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 will be designed and installed in compliance with all state and federal laws including water rights.

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. 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 the storage volume necessary to provide water between periods of replenishment. Storage tanks connected to watering facilities by gravity flow may be used to provide the needed capacity. This will include the storage volume necessary to carry over between periods of replenishment. The minimum storage capacity for tanks supplied by windmill pumps, other undependable sources, or tanks that are infrequently inspected shall be 4 days. Tanks with an adequate water supply that are frequently inspected shall have a minimum volume for 10% of the daily water requirement for all animals.

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. Troughs or tanks must provide access to the entire herd within a period of four to six hours, or less. Escape ramps for birds and small animals shall be installed on all tanks or troughs. Include design elements to meet the specific needs of the animals that are planned to use the watering facility, both livestock and wildlife.

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. The site shall be well drained, if not, drainage measures shall be provided.

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, freezing and ice damage.

Automatic water level control and/or overflow facilities shall be provided to maintain the water level at 2 inches below the top of the tank. Valves or pipes shall be protected by shields or covers to prevent damage by livestock. Overflow shall be piped to a stable or suitable point of release.

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 for the material being used or industry standards where NRCS standards do not exist.

Common construction materials are reinforced concrete, steel, fiberglass, rubber tires, and plastic. All designs shall meet the industry standards for the material being used. Generally applicable design requirements and procedures can be found in the documents referenced at the end of this standard.

Concrete components shall be constructed from a concrete mix producing a minimum compressive strength of 3,000 psi at 28 days. Concrete shall be a minimum of 4 inches thick and contain reinforcement as necessary to resist all anticipated loadings.

Galvanized steel tanks shall have a minimum thickness of 20 gauge.

Plastic and fiberglass structures shall be made of ultraviolet resistant materials or shall have a durable coating to protect the structure from deterioration due to sunlight.

Use the criteria in NRCS Conservation Practice Standard 516, Pipeline to design piping associated with the watering facility. All requirements of the Colorado Department of Public Health shall be met for tanks connected to domestic use systems. Double check valves or other measures prescribed in local plumbing codes shall be used at tank inlets when tanks are hooked into waterlines that have domestic users. Follow local health department regulations for types of valves needed and on the installation location of the valves.

Additional Criteria for Wildlife Watering Facilities

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.

Designs for watering facilities shall be according to the following principles: The distribution and spacing of facilities shall be based on topography; required travel distance to water; and the home range, territory size, and distribution of the target species. All habitat needs will be provided for the target species.

Design shall be sized to accommodate the expected and/or anticipated consumptive rates of target and non-target species. See Biology Technical Note #21 for specific recommendations.

The facility must provide accessible and dependable water of suitable quality during the critical period.

Design shall include appropriate safety features to minimize the hazards of the facility.

Watering facilities will be fenced to prevent damage by livestock where danger of damage exists.

CONSIDERATIONS

Design fences associated with the watering facilities to allow safe access and exit for area wildlife species. To protect 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.

Watering facilities often collect debris and algae and should be cleaned on a regular basis. Consider increasing the pipe sizes for inlets and outlets to reduce the chances of clogging. 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.

In addition to tanks or troughs covered by this standard, other types of wildlife watering facility developments are:

- Guzzlers and rain traps-typically plastic or fiberglass catchments with storage and drinking facilities. See Biology Technical Note # 21.
- Spring and seep development. Refer to Spring Development (574) standard.
- Float or vacuum valve controlled drinking basins. May be installed in new or existing facilities to address wildlife needs.
- Excavated or embankment ponds. Refer to Pond (378) standard.

Consider the effects of concentrated grazing, predation, hunting etc. on the target population and the ecosystem when planning wildlife watering facilities.

Consider adapting existing water sources for wildlife water.

Consider protecting wildlife watering facilities from non-target species including livestock. Refer to Livestock Exclusion (472).

Consider the effect of noxious weed or brush encroachment.

Consider the accessibility of the site for installation and maintenance.

Consider the esthetics of the installation. Troughs, tanks, or other structures should be located such that it does not detract from the natural viewscape.

In special situations, a permanent watering facility may be supplied by hauling water. Regular, dependable delivery must be stressed. Locating such facilities near an access road is advisable.

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
- 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;
- Check the outlet pipe to assure it is freely operating and not causing erosion problems;
- Facilities not designed to withstand or operate during freezing weather shall be winterized prior to winter conditions;
- Periodically monitor water quality to insure acceptable water quality is maintained;
- Flush or clean tanks and troughs as needed;
- Repair damaged tanks, collection aprons, pipes, and appurtenances;

- Remove accumulated debris and sediment as needed; and
- Clear or manage vegetation that obstructs wildlife access to water.

REFERENCES

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Concrete, ACI 318, American Concrete Institute

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