

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

WATERING FACILITY

(No.)

CODE 614

DEFINITION

A permanent or portable device to provide an adequate amount and quality of drinking water for livestock and or wildlife.

PURPOSE

To provide access to drinking water for livestock and/or wildlife in order to:

- Meet daily water requirements
- Improve animal distribution

CONDITIONS WHERE PRACTICE APPLIES

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

CRITERIA

General Criteria Applicable to All Purposes

Facilities shall be designed and installed in compliance with all state and federal laws.

Capacity. Design watering facilities with adequate capacity and supply to meet the daily water requirements of the livestock and/or wildlife planned to use the facility. Include the storage volume necessary to provide water between periods of replenishment. The facility must provide accessible, dependable, and suitable quality water during the season of intended use. Facilities planned for use during the summer must meet the high daily water requirements of the animals. Facilities planned for use in the winter must be equipped and/or operated to provide water during anticipated low temperature. Refer to the National Range and Pasture Handbook for guidance on livestock water quantity and quality requirements. For wildlife, base water

quantity and quality requirements on targeted species needs.

Include design elements to meet the specific needs of the animals that are planned to use the watering facility, both livestock and wildlife.

Location and Access. Locate facilities to promote even grazing distribution and reduce grazing pressure on sensitive areas.

Design the watering facility to provide adequate access to the animals planned to use the facility. Incorporate escape features into the watering facility design unless local knowledge and experience indicate that wildlife or young livestock will not be at risk of drowning.

Foundation and Stabilization. Protect areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns. Use criteria in NRCS Conservation Practice Standard 561, Heavy Use Area Protection to design the protection.

Install permanent watering facilities on a firm, level, foundation that will not settle differentially. Examples of suitable foundation materials are bedrock, compacted gravel and stable, well compacted soils.

Design and install watering facilities to prevent overturning by wind and animals.

Design watering facilities and all valves and controls to withstand or be protected from damage by livestock, wildlife, and if winter use is planned protect from freezing and ice damage.

Materials and Appurtenances. Construct watering facilities from durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation. Follow appropriate NRCS design procedures

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resource Conservation Service or download the standard from the electronic Field Office Technical Guide for Missouri.

**NRCS MOFOTG
June 2013**

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for the material being used or industry standards where NRCS standards do not exist. Tanks may be built from used heavy equipment tires following NRCS standard drawing and construction specification requirements.

Use the criteria in NRCS Conservation Practice Standard 516, Livestock Pipeline, to design piping associated with the watering facility. Include backflow prevention devices on facilities connected to wells, domestic or municipal water systems.

Disturbed areas shall be vegetated according to a revegetation plan. Use CONSERVATION COVER (327) unless the area is subject to frequent overflows then CRITICAL AREA PLANTING (342) will be used. When possible use plant species that will not impede wildlife access or decrease habitat quality. Native plant materials will be used whenever possible to achieve the desired purpose. In some instances natural regeneration may be sufficient for revegetation. Consult NRCS Area Biologist or Resource Conservationist if this option is considered.

Spring development shall meet the requirements of Conservation Practice Standard SPRING DEVELOPMENT (574).

Additional Criteria for Livestock Watering Facility

The tank or trough and associated livestock watering system shall be designed using approved engineering procedures, refer to the Missouri Livestock Watering Systems Handbook (MLWSH).

Portable livestock watering facilities utilize moveable tanks not permanently plumbed in place. Tanks are not required to be freeze proof if not utilized during freezing periods, but freeze protection should be considered during storage when not in use to protect tank materials. When installing a portable watering system, protect areas where livestock concentrations or overflow from the watering facility will cause resource concerns. For portable tanks of a size that prevent easy mobility, utilize gravel heavy use area protection around the tank as needed.

A permanent tank or trough is any tank that is permanently plumbed and anchored in place. Protection from freezing shall be considered. When installing permanent tanks or troughs a protective pad shall extend a minimum of six (6) feet from the exterior wall of the tank or trough, in all directions from which livestock will have access. Refer to Conservation Practice Standard (561) Heavy Use Area Protection for pad design criteria for the appropriate foundation condition. Pad may be either concrete, natural gravel, crushed rock or a combination of these materials. For tanks requiring a concrete pad for anchorage, the concrete portion of pad shall extend a minimum of 2' from exterior wall of the tank. Concrete anchorage pad and pad required to seal the tank bottom are part of the watering facility and are not a separate application of the (561) Heavy Use Area Protection Conservation Practice Standard.

Concrete for anchorage pad shall be a minimum of 5 inches thick. Steel reinforcement for the concrete pad shall be 1/2 inch diameter bars spaced 18 inches center to center in both directions. Concrete shall comply with the current Construction Specification NRCS-MO 750 – Reinforced Concrete.

Additional Criteria for Wildlife Watering Facility

Because each facility is unique to species, habitat, topography, and climate, watering facilities must be planned and installed according to a plan and adapted to the specific site. Each site is unique and the planner must use individual judgment on the method of construction, size and available water sources that are necessary to meet the purpose of this practice.

Wildlife watering facilities shall be spaced one-quarter mile apart or no closer than one-quarter mile to a dependable quality water supply.

