

EVALUATING EXISTING WASTE STORAGE FACILITIES

A. FACILITIES INSTALLED WITHOUT NRCS ASSISTANCE

In order to receive financial or technical assistance from NRCS on manure and wastewater handling and storage practices, all existing waste storage facilities within a comprehensive nutrient management plan (CNMP) must meet the following criteria; or take the following action:

Note - Follow OSHA guidelines on confined space for all investigations requiring entry into a storage facility.

1. Earth ponds

All existing earthen waste storage facilities installed without NRCS assistance must be evaluated to determine if it meets current NRCS standards. This investigation shall include:

a. Site Assessment.

- i) Locate waste storage facility on a plan map and locate wells, neighbors, property lines, neighbor's wells, buildings, animal confinement areas, drainage tile, surface drains, utilities, streams, lakes, and wetlands near the storage structure.
- ii) Determine if storage structure is within a flood prone area. If structure is within a flood hazard area, determine if the structure is properly protected from inundation or damage from a flood event as required within practice standard 313, Waste Storage Facility.
- iii) Gather documentation showing soil survey information, soil test results, any test pit or soil boring logs, and the results of any soil permeability tests if available.
- iv) Gather ground water maps and well construction logs and any documentation describing locations, dimensions, and elevations of any sinkhole features near the facility.
- v) Owner's well(s) with 300 feet shall be tested for nitrates.
- vi) If possible, determine construction equipment and methods used to construct the storage structure.
- vii) If possible, determine the age of the facility.
- viii) Are required safety measures in place to protect humans and livestock? (signage, fencing, escape ladder, etc...)
- ix) Is the bottom above the high water table as required in standard 313?
- x) Is the bottom above bedrock as required in standard 313?

b. Storage Volume.

Determine the available storage capacity.

- i) Has excessive solids accumulation reduced the storage volume? What was the date of the last clean out?
- ii) Use survey data, as-built drawing, landowner information, and any other data that is available or can be measured to calculate the available storage capacity.

c. Embankment.

Determine the adequacy of the waste storage facility embankment.

- i) Determine if the side slopes are stable and do they meet standard. Is there any sign of cracking, sloughing, poor maintenance, scouring, erosion?
- ii) Evaluate the embankment for proper vegetative treatment. Has vegetation been properly established? Are there trees or evidence of burrowing animals? Is there any sign of rills or gullies forming?
- iii) Does the embankment top width meet standard?
- iv) Is there any evidence of seepage (hydric plants, wet areas) near the toe of the embankment or around pipes or structures through the embankment?
- v) If there is a ramp into the storage facility, is the ramp appropriately sloped for equipment access? Is there any sign of damage from equipment use?
- vi) Is there a potential to raise the embankment without affecting the facility operation and runoff areas.

d. Inlet/Outlet.

Determine the adequacy of the inlet and outlet.

- i) Is the inlet of a permanent type designed to resist corrosion, plugging, freeze damage and ultraviolet ray deterioration while incorporating erosion protection as necessary?
- ii) Does the gravity inlet pipe have watertight joints?
- iii) If the outlet is manually operated, is the outlet of permanent type designed to resist corrosion and plugging.
- iv) If the outlet is a gravity type system, it shall be removed or permanently plugged watertight.

e. Seepage Investigation.

Note - Following OSHA guidelines for confined space on all investigations requiring entry into the storage facility.

i) Earthen

- a. Collect 1 undisturbed soil core samples for permeability testing for every 10,000 SF of surface area of the storage pond, but a minimum of 4 samples. The cores shall be taken at uniformly distributed locations around the facility. ½ of the samples shall be taken no more than 2 feet above the bottom elevation and ½ the samples at mid-slope.
- b. The cores shall be sent to a certified or licensed soils lab for flexible wall permeability testing in accordance to ASTM D5084 to determine permeability.
- c. As an alternative, Atterberg Limits may be used to determine the classification on each sample using ASTM D2487. If the soil is Permeability Group III or IV as defined in AWMFH Chapter 10, Appendix D, no further testing needed and the soil is sufficient.
- d. For soil liners, check the thickness of the liner with a bucket auger at each sample location. Pack material back into hole when finished.
- e. If pits cannot be emptied, alternative soil sample collection protocol shall be approved the NRCS State Conservation Engineer.

- ii) Synthetic Liners
 - a. If a leak detection system or subsurface drain exist, check this system for evidence of leaking. If leakage is detected, the source of the leak needs to be identified and repaired. For all synthetic liners, make observations when the storage is near empty to look for punctures, tears, and other potential leakage points, especially around pipe inlets or outlets and around pump ramps. Correct all identified deficiencies. **Do not go down into a pit on a membrane liner.**
- iii) Concrete Liners
 - a. When the facility is near empty, inspect the liner for cracks, spalling, chipping, or other deficiencies. All deficiencies shall be correct to meet NRCS standards.

f. Operation and Maintenance.

- i) Does the facility have an operation and maintenance plan and has that plan been followed?

2. Concrete structures

- a. Follow Items 1, 2, 4, and 6 above the same as for Earth Ponds.
- b. All existing concrete structures shall be evaluated by a qualified engineer. This may include investigating cold joints, evaluating cracks, checking for spalls and exposed steel. Reinforcing steel does not need to be determined. The structural engineer and/or SCE will use their best professional judgment on the adequacy of the structure to safely function for at least 15 more years as-is or with needed repairs.
- c. If the investigation determines that the facility may not safely function for at least 15 years, the structure will have to be modified or replaced.

3. Glass lined / Steel tanks

- a. Follow Items 1, 2, 4, and 6 above the same as for Earth Ponds.
- b. All existing glass lined / steel tanks shall be evaluated by manufacturer or authorized dealer experienced and knowledgeable in this type of facility. A written declaration from the evaluator is required.
- c. If analysis determines that the facility does not meet current NRCS standards, it shall be modified or replaced.

4. Findings

- a. If the results from these six (6) areas of investigation show that the facility meets the current NRCS practice standard for waste storage facilities, 313, it can be certified and NRCS may provide assistance to the farmer on manure and wastewater handling and storage practices. If the facility does not meet standard 313, it will be required to be modified to meet the 313 for the farmer to be eligible for financial or technical assistance.

B. FACILITIES INSTALLED WITH NRCS ASSISTANCE

- a. In order to receive financial and technical assistance from Vermont NRCS on manure and wastewater handling and storage practices, existing waste storage facilities must meet the following criteria:

1. Facilities past their service life

- a. If the facility was installed with NRCS assistance according to an archived NRCS standard(s), and the facility has exceeded its practice life, then it shall be evaluated following the same protocol as described above for facilities installed without NRCS assistance.
- b. If the facility is determined not to meet the current 313 standard, it will be required to be modified to meet the 313 for the farmer to be eligible for financial or technical assistance on waste management practices.

2. Facilities still within their service life

- a. If the facility has been modified in any way, including but not limited to: earth work on embankments, waste transfer additions or replacement, concrete alterations, liner additions or modifications, etc., it will have to be evaluated following the same protocol as described above for facilities installed without NRCS assistance.
- b. If a facility is within its service life, has not been modified in any way, and has been maintained according to the O&M Plan, it shall be considered certified without modifications required.