

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.

Storage provided in drinking facilities is preferred over central storage, unless central storage can be fully utilized by gravity flow.

The livestock water system must supply at least the amount shown in Table 1.

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; or

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

The watering facility shall have adequate capacity to meet the water requirements of the livestock and/or wildlife. Storage volume must be included as necessary to carry over between periods of replenishment.

Storage. Where water supplies are dependable and livestock are checked daily, troughs, or fountains with little water storage capacity may be used. Watering facilities must provide the daily water requirement of the livestock and provide access to the entire herd (including young animals) within a short period of time.

Needed storage can be provided in a central storage facility, drinking facilities, or a combination.

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service [State Office](#), or visit the [electronic Field Office Technical Guide](#).

SDTG Notice 233
Section IV
NRCS-MARCH 2006

Table 1. - Minimum Water Supply Per Animal	
Animal	Water, Gal./Day
Beef Cattle:	
Cows lactating with calves	18
Bred, Dry Cows and Heifers	15
400 lb. Growing Cattle	10
600 lb. Growing Cattle	13
800 lb. Growing Cattle	15
Bulls	19
600 lb. Finishing Cattle	15
800 lb. Finishing Cattle	18
1,000 lb. Finishing Cattle	21
1,200 lb. Finishing Cattle	23
Dairy Cattle:	
1,400 lb. Dry Cow	16
1,700 lb. Dry Cow	17
Lactating, 20 lb. Milk	18
Lactating, 60 lb. Milk	25
Lactating, 80 lb. Milk	28
Lactating, 100 lb. Milk	33
200 lb. Heifer	3
400 lb. Heifer	6
800 lb. Heifer	11
1,200 lb. Heifer	15
Swine:	
Boars & Gestating Sows	3
Lactating Sows	5
15 – 50 lb. Feeder	0.75
50 – 120 lb. Feeder	1
120 lb. to Market	2
Horses:	
Mature	18
Weanling	8
Sheep & Goats:	
Rams & Dry Ewes	2
Ewes with lambs	3
Feeder Lambs	1.5
Suckling Lambs	0.3
Birds:	
100 Chickens	9
100 Turkeys	15

Required storage volume is dependent upon water source, prescribed grazing plan, and frequency of checking water supply. The facility should also be sized to provide adequate space for the number of animals expected to use the facility at any given time. The watering facility shall be designed according to South Dakota Engineering Technical

Note 2005-1, Watering Facility Design Criteria, and the following criteria:

No minimum amount of storage is required for the watering facility and the facility shall be designed according to access space if all of the following conditions are met:

1. A very reliable water supply source such as a rural water system is used.
2. The facility is to be used in conjunction with the Prescribed Grazing (528) where each pasture will be grazed two or more times per year.
3. The distance from the edge of the pasture to the watering facility is no greater than 900 feet.

If a very reliable water supply source such as a rural water system is used, and the facility is to be used in conjunction with Prescribed Grazing (528) where each pasture will be grazed two or more times per year and the distance from the edge of the pasture to the watering facility is no greater than 1,320 feet; no minimum amount of storage is required and the facility will be designed for access space.

For reliable water supply sources such as rural water systems or wells and where the water supply is checked daily a minimum of one half day and a maximum of two days of capacity at each outlet is required. Capacity may be based upon a combination of flow rate and physical storage.

For water sources not inspected daily, or sources with high maintenance requirements, or which have power requirements which are not dependable (solar, wind, etc.), a minimum of three and a maximum of seven days of storage is required.

Winter Watering Facilities. Winter watering facilities shall be part of a prescribed grazing plan. Winter watering facilities must be freeze-proof. Electric heaters, geothermal heat, insulation, flowing water, or other methods may be used. The storage capacity shall be appropriate for the animals' winter water need and watering habits. Commercial automatic waterers shall be installed according to manufacturer's recommendations.

Livestock Water Distribution. Stock watering facilities should be located so travel distance between forage and dependable water is not more

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SDTG Notice 233
Section IV
NRCS-MARCH 2006

than one mile in gentle relief or one-half mile in rough relief. Location of the facilities shall be planned in conjunction with the prescribed grazing plan.

