waste transfer component shall not be allowed unless procedures published in ASABE Standard 470, Manure Storage Safety, are followed.

**Erosion and Pollution Control.** All disturbed areas shall be re-vegetated or treated with other suitable measures used to control erosion and restore the aesthetic value of the site. Sites, not suitable for re-vegetation through normal cropping practices, shall be vegetated in accordance with WI CPS Critical Area Planting (Code 342).

Measures shall be taken during construction to minimize site erosion and pollution of downstream water resources. This may include such items as silt fences, hay bale barriers, temporary vegetation, and mulching.

**Liquid or Slurry Waste and Sludge (Accumulated Solids) Removal.** Liquid and slurry wastes shall be agitated and pumped out to the maximum extent possible. Water shall be added as necessary to facilitate the agitation and pumping.

Remove manure and agricultural waste from the storage facility and waste transfer system to the maximum extent practicable. All manure and agricultural waste that could negatively impact water and/or air quality or pose a safety hazard shall be removed as deemed practical. All liquid, slurry, sludge, and solid waste, and soil removed from the facility shall be utilized in accordance with WI CPS Nutrient Management (Code 590) or stored in a facility meeting WI CPS Waste Storage Facility (Code 313). In lieu of field application, removed soil may also be thinly spread as topsoil at the closure location and vegetated.

During sludge removal operations, the integrity of the liner, if one is present, shall be maintained to the extent possible to minimize the volume of contaminated soil removal.

#### **Impoundment Liner Removal.**

1. Flexible membrane liners shall be:

- Removed and properly disposed of, or
- Cleaned and rendered unable to impound water (punctured).

Removed flexible membrane liners may be buried within the closure with a minimum cover of 3 feet of mineral soil.

2. Concrete liners shall be:

- Removed and properly disposed of, or
- Cleaned and rendered unable to impound water (punctured), or
- Cleaned and remain in place if the site grade allows rainfall to drain off the concrete surface.

Removed concrete liners may be buried within the closure with a minimum cover of 3 feet of mineral soil.

Foundry sand previously placed under a concrete liner in accordance with NR 538, Beneficial Use of Industrial Byproducts, will require site-specific Wisconsin Department of Natural Resources (WDNR) approval of the closure plan.

3. Constructed clay liners shall be:

- Completely removed, or
- Rendered unable to impound water (partially excavated), or
- Remain in place if the site grade allows rainfall to drain off the surface.

**Contaminated Soil Removal.** Flexible membrane, concrete, soil liners, or in-place soils shall be systematically investigated for leaks and contaminated soils (soil mixed with waste) beneath them. When contaminated soils are found, they must be removed to the extent necessary with a minimum depth of 6 inches.

The extent (area and depth) of contaminated soil to be removed shall be determined by color, odor, or consistency of the soil indicating permeation or saturation with waste.

**Additional Criteria Applicable to Impoundment Closure or Conversion**

Embankment Impoundments shall be breached so that they no longer impound waste. Portions of the embankment may remain in place. The slopes and bottom of the breach shall be stable for the soil material involved, however the side slopes shall be no steeper than three horizontal to one vertical (3:1).

The embankment material can be graded into the impoundment area; compacted in accordance with Wisconsin Construction Specification 3, Earthfill; and the area vegetated for another use.

Excavated Impoundments shall be backfilled and compacted in accordance with Wisconsin Construction Specification 3, Earthfill, so that these areas may be reclaimed for other uses.

Impoundments converted to fresh water storage shall be closed in accordance with the General Criteria and converted to a use that meets the requirements as set forth in the appropriate NRCS practice standard for the intended purpose. Where the original impoundment was not constructed to meet NRCS standards, the investigation for structural integrity shall be in accordance with National Engineering Manual (NEM) 501.23. When it is not possible to remove all the sludge and contaminated soils from a waste impoundment that is being converted to fresh water storage, the impoundment shall not be used for fish production, swimming, or livestock watering until the water quality is adequate for these purposes.

**Additional Criteria Applicable to Fabricated Liquid Waste Facilities**

If fabricated structures are to be demolished, disassembled or otherwise altered, it shall be done to such an extent that no water can be impounded. Disassembled materials such as pieces of metal shall be temporarily stored in such a manner that they do not pose a hazard to animals or humans until their final disposition.

Demolished materials shall be buried on-site within the facility or moved off-site to locations designated for such use by state or local officials.