The watering facility is to provide a source of water during dry months of normal rainfall patterns. Design shall include appropriate safety features to minimize the hazards of the

facility. Wildlife watering facilities are not designed for livestock watering use.

Dugout/Embankment Type Structures.

Small constructed dugout/embankment structures used to provide supplementary water for wildlife and shallow water habitat for amphibians and reptiles are not applicable to this standard. Use Conservation Practice Standard Upland Wildlife Habitat Management (645) for these dugout/embankment structures. If the structure stores more than 3 feet of water against the earth embankment it shall be designed according to Conservation Practice Standard POND (378).

Spring Development for Wildlife Watering Facility.

The reliability and quantity of its flow will be checked before development of a spring or seep to serve as a wildlife watering facility. Intermittent springs will be developed only if adequate checks show that water is available for the intended periods of use. It is advisable to provide large capacity storage to assure an adequate water supply when the intermittent spring stops flowing.

To insure adequate water supply, watering facilities for wildlife involving intermittent springs and seeps will contain storage of a minimum of 50 gallons of water.

CONSIDERATIONS

Design fences associated with the watering facilities to allow safe access and exit for area wildlife species. To protect bats and other species that access water by skimming across the surface, fencing material should not extend across the water surface. If fencing across the water is necessary it should be made highly visible by avoiding the use of single wire fences and using fencing materials such as woven wire or by adding streamers or coverings on the fence.

For watering facilities that will be accessible to wildlife, give consideration to the effects the location of the facility will have on target and non-target species. Also consider the effect of introducing a new water source within the ecosystem in the vicinity of the facility. This should include things such as the

concentration of grazing, predation, entrapment, drowning, disease transmission, hunting and expansion of the wildlife populations beyond the carrying capacity of available habitat.

Consider the following guidelines for materials commonly used for watering facilities.

Material	Property
Galvanized Steel	20 gauge thickness
Plastic	Ultraviolet resistance
Fiberglass	Ultraviolet resistance

Where water is supplied continuously or under pressure to the watering facility consider the use of automatic water level controls to control the flow of water to the facility and to prevent unnecessary overflows.

Watering facilities often collect debris and algae and should be cleaned on a regular basis. Consider increasing the pipe sizes for outlets to reduce the chances of clogging. Floating debris can easily plug an outlet. To minimize debris plugging install two ninety degree elbows at the top of the outlet so water will flow through the outlet from below the water surface. Maintenance of a watering facility can be made easier by providing a method to completely drain the watering facility.

Steep slopes leading to watering facilities can cause erosion problems from over use by animals as well as problems with piping and valves from excess pressure. Choose the location of watering facilities to minimize these problems from steep topography.

Consider the accessibility of the site for installation and maintenance.

Consider any effects upon natural springs/wetlands and associated unique flora and fauna.

This practice may be used to promote the conservation of declining species, including threatened and endangered species. If the site has unique flora or fauna consult with Area Biologist.

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Consider the aesthetics of the installation.

Consider use of these areas by reptiles and amphibians. Stacked logs and/or rock piles may be located near the water's edge to provide critical habitat for local reptile and amphibian species.

PLANS AND SPECIFICATIONS

Plans and specifications for watering facilities shall provide the information necessary to install the facility. As a minimum this shall include the following:

- A map or aerial photograph showing the location of the facility
- Detail drawings showing the facility, necessary appurtenances (such as foundations, pipes and valves) and stabilization of any areas disturbed by the installation of the facility
- Construction specifications describing the installation of the facility

OPERATION AND MAINTENANCE

Provide an O&M plan specific to the type of watering facility. to the landowner. As a minimum include the following items in the plan:

- a monitoring schedule to ensure maintenance of adequate inflow and outflow;
- checking for leaks and repair as necessary;
- if present, the checking of the automatic water level device to insure proper operation;

- checking to ensure that adjacent areas are protected against erosion;
- if present, checking to ensure the outlet pipe is freely operating and not causing erosion problems;
- a schedule for periodic cleaning of the facility (generally only required for tanks or troughs).

REFERENCES

Missouri Livestock Watering Systems Handbook, Missouri USDA Natural Resources Conservation Service.

Brigham, William and Stevenson, Craig, 1997, Wildlife Water Catchment Construction in Nevada, Technical Note 397.

Tsukamoto, George and Stiver, San Juan, 1990, Wildlife water Development, Proceedings of the Wildlife Water Development Symposium, Las Vegas, NV, USDI Bureau of Land Management.

Yoakum, J. and W.P. Dasmann. 1971. Habitat manipulation practices. Ch. 14 in Wildlife Management Techniques, Third Edition. Ed. Robert H. Giles, Jr. Pub. The Wildlife Society. 633 pp.

National Engineering Handbook, Part 650 Engineering Field Handbook, Chapters 5, 11 & 12, USDA Natural Resources Conservation Service.

National Range and Pasture Handbook, Chapter 6, Page 6-12, Table 6-7 & 6-8, USDA-Natural Resources Conservation Service.

National Research Council, 1996 Nutrient Requirements of Domestic Animals, National Academy Press.