Drainage and Overflow. The site shall be well drained. Drainage measures shall be provided as needed. Areas adjacent to the watering facility that will be trampled by livestock must provide firm footing and provide adequate drainage. An apron area around the tank perimeter must be concrete or must receive regular maintenance using compacted earth, pit run sand/gravel/rock, or other appropriate nonpolluting, durable materials.

Automatic water level control and/or overflow facilities shall be provided as appropriate. Overflow pipes must carry overflow to a stable outlet, and must be two inch nominal diameter or larger. Remove excess or overflow water from the drinking facility area to avoid boggy conditions or foundation failure at the site. Provisions to cleanout or drain the facility such as siphon pipes, drain pipes, or manual drainage shall be provided. The watering facility including valves, pipes, and appurtenances shall be protected from damage by freezing, ice, livestock, and other hazards.

Durability. Watering facilities must be designed to prevent movement of empty tanks. All plumbing components must be protected from livestock damage. It is recommended that watering facilities be designed to prevent entry of livestock.

The design and materials must have a life expectancy of at least 10 years and meet or exceed the planned useful life of the installation. All designs shall meet industry standards for the material being used.

Shade. When a roof or shade is placed over the watering facility, the structure must be designed for appropriate wind and snow loads and shall be durable and able to withstand anticipated livestock and wildlife activities.

Concrete. Type II cement and 3,500 pounds per square inch (PSI) concrete minimum compressive strength shall be specified for concrete structures containing more than 20 cubic yards of concrete.

All reinforced concrete floors for steel rim tanks shall extend a minimum of two feet beyond the periphery of the tank and shall be set on a gravel base at least two inches thick.

Metal. Metal tanks shall have sturdy reinforced rims and must be protected from rapid destruction by corrosion. Metal rims set in concrete must be coated with plastic or asphalt based sealant to protect the metal at all concrete/metal contact points. Metal tanks with largest dimension less than 10 feet must be constructed from 18 gauge or heavier metal. Larger tanks must be 16 gauge or heavier.

Fiberglass. Fiberglass tanks shall have a minimum thickness of 3/16 inch, and shall be secured with posts and cross bracing or other suitable methods to provide a secure installation. Fiberglass tanks shall be made of ultraviolet resistant materials or shall have a durable coating to protect the structure from deterioration due to sunlight. Fiberglass tanks shall be set on a gravel base at least two inches thick.

Other Materials. Other materials may be used where long service life will be provided. Use of manufactured materials must follow the manufacturer's recommendations or a design prepared by an engineer.

Connection to Pipeline. Appurtenances to join sections to pipe or provide tank hook-ups must provide leak free seals and be structurally equivalent to the pipe used.

CONSIDERATIONS

This practice may adversely affect cultural resources and must comply with General Manual 420, Part 401.

Topography should be evaluated to minimize trail and overflow erosion.

Watering facilities should be accessible to small animals. Escape ramps for birds and small animals should be installed.

Consider providing winter protection for livestock.

PLANS AND SPECIFICATIONS

Plans and specifications for installing watering facilities shall meet this standard and describe requirements needed to achieve the purpose.

Development of plans will be guided by Engineering Field Handbook, Chapter 5, and shall be in accordance with National Engineering Manual, Parts 541 and 542.

OPERATION AND MAINTENANCE (O&M)

An O&M Plan specific to the type of installed watering facility shall be provided to the landowner. The plan shall include the following:

Remove debris, algae, sludge, or other materials that may restrict inflow or outflow.

Check for and repair leaks.

Maintain automatic water level controls.

Protect adjacent areas and outlet from erosion.

Inspect operation of the outlet pipe.

Provide guidance for winter operation.

Algae, sludge, and other accumulations should be addressed in areas with known problems. South Dakota and United States Environmental Protection Agency rules and regulations are to be followed when recommending and/or using chemicals.

REFERENCES

Engineering Field Handbook

National Engineering Manual

Manual of Steel Construction, American Institute of Steel Construction

Timber, National Design Specification for Wood, American Forest and Paper Association

Concrete, ACI 318, American Concrete Institute

Masonry, Building Code Requirement for Masonry Structures, ACI 530, American Concrete Institute