

**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.

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.

PURPOSE

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

- Meet daily water requirements
- Improve animal distribution

Placement of watering facilities shall allow for livestock access around the entire facility where practical.

Design the watering facility to provide adequate access to the animals planned to use the facility.

CONDITIONS WHERE PRACTICE APPLIES

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

Incorporate escape features into the watering facility design where local knowledge and experience indicate that wildlife (e.g. birds, bats and other small animals) may be at risk of drowning. See Taylor & Tuttle, 2007, for designs of escape structures and/or IL standard drawing IL-ENG-88B.

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. Designs are to be based on 30 gallons/day/animal unit (Animal Unit = 1000 pounds live weight) for the number and species of animals to be supplied (20 gallons per day per animal unit for sheep). Include the storage volume necessary to provide water between periods of replenishment. Refer to the current version of the Illinois Pipeline Design Program for storage requirements, refill rates, trough sizes, distance to water, etc. For

Include design elements to meet the specific needs of the livestock and/or wildlife that are planned to use the watering facility.

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 Heavy Use Area Protection (Practice 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.

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 follow industry standards where NRCS standards do not exist.

Use the criteria in NRCS Conservation Practice Standard Pipeline (Practice Code 516) to design piping associated with the watering facility. Include anti-siphon valves, check valves, or backflow prevention devices on facilities connected to wells, domestic or municipal water systems as required.

Disturbed areas shall be vegetated according to a revegetation plan. Use NRCS Conservation Practice Standard Pasture and Hay Planting (Practice Code 512) or Conservation Cover (Practice Code 327) to design the revegetation plan unless the area is subject to frequent overflows or spillway protection is needed, then NRCS Conservation Practice Standard Critical Area Planting (Practice Code 342) will be used.

Where water supplies are dependable and livestock are checked daily, troughs with little water storage capacity may be used. Troughs or tanks must provide the daily water requirement of livestock and wildlife and provide access to the entire herd within a short period of time, refer to NRCS Conservation Practice Standard Pipeline (Practice Code 516).

Automatic water level control and/or overflow facilities shall be provided as appropriate. Valves or pipes shall be protected by shields or covers to prevent damage by livestock or wildlife. Overflow shall be piped to a stable or suitable point of release. The trough and outlet pipes shall be protected from freezing and ice damage or drained when not in use. Freeze-proof troughs or electric heaters may be used.

When a roof is placed over the trough to provide shade, the roof shall be designed for appropriate snow and wind loads and shall be durable to withstand anticipated livestock and wildlife activities, to meet design criteria in Conservation Practice Standard Waste Storage Facility (Practice Code 313).

Linear access for cattle will be based on 24 inches per head, while sheep and goats will be calculated on 12 inches per head. Where trough access is being calculated for horned cattle the linear access will be based on either: 1) the average width of the animal's horns from tip to tip times the number of livestock to drink at one time (ie. Longhorn cattle with 55 inch horn span X 3 = 165 inches / 3.14 = 52.5 inch diameter or 13.75 feet of facility access for 3 head) or 2) multiple smaller watering facilities with 30 feet between facilities and 360 degree access.

Additional Criteria for Wildlife Watering Facility

Wildlife watering facilities are generally simple earthen dugouts or dugout/embankment structures with low embankment heights (usually less than 3 feet). All earthen wildlife watering facilities will be designed according to the NRCS Conservation Practice Standard Pond (Practice Code 378). Additional protection with rock and concrete pads is usually not required. Additional criteria for dugout/embankment wildlife watering facilities include:

- Locate where livestock are not present. Wildlife watering facilities are not designed for livestock watering use.
- Locate at least one half mile apart or no closer than one half mile to an existing dependable quality water supply.
- The revegetation plan will specify seed mixtures that will not impede wildlife access or decrease habitat quality. Native plant materials will be used whenever possible to achieve the desired purpose.

- Maximum water depth will not exceed 6 feet. Watering facilities are not designed for fish habitat.
- Water surface area of at least 150 square feet.
- Water depth at design permanent pool level shall be at least 3 feet over half of the area.
- At least one slope must permit wildlife to enter and leave easily (6:1 or flatter slope).

Spring developments for wildlife watering facilities shall meet the requirements of Conservation Practice Standard Spring Development (Practice Code 574). The reliability and quantity of the 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. Providing large capacity storage to assure an adequate water supply when the intermittent spring stops flowing is advisable. Improvements for wildlife involving intermittent springs and seeps will contain a minimum storage 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 fencing should be made highly visible by avoiding the use of single wire fences and instead 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, 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 regulate 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. Carefully choose the location of watering facilities to minimize problems from steep topography.

PLANS AND SPECIFICATIONS

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

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

Refer to Construction Specification included in NRCS Conservation Practice Standard Pond (Practice Code 378) for all earthen wildlife watering facilities that have been designed according to Practice Code 378

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:

- create a monitoring schedule to ensure maintenance of adequate inflow and outflow;
- check for leaks and repair as necessary;
- if present, check the automatic water level device to ensure proper operation;
- check to ensure that adjacent areas are protected against erosion;
- if present, check to ensure the outlet pipe is freely operating and not causing erosion problems, and promptly repair any eroded areas;
- establish a schedule for periodic facility cleaning
- guidance for winter weather, such as adding material (items that float) in the storage area to allow for ice expansion without damage, draining the system, or heaters

Refer to Operation and Maintenance included in NRCS Conservation Practice Standard Pond (Practice Code 378) for all earthen wildlife watering facilities that have been designed according to Practice Code 378

REFERENCES

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

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

National Range and Pasture Handbook, Chapter 6, USDA-Natural Resources Conservation Service.

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

Taylor, Daniel A.R., Merlin D. Tuttle. 2007. Water for Wildlife a Handbook for Ranchers and Range Managers. Bat Conservation International

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.

Donald Pfost; James Gerrish, Maurice Davis, Mark Kennedy. 2000. Pumps and Watering Systems for Managed Beef Grazing.