

PART 543 – MATERIALS

MT 543.2a Used Materials - General

- A. Used materials may be substituted for new materials if they will not jeopardize the practice life or result in a safety hazard. The following factors shall be considered when evaluating used materials for inclusion in a conservation practice. If the following factors apply, used material shall not be installed.
- (1) Failure of the used material would create a hazard; an adverse affect to the health, safety, or welfare of the public; or a greater loss of property than a new material failure.
 - (2) Used material would be located where replacement is financially prohibitive.
 - (3) Early failure would reduce the practice life or jeopardize the conservation benefits.
 - (4) Used material would be embedded in or through an embankment.
 - (5) Used material would be a pipe embedded in metal, wood, or concrete structures.
- B. Used materials that have contained or have been in contact with hazardous materials (flammable, corrosive, reactive, or toxic) shall not be permitted under the following conditions:
- (1) Hazardous material residue is incompatible with the intended function of the used material and
 - (2) Hazardous material residue cannot be removed to a degree that will not present a hazard.
- C. Installation of used materials must have concurrence by the Area Engineer.
- D. Used materials shall meet the requirements of the design based on the manufacturer's markings, previous certifications, or professional judgment and experience.
- E. Estimated practice life shall be evaluated and documented by NRCS. Example: The design thickness of a metal pipe is 12 gauge (0.1046 inches). If a used 1/4-inch oil well pipe is available, documentation must show that random measurements of minimum wall thicknesses are equal to 12 gauge. If a used metal watering facility is installed, documentation must show an intact galvanized coating and watertight seams.

MT 543.2b Used Materials - Steel Petroleum and Fertilizer Tanks for Stockwater Supply Systems

- A. Acceptance Criteria. Petroleum storage tanks and railroad tankers removed from service are often proposed for use in NRCS conservation practices. Acceptance of used tanks shall be based on the tank's structural integrity, remaining service life, and former contents.
- (1) Structural. The tank should be structurally sound to withstand the stresses of transporting and installation at the new site. Refer to MT 512.33 for inspection and acceptance of structural adequacy.
 - (2) Service Life. Random thickness or corrosion pitting depth measurements should be made to assure that the tank will meet the required service life for the practice. Observe the condition of metal pipes, etc., in the proposed water supply if possible, or obtain a lab analysis for the corrosive (Langlier Saturation) Index of the water. A corrosive water supply and/or soils may indicate that the tank needs to be coated or will need other corrosion protection to insure an adequate service life.
 - (3) Harmful Contents. Used tanks may contain flammable, explosive, or toxic residues in the form of liquids, sludge, dust, scale, vapors, hydrogen sulfide, leaded gasoline, petroleum, welding fumes, lead-based paints, or other chemical hazards. The tank must be cleaned before reuse.

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- a) Tanks that have stored gasoline containing lead anti-knock compounds are a potential source of organic lead poisoning. Lead anti-knock compounds are highly toxic with effects ranging from subtle to serious central nervous system disorders and psychological symptoms.
- b) It is difficult to determine if gasoline tanks and railroad cars have not contained lead products.
- c) API Standard 2015 assumes that a tank has been in leaded service unless tests prove otherwise. Testing requires an organic-lead-in-air analysis. However, finding organic-lead-in-air analyzer is diminishing rapidly. This is a specialized method to test for organic lead after the sludge and loose materials have been removed, the tank has been cleaned, and the tank dry and free of liquids or puddles.
- d) Additional research by the Environmental Protection Agency (EPA) toxicologists and university toxicologists indicate that a quality tank cleaning is imperative for stockwater storage. Most of the toxic substances will be in the sludge which needs to be removed prior to the cleaning. The use of water pressure, heated water, and detergent are the key to the removal of water soluble chemicals.

B. Minimum Cleaning Requirements. Railroad pressurized tank cars that have contained liquefied petroleum gas and/or anhydrous ammonia, gas and oil tanks that can be accessed according to API Standard 2015 for cleaning may be considered for use for livestock water storage tanks if:

- (1) A qualified, professional cleaner, who follows American Petroleum Institute (API) Standard 2015, is required to clean the used tank. The qualified person should determine which toxic substance(s) are likely to be present in the tank.
- (2) The tank needs to be large enough for access during the cleaning process. API Standard 2015 provides the necessary guidance for safe entry and cleaning of the petroleum storage tanks.
- (3) All sludge or loosely adherent materials must be removed from inside the tank.
- (4) The tank shall be steam cleaned and pressure washed with detergent with at least 180-degree water at 300 psi. The tank must be rinsed with clean water at least 180 degrees at 300 psi for at least 60 minutes.
- (5) The tank cleaner shall conduct tests to provide documentation that the tank does not contain petroleum products or petroleum by-products and heavy metals. As a minimum, the following tests shall be performed:
 - a) Total petroleum hydrocarbons test as gasoline (TPH-G) and diesel (TPH-D).
 - b) Heavy metals test. Toxicity Characteristic Leaching Procedure (TCLP Metals).

C. Water Quality Testing. If it cannot be determined that the tank is clean as described above, and it cannot be determined that a heavy metals test along with a total petroleum hydrocarbons test have been conducted, then a water quality sample shall be taken after water has been in the cleaned used tank for at least 96 hours.

- (1) Potential owners of the tank should be cautioned that a livestock water quality test after the tank has been installed is risky. A used tank that is not clean and does not meet livestock water quality standards will not be accepted for cost-share.
- (2) The water quality tests should include the following:
 - a) Total Metals Digestion (TMD) and the particular metal fraction.

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b) Appropriate Non-Metals.

(3) The water quality test results should meet or exceed the following for livestock:

Constituent or Parameter	(Mg/l unless otherwise indicated)
Aluminum	5.0
Arsenic	0.2
Barium	----
Boron	5.0
Cadmium	0.05
Chloride	2000.0
Chromium	0.05
Cobalt	1.0
Copper	0.5
Lead	0.1
Constituent or Parameter	(Mg/l unless otherwise indicated)
Mercury	0.00005
Nitrite (NO ₃ – N)	10.0
Nitrite (NO ₃ + NO ₂) – N	100.0
Oil and Grease	10.0
Selenium	0.05
Silver	----
Sulfate (SO ₄)	3000.0
Total Dissolved Solids (TDS)	5000.0
Uranium	5.0
Vanadium	0.1
Zinc	25.0
pH	6.5-8.5 s.u.
Combined Total of Radium 226 and 228	5pCi/l
Total Strontium 90	8pCi/l
Gross alpha particle radioactivity including Radium 226 but excluding Radon and Uranium	15pCi/l

(4) Prior to any sampling or testing, the sampler shall contact the certified testing laboratory. The sampling, handling, temperature control, and timeliness of delivery to the laboratory are very important. The certified laboratory will commonly provide the sampling materials, containers, size of sample required, and temperature controls, along with instructions for handling and transporting the samples. If these parameters are not met, the test will be invalid.

(5) NRCS assumes NO LIABILITY if residual chemicals in a used tank affects human or animal health. NRCS shall provide written notice to the owner that the NRCS approves the tank on a structural service life basis only. The final decision with regard to water quality lies exclusively with the owner. This statement is required on the NRCS plan drawings and/or specifications.

(6) If owner installs a cleaned and tested used petroleum tank, a copy of the following documents shall be placed in the administrative files.

- a) Professional cleaning company certification that the cleaning complies with API 2015.
- b) Test results for hydrocarbons and heavy metals.
- c) Water quality test results.

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