

**NATURAL RESOURCES CONSERVATION SERVICE  
MONTANA CONSERVATION PRACTICE STANDARD**

## **CONTROLLING EXISTING FLOWING WELLS (NUMBER)**

### **CODE 800**

#### **DEFINITION**

The capping and control of existing flowing wells at the wellhead.

#### **PURPOSES**

This practice may be applied as part of a resource management system to support one or more of the following purposes:

- Prevent loss of groundwater under artesian flow at a wellhead
- Provide sanitary protection of the groundwater supply from surface or near-surface contamination sources
- Preserve hydraulic characteristics of the aquifer and provide a seal against loss of artesian pressure
- Increase the life of the well casing by protecting it from corrosion in areas of acid soils or where other corrosive conditions exist
- Provide structural support for casing when neat cement is used to grout plastic well casing.

#### **CONDITIONS WHERE PRACTICE APPLIES**

This practice applies to any existing drilled, cored, bored, washed, dug, jetted or otherwise constructed vertical water well that withdraws water from one or more fresh water aquifers or zones that flow to the surface, produce water of a quality suitable for livestock and wildlife, and which have uncontrolled water discharges.

The practice applies to capping and controlling an existing flowing well at the wellhead.

This practice requires a completed flowing well assessment by the Montana Bureau of Mines and Geology (MBMG).

This practice does not apply to wells used for waste disposal or any other type of underground injection.

This practice standard does not apply to the decommissioning of water wells. See NRCS conservation practice standard, Water Well Decommissioning, Code 351.

#### **CRITERIA**

The following criteria apply to all purposes of this standard.

Planned work shall comply with all Federal, State, and local laws and regulations.

**Data review.** Collect and review all available data related to the well, including as-built construction and maintenance records (e.g., driller's log, geophysical logs, latest specific capacity test, materials schedule, length, and diameter of casing, total well depth, type of liners and screens, and related information).

Identify the condition of the well casing and annulus to the extent possible, to determine whether replacement, repair, decommissioning, or a new well is needed. Determining the condition of the well may require use of a down-the-hole camera and/or geophysical logging methods. The well must be structurally sound as failure to insure that the casing and annulus seal is adequate may lead to greater problems than the existing condition.

To the extent possible, recommendations in the MBMG assessment shall be implemented.

**Wellhead capping and control of existing flowing wells.** Conduct water quality and quantity tests to determine whether the water has potential for agricultural use or uses. If there is potential serviceability, install a watertight and frost proof control valve at the top of the well. If the water has no foreseeable practical use, decommission the

**NRCS, MT  
September 2014**

**Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard contact the Natural Resources Conservation Service.**

**NOTE:** This type of font (**AaBbCcDdEe 123..**) indicates NRCS National Standards.  
This type of font (**AaBbCcDdEe 123..**) indicates Montana Supplement.

well according to CPS Water Well Decommissioning, Code 351.

**Wellhead Design.** Wellhead design must be able to contain the pressure developed by the aquifer at the surface. The wellhead must be able to shut off the total flow of the well when the water is not being used. The wellhead must not be subject to frost damage when the flow is shut off. The wellhead must be able to produce the available water supply when being used. The wellhead design must be able to accommodate any flammable, toxic, or asphyxiating gas that may be produced by the aquifer. The wellhead must be protected from damage by animals and vehicles.

**Casing Replacement.** If existing well casing is no longer serviceable and its condition may contaminate the aquifer, or if the casing is not deep enough, install new casing. Remove the existing casing, if possible. If the casing cannot be removed, install new casing inside the existing casing and seal the void between the two. If the casing is not serviceable and cannot be repaired or replaced, then decommission the well according to CPS Water Well Decommissioning, Code 351.

**Sealing materials.** Ensure that the hydraulic conductivity of all materials used for sealing any portion of the well is equal to or less than that of the lowest hydraulic conductivity of geologic materials of zones identified for sealing. Properties of sealing materials must conform to characteristics listed in ASTM D5299, Part 6.3 Plugging Materials.

**Placement of sealing materials.** For wells greater than or equal to 30 inches in diameter, place backfill in a manner that minimizes segregation or bulking to prevent surface subsidence and leakage. Use an emplacement method that does not allow bridging or segregation during emplacement of the sealing material.

**Protection.** Vegetate all disturbed areas surrounding the wellhead according to NRCS conservation practice standard Critical Area Planting, Code 342. Grade the ground near the wellhead to divert surface waters and runoff away from the wellhead. Fence the immediate area around wellhead to protect wellhead from damage and contamination.

## CONSIDERATIONS

This practice may be part of a groundwater protection system that includes water quality management practices.

Consider the costs of rehabilitating the existing flowing well against the costs of decommissioning the existing well and drilling a new well designed to perform the same purpose.

To the extent practicable, rehabilitate the well in a manner that does not impair the current land use near the well or the installation of future land management practices.

Consider all relevant geological, biological, physical and climatic conditions of the soil, rock, groundwater and topography in determining the best methods to control the discharge of the existing flowing well.

Review and consider the well's construction records when developing the defensive design measures, including the selection of wellhead design, sealing materials, and emplacement methods, and the possible use of geophysical testing for this practice.

## PLANS AND SPECIFICATIONS

All work performed on an existing flowing well must be done by a Water Well Contractor licensed by the State of Montana.

Ensure plans and specifications describe requirements for applying the practice to achieve its intended purpose(s). If not already specified in state required documentation, ensure the following information is recorded in the installation record:

- Location of water well by Global Positioning System (GPS) coordinates or in a sufficiently detailed narrative that enables ready location of the well
- Name and address of well owner
- Name, title, and address of person responsible for the water well design
- Name, and address of water well contractor responsible for the installation of the work
- Length and inside diameter of all casing and screen set including gage (slot size) of casing screen
- Type of casing material or schedule, and whether new or used
- Packer type and depth(s), if used
- Static water level measured from top edge of casing above ground surface
- Note flow rate and pressure

- Provide type of capping materials or valve used to control artesian flow at the wellhead
- Results of pumping test including length of test, stability of water level, pumping rate, and specific capacity after water level is stable, or results of constant draw down test
- Driller's log
- If water quality tests were performed, record the parameters tested, test results, and date of sampling, name of person who took sample, and name of laboratory that conducted testing.

NRCS Conservation Practice Standards:  
 Critical Area Planting, Code 342  
 Water Well, Code 642  
 Water Well Decommissioning, Code 351.

NRCS Technical Note MT-15, Design  
 Considerations for Wells Producing Gas in Montana

## OPERATION AND MAINTENANCE

Prepare a plan for operation and maintenance of the water well and improvements installed. The owner is responsible for keeping and maintaining well construction records with the maintenance plan. The owner must ensure periodic inspection of the well is properly functioning and producing acceptable water quality. The inspection must include conditions that affect well performance as designed for the water use. As a minimum, these conditions include:

- declines in discharge, static piezometric surface (well head pressure), and maximum pumping level, that are outside of acceptable limits for proper functioning
- Appearance of sediment that may damage the well, pump, or appurtenances
- Changes in water quality including odor, color, taste, and chemistry
- Presence of algae or iron bacteria
- Evidence of leaking casing or valves or other damage to the well.

Include in the maintenance plan statements describing identified problems, corrective action taken and date, and specific capacity of well before and after corrective action was taken. The owner must remedy unacceptable well construction conditions in a timely manner.

## REFERENCES

ASTM D5299, Standard Guide for Decommissioning of Groundwater Wells, Vadose Zone Monitoring Devices, Boreholes, and other Devices for Environmental Activities.