NATURAL RESOURCES CONSERVATION SERVICE

VIRGINIA 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

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. Refer to the National Range and Pasture Handbook for guidance on livestock water quantity and quality requirements. Virginia Engineering Design Note 614 – Watering Facility also provides information on livestock water requirements. For wildlife, base water quantity and quality requirements on targeted species needs.

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 will not be at risk of drowning.

Include design elements, such as storage reservoirs, 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 Virginia NRCS Conservation Practice Standard *Heavy Use Area Protection (Code 561)* 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.

Select a site that is well drained, where possible. If the site is not well drained, include drainage measures in the design.

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.

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.

Overflow pipes will be equipped with a trash rack.

Use the following minimum quality criteria in specifying materials:

Concrete	3000 psi compressive strength
Galvanized Steel	20 gauge thickness
Plastic	Ultraviolet resistance or durable coating to protect against sunlight
Fiberglass	Ultraviolet resistance or durable coating to protect against sunlight

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

Additional Criteria for Livestock Watering Ramps

Use the Virginia Conservation Practice Standard *Stream Crossing (Code 578)* for installation of livestock watering ramps except as noted below.

Width. The minimum width of the watering ramp shall be the width needed to accommodate the expected usage but shall not be less than 12 feet wide.

Length. The watering ramp shall extend into the water far enough that the animals will have access to the water during the driest times of the year.

Fencing. Areas adjacent to the watering ramp shall be permanently fenced or otherwise managed as needed to manage livestock access to the watering ramp. All fencing shall be designed and constructed in accordance with Virginia NRCS Conservation Practice Standard *Fence (Code 382)*. Electric fencing shall not be used immediately adjacent to the 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.

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 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.

PLANS AND SPECIFICATIONS

Plans and specifications for watering facilities shall provide the information necessary to install the facility.

Record all required information in an engineer field book, on a plan sheet or design computation sheet, or in another appropriate location.

DESIGN DATA

1. Completed Environmental Evaluation and subsequent requirements.

2. Soils investigation.
3. Survey and plot data: profile, cross-sections, as needed.
4. Design computations, including purpose of practice and references used.
5. Plan view of site with existing and planned features, including dimensions, distances, etc.
6. 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.
7. Standard Cover Sheet (VA-SO-100).
8. Materials and quantities needed. Identify borrow material and/or spoil area, as needed.
9. Vegetation and/or ground cover requirements.
10. Identification of needed Erosion & Sediment Control measures.
11. Supplemental practices required.
12. Virginia Conservation Practice Specifications (700 Series).
13. Operation and Maintenance Plan

CHECK DATA

1. As-built survey.
2. As-built plans including dimensions, types and quantities of materials installed, and variations from design. Include justification for variations.
3. Locations of appurtenant practices.
4. Adequacy of vegetation and/or ground cover.
5. Complete as-built section of Cover Sheet.

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 ensure 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.

REFERENCES

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

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.

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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.

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