

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**PUMPED WELL DRAIN**

(No.)  
CODE 532

**DEFINITION**

A well sunk into an aquifer from which water is pumped to lower the prevailing water table.

**PURPOSE**

To provide subsurface drainage by lowering the prevailing water table to a level that will provide minimum benefits to crop or soils by removing excess ground water and/or salts from the soil profile.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies to areas that have a high water table and are in need of subsurface drainage, where pumping from wells is feasible. This requires a permeable aquifer at a depth and of such thickness and magnitude that, when pumped, will lower the water table to the desired degree.

An adequate outlet for the pumped drain water, considering its quantity and quality, must be available.

**CRITERIA**

**Quantity of water.** The amount of ground water to be pumped from the well or wells shall be that required to provide the desired drawdown in the area being drained.

**Multiple well drains.** If more than one well is used in the system, the coned of depression developed by each shall overlap to such an extent that the points of least drawdown will be at the desired level after drainage.

**Depth and diameter.** The well depth and diameter shall be of such that the amount of water that can be drawn from the aquifer is sufficient to maintain the desired drawdown throughout the crop-growing season. Gravel envelopes may be used in conjunction with

screens to serve as a filter and to increase the effective diameter of the well.

**Casing.** All wells shall be cased with steel, concrete, plastic, asbestos-cement, or other material of adequate strength and durability. The casing shall have a diameter that is adequate to accommodate the required pumping equipment.

**Screens.** All wells shall be equipped with manufactured screen sections, well points, shop-perforated metal casing sections, or field-perforated sections meeting the criteria stated below.

The screen openings for aquifer material of near uniform size shall be slightly smaller than the average diameter of the aquifer material. For graded aquifer materials (of non-uniform gradation), the screen openings shall be of such that 25 to 40 percent of the aquifer material is larger than the screen opening.

A sufficient length of screen shall be provided to maintain the entrance velocity of water into the well at an acceptable level, preferably less than 1/10 ft/s.

The position of the screen in the well shall be governed by the depth of the aquifer below the ground surface and the thickness of the aquifer to be penetrated by the well.

**Quality of water.** If the water from the well drain is to be used for human consumption, it shall meet all requirements of the state health department or other state agencies having jurisdiction. If the water has a high salt content or is not potable, means of disposal shall be planned and installed concurrently with the installation of the well, which will not adversely affect potable water sources and the environment.

## **CONSIDERATIONS**

### **Water Quantity**

1. Effects of the cone of depression on adjacent water uses and users.
2. Downstream effects of the pumped water.

### **Water Quality**

1. Effects of the quality of pumped water on the surrounding environment, water uses, or water users.
2. Effects of well pumping on soil and water salinity.
3. Effects of discharges of pumped water on downstream water temperatures.

4. Temporary and long-term effects on the visual quality of downstream waters.

## **PLANS AND SPECIFICATIONS**

Plans and specifications for constructing well drains shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

## **OPERATION AND MAINTENANCE**

An operation and maintenance plan must be prepared for use by the owner or others responsible for operating the system. The plan should provide specific instructions for operating and maintaining the system to insure that it functions properly. The plan should also provide for periodic inspections and prompt repair of eroded or damaged areas.