

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**WATER HARVESTING CATCHMENT**

(No.)

CODE 636

**DEFINITION**

A facility for collecting and storing runoff from precipitation.

**PURPOSE**

Provide water for livestock, fish, wildlife, or other conservation purposes, by creating impervious areas to increase, collect, and store runoff.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies to resource conservation systems where there is a need for additional supply of water.

This practice applies to the sealing of the ground surface or the construction of elevated roof structures. It also applies to curbs and diversions constructed to collect and store runoff from existing impervious areas such as rock outcrops or existing pavement.

This practice does not apply to the collection and storage of runoff from existing roofed structures, which is addressed by NRCS Conservation Practice Standard, Roof Runoff Structure (558).

***Federal, State and Local Laws and Permits***

***Design and construction activities shall comply with all federal, state, and local laws, rules, and regulations governing activities in or along streams, pollution abatement, health, and safety.***

***The owner or operator shall be responsible for securing all required permits or approvals and for performing all planned work in accordance with such laws and regulations. NRCS employees are not to assume responsibility for procuring these permits, rights, or approvals, or for enforcing laws and regulations. NRCS may provide the landowner or operator with technical information needed to obtain the required rights or approvals to construct, operate, and maintain the practice.***

***Permits may be required from the following agencies:***

- 1. U.S. Army Corps of Engineers (USACE).***
- 2. WV Department of Natural Resources (WVDNR); Public Land Corporation (PLC); Stream Access Application***
- 3. West Virginia Department of Environmental Protection (WV DEP); Division of Water and Waste Management (DWWM)***
  - a. Dam Safety (Non-Coal)***
  - b. Stormwater Program***
- 4. WV Department of Agriculture (WVDA)***
- 5. US Fish and Wildlife Service (USFWS).***
- 6. WV Division of Forestry (WVDOF)***
- 7. Local, state and county ordinances***

***When applicable, proposed projects must comply with the West Virginia State Water Quality Standards including the Antidegradation Implementation Rule.***

**NRCS, NHCP  
September 2010**

**WV, NRCS  
September 2013**

<p>Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard contact your Natural Resources Conservation Service <a href="#">State Office</a>, or visit the <a href="#">Field Office Technical Guide</a>.</p>
--

**Work in or adjacent to “Waters of the US” may require a WV Public Land Corporation Application, a Nation Wide Permit or appropriate Individual Section 404 permit from the USCOE prior to implementation of the project.**

**Permits or licenses issued by a federal agency (such as the USACE) may require a WVDEP Section 401 Water Quality Certification to ensure that projects will not violate the state’s water quality standards or stream designated uses.**

**Work near waters where there is a present or possible presence of endangered or threatened species require notification and collaboration with the USFWS prior to implementation.**

**OBTAIN ALL REQUIRED PERMITS BEFORE STARTING CONSTRUCTION.**

## CRITERIA

Water harvesting catchments shall be designed according to the water requirements and conditions of the site, in accordance with the following:

- The contributing drainage area shall be large enough to yield the quantity and quality of runoff water required for the intended use.
- Aprons on the ground surface shall be smooth and impervious, to insure that adequate runoff occurs. Compacted earth, treated earth, wax, rubber, plastic, asphalt, concrete, steel, and other suitable materials are acceptable for this purpose.
- Undesired runoff shall be diverted from the catchment area to prevent damage, contamination, or excessive sedimentation.
- An overflow pipe or auxiliary spillway shall be installed to prevent damage to the surface apron from runoff in excess of that needed to maintain the design capacity of the conveyance system. A sediment trap shall be installed between the surface apron and the storage facility.
- The storage facility shall be of adequate size, impermeable, and durable to hold water for the intended purpose. Earthen basins, or tanks constructed of steel, concrete, plastic, wood, or similar

materials, are acceptable. Earthen reservoirs shall have a minimum 1 foot of freeboard above the design high water surface elevation **or according to Conservation Practice Standard (CPS) Pond (378) whichever is greater.** All storage facilities shall be protected from a minimum 10-year-frequency rainfall event. Overflow protection shall be provided for all storage facilities.

