

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

WATERING FACILITY

(No.)

CODE 614

DEFINITION

A device (tank, trough, or other watertight container) for providing animal access to water.

PURPOSE

To provide watering facilities for livestock and/or wildlife at selected locations in order to:

- Protect and enhance vegetative cover through proper distribution of grazing.
- Provide erosion control through better grassland management and distributing livestock away from sources of gully erosion.
- Protect streams, ponds, and water supplies from contamination by providing alternative access to water.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all land uses where there is a need for new or improved watering facilities.

CRITERIA

General Criteria Applicable to All Purposes

This practice shall conform to all federal, state, tribal, and local laws, rules, and regulations. Laws, rules, and regulations of particular concern include those involving water rights, land use, pollution control, property easements, wetlands, preservation of cultural resources, and endangered species.

Spacing of watering facilities within the rangeland should not exceed 1 mile apart on gentle terrain or ½ mile on rough terrain.

The tank or trough shall have adequate capacity

to meet the water requirements of the livestock. This will include the storage volume necessary to carry over between periods of replenishment. Where wind, power, or pump failure may cause a loss of water supply, a 3-day water supply shall be provided. Minimum capacity may be less than the 3-day livestock water requirement when an auxiliary power source is available, where a rural water district is the supply, where tanks are supplied by gravity flow from ponds, or where a spring development supplies water.

The following are the general livestock water requirements in gallons per day:

Horses and beef cattle	12
Dairy cows	25
Swine	3
Sheep and goats	1.5

These requirements will vary with the temperature and moisture content of the air, the kind of feed eaten, and the size of the animal.

Where water supplies are dependable and livestock are checked daily or the water supply is provided for grazing distribution only, fountains with little or no water storage capacities may be used. Fountains must be capable of delivering the daily water requirements of the livestock and providing access to the entire herd within a short period of time. Animals typically water as a group, and the water should be accessible such that the entire herd can receive adequate amounts of water within 1 to 2 hours.

Permanent installations shall be constructed of materials having a life expectancy of 10 years or more. Temporary installations are those having a life expectancy of less than 10 years.

A watering facility may be portable or constructed in place. It shall be constructed of

reinforced concrete or fiberglass. Other materials satisfying the conservation needs and life expectancy requirements can be used such as a reinforced concrete floor with a steel-rimmed, fiberglass-rimmed, rubber-track-rimmed, or rubber-tire-rimmed tank.

Tanks constructed of corrugated steel sheets shall conform to the manufacturer's recommended design for wall thickness or gauge. If such recommendations are not available, then a minimum wall thickness of 16 gauge shall be indicated on the plans and specifications.

Concrete structures shall not be installed where experience has indicated the sulfate concentrations in the soil cause rapid concrete deterioration. For steel tanks, if a corrosion problem related to water quality is known or suspected, testing for water pH and electrical conductivity should be conducted. Based on the results of these tests, corrosion potential should be estimated. Protective coatings or non-corrosive tank materials shall be specified where necessary.

Concrete shall have a minimum design strength of 3000 psi at 28 days for cast-in-place tanks or bases and 4000 psi at 28 days for pre-cast concrete tanks.

Reinforcing steel, nylon fiber mesh additive, or wire fabric shall be used in the concrete as follows:

Reinforcing steel (when required) shall be shown on the drawings.

Concrete may be placed without reinforcing steel in the base of a steel-rimmed, fiberglass-rimmed, rubber-track-rimmed, or rubber-tire-rimmed tank if all of the following criteria and site conditions are met:

1. The concrete has a minimum design strength of 3000 psi at 28 days.
2. The tank base is located on soils that have low or moderate shrink-swell potential to a depth of 3 feet. The shrink-swell potential can be found by county in the electronic Field Office Technical Guide (eFOTG) Section II.
3. The tank is located to provide positive drainage away from the tank.

If reinforcing steel is not included in the concrete base, nylon fiber mesh shall be included in the concrete mix as an additive in the concrete base with a steel-rimmed, fiberglass-rimmed, rubber-track-rimmed, or rubber-tire-rimmed tank.

Two layers of wire fabric 6x6—6x6 can be used in place of the reinforcement steel in the concrete base.

Temporary facilities may be constructed of any material that will produce an installation meeting the conservation need.

The site should be well drained; or if not, drainage measures will be provided. Areas adjacent to the tank, trough, or fountain that will be trampled by livestock shall be graveled, concreted, paved, or otherwise treated to provide firm footing and reduce erosion.

If the water source to the watering facility is a developed spring, a float valve shall be installed on the inlet to the watering facility. The float valve may be left open during the non-growing season for winter use for the animals, if needed. The period that the float valve may be kept open will be determined from the county WETS Table (see References section).

Automatic water level control and/or overflow facilities shall be provided as appropriate. Such devices may be used in conjunction with windmills if they will not adversely affect the water supply. A cleanout drain shall be provided. Shields or covers to prevent damage by livestock shall protect valves or pipes. Overflow shall be piped to a desirable point of release. The tank and outlet pipes will be protected from freezing and ice damage if this is a potential problem. Freeze-proof tanks or electric heaters may be used at some sites. Roofs can be placed over the tank to provide shade and reduce loss of water by evaporation.

The quality and durability of all materials shall be in keeping with the planned useful life of the installation.

Structures to prevent animals from entering the tank shall be designed and installed when needed to protect the facility from damage or water contamination or to protect the animals.

CONSIDERATIONS

Topography should be evaluated to minimize trail erosion and flooding erosion from tank overflow.

Watering facilities should be accessible to small animals. Escape ramps for young livestock, birds, and small animals should be installed. Consider cattle guards that will prevent drowning of livestock. Cattle guards or some other form of tie-downs should be used to prevent empty tanks from blowing off pads.

Consideration should be given to accessibility and wall height of watering facilities used in locations where various types and sizes of livestock will be using the facility.

Adequate protection for livestock during the winter should be considered.

PLANS AND SPECIFICATIONS

Plans and specifications for watering facilities shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. If the tank, trough, and/or fountain is a component of a system that includes additional conservation practices, the information necessary to construct these additional practices will also be conveyed on the plans.

OPERATION AND MAINTENANCE

An operation and maintenance plan shall be developed and reviewed with the landowner or individual responsible for operation and maintenance. Check periodically to see if any

type of debris has fallen into the watering facility which may restrict the inflow or outflow system. Check tank for leaks or cracks and repair immediately if any cracks or wall separations are found. Check the automatic water level device to ensure that it is operating properly. Make certain that the area adjacent to the tank is well protected with gravel, paving, or good cover. Be sure that the outlet pipe has a free outlet and is not causing any serious erosion problems.

If the tank has not been designed to prevent damage from freezing, it should be prepared for winter weather. This may include a measure such as adding material in the storage area to take up expansion.

Aquatic plants sometimes are problems in watering facilities. Control of aquatic plants can be accomplished by prevention, mechanical removal, biological control, and herbicides.

With herbicides, control may vary due to such factors as susceptibility of the aquatic weeds to herbicides, stage of growth, rate of application, and the time of application.

Information on the proper use of registered herbicides for effective aquatic pest control can be obtained from: (1) Kansas State Research and Extension county offices, (2) Kansas Department of Wildlife and Parks, and (3) product labels and manufacturers of herbicides registered by the Environmental Protection Agency (EPA) for use in aquatic areas.

REFERENCES

WETS Table web site:
<http://www.wcc.nrcs.usda.gov/climate/wetlands.html>