

**NATURAL RESOURCES CONSERVATION SERVICE
GENERAL SPECIFICATION**

WASTE TREATMENT LAGOON

(No.)

CODE 359

A. Embankment

FOUNDATION PREPARATION

The foundation area shall be cleared of trees, logs, stumps, roots, brush, boulders, sod, and rubbish. The topsoil and sod shall be stockpiled during construction and spread on the completed dam and spillways.

Foundation surfaces shall be sloped no steeper than a ratio of 1-1/2 horizontal to 1 vertical. The foundation area shall be prepared to adequate moisture content and density, and the surface shall be thoroughly scarified, to allow for proper compaction and bonding of the first layer of fill material to the foundation.

Foundation areas shall be kept free of standing water when fill is placed on them.

FILL PLACEMENT

The material placed in the fill shall be free of sod, roots, frozen soil, and stones more than 6 inches in diameter (except for rock fills), and other objectionable material.

The distribution and gradation of materials shall be such that no lenses, pockets, streaks, or layers of material shall differ substantially in texture or gradation from the surrounding material. If it is necessary to use materials of varying texture and gradation, the more impervious material shall be placed in the center and upstream parts of the fill. If zoned fills of substantially differing materials are specified, the zones shall be placed according to lines and grades shown on the drawings. The complete work shall conform to the lines, grades, and elevations shown on the drawings.

Fill material shall be obtained from selected borrow areas or as approved by the designated technician. Unless otherwise designated, it shall be obtained within the storage and/or treatment area of the structure.

Moisture Control. The moisture content of the fill material shall be adequate for obtaining the required compaction. Material that is too wet shall be dried to meet this requirement, and material that is too dry shall be wetted and mixed until the requirement is met. Moisture content shall be determined by a method approved by NRCS.

Dry foundation materials shall have moisture added to the top six inches to meet that required for fill material prior to placement of the first layer of fill.

Compaction. Construction equipment shall be operated a minimum of 3 passes over each layer of fill to insure that the required compaction is obtained. Special equipment shall be used if needed to obtain the required compaction.

B. Excavation

All applicable sections for supporting embankments will apply, including that for clearing and grubbing, foundation preparation, excavation, and pollution control and project completion.

The completed excavation shall conform to the line, grades, and elevations shown on the drawings and staked in the field. All work shall be completed in a skillful and workmanlike manner. The completed job shall present a workmanlike appearance.

The excavated earth shall be disposed of in the locations specified on the plans and spread or shaped to a uniform top and side slopes so it can be disked or mowed with regular farm equipment.

C. Clay Liner

MATERIAL

Liner material shall be obtained from selected borrow areas or as approved by the designated technician.

MOISTURE CONTROL

The moisture content of the liner material shall be as specified in Section H, Construction Details. Material that is too wet shall be dried to meet this requirement, and material that is too dry shall be wetted and mixed until the requirement is met. Moisture content shall be determined by a method approved by NRCS.

Dry foundation materials shall have moisture added to the top six inches to meet that required for fill material prior to placement of the first layer of fill.

COMPACTION

Compaction of the liner material shall be as specified in Section H, Construction Details.

D. Computation of Earth Fill and/or Excavation Quantities

Quantities of earth fill and/or excavation shall be computed by approved methods. The earth fill and/or excavation extent will be the sum of the fill and excavation components as defined below:

FILL

The volume of material required for construction of the supporting embankment to the designed settled elevation and dimensions.

- The volume is to be calculated from natural ground before foundation stripping.
- If there are vertical banks to be sloped then the fill amount will be calculated as if these items have already been completed.
- The volume required to backfill the core trench is only included when excavated material cannot be placed in the embankment as it is being excavated. (This means the material must be either stockpiled for later use or is not suitable for fill and must be wasted.)

EXCAVATION

The volume of material required for excavation to the designed neat lines and grades.

- The volume of material required to be excavated to construct the designed centerline dam core trench below natural ground, before foundation stripping (after vertical banks are sloped).

- Volume of material required to be excavated to construct a designed storage/treatment reservoir. When a structure involves a designed excavated pit and a designed embankment the excavated pit volume will be the extent. Exception – fill will be the extent when the volume of fill for the designed embankment is greater than the excavated pit volume.

E. Renovation of Existing Lagoon

SCOPE

Implementation of this conservation practice shall consist of all work necessary to complete the renovation of earthen waste impoundments that have served the design life and are in need of structural repair. The renovated lagoon shall meet all current design requirements for storage and/or treatment volume.

EFFLUENT REMOVAL

Prior to removal of any effluent from the waste impoundment, a Comprehensive Nutrient Management Plan (CNMP) must be prepared and approved. Removal of all effluent, to the greatest extent possible, including solids, slurry and liquid shall be achieved in order to renovate the waste impoundment.

Vigorous agitation of the effluent should result in the accumulated solids being suspended in the liquid creating slurry that can be pumped into spreading equipment. When removal of effluent from the bottom and side slopes using earth-moving equipment is needed, the liner shall not be disturbed. Wheel or track mounted machinery used for removal of the effluent shall not be equipped for aggressive excavation. Only smooth mouthed buckets or blades with no rippers, scarifiers, or ripper teeth should be used to minimize ground disturbance of the liner. If liner is disturbed, it shall be repaired by methods approved by NRCS.

EFFLUENT DISPOSAL

All waste removed from the waste impoundment shall be transferred and spread according to an approved CNMP and in accordance with all local, state and federal laws, rules and regulations.

EMBANKMENT

The supporting embankment around the waste impoundment shall meet the neat lines and grades as shown on the attached drawings. The supporting embankments must also meet the minimum construction tolerances in this specification. All eroding and low areas will be filled with suitable fill material and re-vegetated during renovation.

LINER CERTIFICATION

If the existing liner cannot be determined to meet the requirements of the appropriate practice code 521, a new liner shall be designed and installed as stated in the attached design.

PUMP DOWN MARKER

In order to meet current design requirements a change in the waste impoundment operating levels could occur due to increased or decreased animal numbers, wash water volume, waste water volume, feed efficiency, storage or treatment period, etc. The permanent markers shall be checked and reinstalled if necessary to meet the current or existing design.

CONSTRUCTION TOLERANCES

All elevations shall not deviate more than 0.1feet from design elevations

An embankment will be acceptable with respect to side slopes when the following conditions are met upon completion of construction:

Planned Side Slope	Planned Unsettled Slopes		Steepest Acceptable Side Slopes
	With 5% Settlement	With 10% Settlement	
2:1	1.91:1	1.82:1	1.5:1
2.5:1	2.38:1	2.27:1	2.0:1
3:1	2.86:1	2.73:1	2.5:1
4:1	3.81:1	3.64:1	3.5:1

F. Vegetation

A protective cover of vegetation shall be established on all exposed areas of embankments, spillways, spoil areas, and borrow areas.

G. Pollution Control and Project Completion

Construction operations shall be carried out so that erosion and air and water pollution are minimal. All work shall be conducted in a skillful and workmanlike manner. The completed job shall present a workmanlike appearance.

Fencing and cover to control erosion and pollution shall be established as needed.

The lagoon shall be fenced around the perimeter and warning signs posted to prevent unintended access.

H. CONSTRUCTION DETAILS

<p>I have reviewed these specifications and agree to construct and maintain the practice in accordance with the accompanying plans, designs, and operation & maintenance plan for this practice.</p>	
<p>_____</p> <p>Cooperator's Signature</p>	<p>_____</p> <p>Date</p>