Under-building reception structures, channels, or storage structures may be filled with clean mineral soil, sand, or controlled low strength materials (flowable fill) after complete removal of manure. The fill shall be surfaced with concrete, gravel, or other material appropriate for the intended use following closure.

## CONSIDERATIONS

Considerations include additional design recommendations that are not required criteria, but may be used to enhance or avoid problems with the design and function of this practice.

Conduct pre-closure soil and water (surface and subsurface) testing to establish base line data surrounding the site at the time of closure. Establishing baseline data can be used in the future to address soil and water issues.

Alternative methods of sludge removal may be required where the impoundments contain large amounts of bedding, sand, oyster shells, soil, or other debris.

Minimize the impact of odors associated with land applying dry wastes and with agitation, emptying, and land applying wastewater and sludge from a waste impoundment by conducting these operations at a time when the humidity is low, when winds are calm, and when wind direction is away from populated areas. Adding chemical and biological additives to the waste prior to agitation and emptying can reduce odors. Odor impacts from land application can also be mitigated by using an incorporation application method.

Minimize agitation of the wastes to only the amount needed for pumping to reduce the potential for release of air emissions.

Soil to fill excavated areas should not come from important farmlands (prime, statewide, local, and/or unique).

If large-size material or wood is used as fill, consideration shall be given to filling methods and additional thickness of clean mineral soil cover to prevent and accommodate excess settling. It may be necessary to limit the quantity of wood, because it degrades.

Waste facility closure may improve utilization and aesthetics of the farmstead.

Breached embankments may detract from the overall aesthetics of the operation. Embankments should be removed and the site returned to its original grade.

Disassembled fabricated structures may be suitable for assembly at another site. Care should be taken during closure to minimize damage to the pieces of the facility, particularly coatings that prevent corrosion of metal pieces.

To minimize potential impacts to livestock, such as nitrate poisoning, initiate a testing and monitoring program of nutrient levels in crop products, particularly livestock feeds, harvested from sites of closed animal confinement facilities.

Consider the need for special permits or procedures concerning harmful materials to demolish an adjacent or associated buildings.

## PLANS AND SPECIFICATIONS

Plans and specifications for the decommissioning of abandoned waste facilities and the rehabilitation of contaminated soil shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. At a minimum, include the following:

- A plan view showing the location and extent of the practice.
- Pertinent elevations and cross sections of the existing facility and excavation limits.
- Number, capacity, and quality of facility(ies) and estimate of liner material and soil volume to be moved.
- Location of known utilities.

- Requirements for salvage and disposal of structural or liner materials.
- Vegetative requirements.
- Utilization Plan for animal wastes and soil.
- Odor management or mitigation requirement.
- Safety plan requirements. Note: Per Occupational Safety and Health Administration (OSHA) confined space entry protocol, personnel shall not enter confined space of an enclosed waste facility without breathing apparatus or taking other appropriate measures.

## OPERATION AND MAINTENANCE

The proper decommissioning and rehabilitation of a waste facility should require little or no operation and maintenance. However, if it is converted to another use, such as a fresh water facility, operation and maintenance shall be in accordance with the needs as set forth in the appropriate NRCS conservation practice standard for the intended purpose.

Monitor the closed site for settlement of filled areas that may need grading to shed rainfall runoff.

## REFERENCES

USDA, NRCS National Engineering Handbook (NEH), Part 651, Agricultural Waste Management Field Handbook.

USDA, NRCS Wisconsin Field Office Technical Guide (FOTG), Section IV, Practice Standards and Specifications.

Wisconsin Administrative Code, Department of Natural Resources, Chapter NR 500, General Solid Waste Management Requirements.

Wisconsin Administrative Code, Department of Natural Resources, Chapter NR 538, Beneficial Use of Industrial Byproducts.

American Society of Agricultural and Biological Engineers (ASABE) Standard 470, Manure Storage Safety.

Rice, J.M., D.F. Caldwell, and F.J. Humenik. Ed. 2006. Closure of Earthen Manure Structures in Animal Agriculture and the Environment: National Center for Manure and Animal Waste Management White Papers. ASABE. Pub. Number 913C0306.

## DEFINITIONS

**Animal Production Area** – Means any part of the livestock operation that is used for the feeding and housing of livestock. This includes the entire animal confinement and feeding area, and any adjacent manure storage areas, raw materials storage areas, and waste containment areas. This does not include pasture and cropland.

**Embankment Impoundments** – those with a depth of waste at the design level that is three feet or more above natural ground.