- Aprons on the ground surface and elevated roof structures shall be protected from damage by weather, animals, vandals, and traffic. Fencing shall be installed as necessary.
- **Evaluate the effects on the water budget, especially on localized rates and volumes of runoff.**
- **When the collected water is pumped to a catchment structure, shape the natural ground of the basin to prevent surface water from entering the structure.**
- **Locate the collection basin as close to the point of use, as possible.**
- **When the collected water is for an CPS Microirrigation Irrigation (441) or Livestock Watering Facility (614) document the planned captured volume verses the monthly use for the use duration and the supplemental water source.**
- **Adjust for volume allowances depending on system efficiency and delivery.**

## CONSIDERATIONS

Consider the effects the practice has on the quantity and quality of surface and ground water resources. Factors may include changes in evaporation, timing of releases from the catchment, and the impact of the type of catchment on surface water versus ground water resources.

Evaporation control measures may be needed to reduce water losses.

Consider covered storage basins or tanks, to preserve water quality of the harvested runoff.

Consider the installation of animal exclusion or escape devices to protect against the accidental drowning of wildlife.

Elevated roof structures or storage tanks may require additional design criteria to meet state or local building codes/permit requirements.

## PLANS AND SPECIFICATIONS

Plans and specifications for water harvesting catchments shall be in keeping with this standard and shall describe the requirements for installing the practice to achieve its intended purpose.

***Protect the water holding facility by marking the area, installing a fence or by other means.***

***Document the catchment site location, soil, water table height and necessary protection.***

### Tanks

***Include in documentation manufacture instructions for installation and maintenance of tank.***

***Document that the tank material is labeled for water use only.***

***Equip the catchment tank with a drain to permit cleaning and draining.***

***Refer to CPS Watering Facilities (614) for additional information on tanks.***

***Include in documentation manufacture instructions' specification, installation instructions and tank maintenance requirements.***

### **Above Ground**

- ***Protect above ground tanks from ultraviolet light by selecting a black or dark color to prevent light penetration or paint the tank.***
- ***Place tank on a concrete base with the sides extending a minimum of one foot past the tank. The concrete base is a minimum 4" thick concrete (4000 psi) with 6" x 6"-8 gauge x 8 gauge (W2.1 x W2.1) wire reinforcement placed on a minimum of 3" - #8 gravel base.***
- ***Bolt and/or tie the tank down to prevent movement due to wind or accidental***

***contact and as recommended by manufacture.***

### **Below Ground Tanks**

- ***Water storage tanks that are buried must be designed for burial depth (ribs, etc.) and be constructed of concrete or commercial grade polyethylene HDLPE which is labeled for water storage.***
- ***Do not bury tanks in soils with a high water table. If the water table depth is greater than 12 inches but less than one foot below the bottom of the buried tank. Calculate for buoyancy and design accordingly.***
- ***Equip the basin with a manhole to permit entrance for cleaning purposes. Tightly fit the manhole cover to prevent dust, light, water or animals from entering.***
- ***Equip the structure with a minimum 1-1/4 inch drainpipe and valve system which is designed to withstand the loading requirement for the site selected.***
- ***Place buried tanks on a minimum of 4" sand or pea gravel on firm, well drained and compacted foundation.***

### **Materials**

***Select watertight construction materials such as reinforced concrete steel, masonry coated with a water-repellent compound, polytanks (designed to store potable water not wastewater).***

## OPERATION AND MAINTENANCE

An O&M plan specific to the type of installed water harvesting catchment shall be provided to the landowner. The plan shall include, but not be limited to, the following provisions:

- Inspecting and testing valves, pumps, or other appurtenances.
- Maintaining protection from erosion at outlets.
- Inspecting for and removing debris, minerals, algae, and other materials that may restrict system flow.
- Draining or providing for cold weather operation of the system.

- Controlling vegetation, wildlife, rodents, or burrowing animals from damaging apron.
- Maintaining all fences to prevent unauthorized human or livestock access.
- Inspecting the catchment area for signs of ultraviolet degradation of flexible materials.
- Repair any facility damage promptly to prevent loss of water.

#### REFERENCES

USDA-ARS, Agriculture Handbook No. 600, Handbook of Water Harvesting.

***Title 210 National Engineering Handbook (NEH)***

- ***Part 642-Specifications for Construction Contracts or WV"700" Series or other material as appropriate.***  
<http://policy.nrcs.usda.gov>
- ***Part 650-Engineering Field Handbook***

#### ***WV NRCS Conservation Practices***

- ***Critical Area Planting (342)***
- ***Pumping Plant for Water Control (533)***
- ***Pipeline (516)***