

1 WATER RESOURCES DEPARTMENT

2  
3 DIVISION 220

4  
5 ABANDONMENT OF WELLS

6  
7  
8 690-220-0005

9  
10 Temporary Abandonment

11  
12 Any water supply well to be temporarily removed from service, temporarily abandoned due to a  
13 recess in construction, or temporarily abandoned before commencing service, shall be capped  
14 with a watertight seal, watertight welded steel cap, or threaded cap. In the event that temporary  
15 abandonment is to be of 90 days or less, the temporary steel cap may be welded to the well  
16 casing with a minimum of four separate welds, evenly spaced, each at least 1/2 of an inch in  
17 length. Steel or cast iron caps shall be at least 3/16 of an inch in thickness. Access ports and  
18 airlines, as described in OAR 690-210-0280, shall be maintained during the temporary  
19 abandonment. During the temporary abandonment, the well must be maintained to the standards  
20 prescribed in OAR 690-215.

21  
22 Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795

23 Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795

24 Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86,  
25 ef. 11-1-86, Renumbered from 690-063-0005; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD  
26 7-2001, f. & cert. ef. 11-15-01

27  
28 690-220-0030

29  
30 Permanent Abandonment

31  
32 (1) Any water supply well that is to be permanently abandoned shall be completely filled in such  
33 a manner that vertical movement of water within the well bore, including vertical movement of  
34 water within the annular space surrounding the well casing, is effectively and permanently  
35 prevented. If a dry or non-producing water supply well is to be permanently abandoned, it shall  
36 be abandoned in accordance with these standards. Unless otherwise stated in these rules, all  
37 permanent water supply well abandonments shall be performed by a licensed Water Supply Well  
38 Constructor.

39  
40 (2) The abandonment procedure shall be recorded on a form provided by or previously approved

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Final Proposed Rules

1 in writing by the Department. The form shall include, as a minimum, all the requirements as  
2 listed in OAR 690-205-0210[0080\_(7)], plus:

3  
4 (a) Method of abandonment;

5  
6 (b) If assigned, the well identification tag number, original start card number, and owner's well  
7 number of the abandoned well.

8  
9 (3) When a well that has a well identification tag on it is permanently abandoned, the well  
10 identification tag shall be destroyed. The well identification tag shall not be reused.

11  
12 Stat. Auth.: ORS 536.090 & 537.505 - 537.795

13 Stats. Implemented: ORS 536.090 & 537.505 - 537.795

14 Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86,  
15 ef. 11-1-86, Renumbered from 690-063-0010; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD  
16 7-2001, f. & cert. ef. 11-15-01; WRD 2-2006, f. & cert. ef. 6-20-06

17  
18 690-220-0035

19  
20 Abandonment of an Existing Water Well After Replacement

21  
22 A landowner who replaces an old well by drilling a new well shall permanently abandon the old  
23 well if the old well is within a setback as defined in OAR 690-210-0030. Permanent  
24 abandonment of a well located within a setback shall occur within one year after the function of  
25 the well is replaced or within one year after the water right, if applicable, is transferred to the  
26 new well, whichever is later.

27  
28 Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795

29 Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795

30 Hist.: WRD 7-2001, f. & cert. ef. 11-15-01

31  
32 **690-220-0040**

33  
34 **Abandonment of Cased Wells**

35  
36 **(1) If all or a portion of the water supply well casing or the liner pipe is not removed**  
37 **during the abandonment of a well, the remaining casing or liner shall be thoroughly**  
38 **ripped or perforated. The number and size of perforations may vary, however, the**  
39 **perforations must be sufficient enough to allow grout to migrate outside the casing and**  
40 **effectively prevent the vertical movement of water. The annular space between the**

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casing or liner and the drillhole wall shall be effectively and completely filled with cement grout applied under pressure.

(2) Perforations are not required in the sealed interval provided proof of the original seal can be verified with the original well report. The verified seal interval shall be filled with cement grout, concrete or unhydrated bentonite.

(3) Uncased portions of a cased well to be abandoned shall be filled in accordance with OAR 690-220-0030 through 690-220-0050.

(4) The well casing to be abandoned [~~shaft~~] may be severed below land surface and removed. (See Figure 220-3.)

[ED. NOTE: Figures referenced in this rule are available from the agency.]

Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795

Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79, Renumbered from 690-063-0013; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

690-220-0050[40]

Abandonment of Uncased Wells [*in Unconsolidated Formations*]

(1) Uncased portions of water supply wells to be permanently abandoned [*that extend only into unconsolidated materials*] shall be completely filled with cement grout [or], concrete or unhydrated bentonite: [*This class of water supply wells may be abandoned using unhydrated bentonite with special standard approval.*] (See Figure 220-1.) (See Figure 220-1)(See Figure 220-2)

(2) Uncased portions of water supply wells that penetrate a water-bearing formation may be abandoned with alternating layers of cement grout, concrete or unhydrated bentonite and clean gravel throughout the water-bearing zones in the following manner:

(a) In all cases, non water-bearing zones shall be filled with cement grout, concrete or unhydrated bentonite.

(b) Clean gravel may only be placed in the water-bearing zones verified by an original water supply well report or other documentation acceptable to the Department. A vertical column of gravel that exceeds a total length of 50 feet shall only be placed with prior

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**Department approval. Non water-bearing portions shall be filled with a plug of cement grout, concrete or unhydrated bentonite. Gravel shall not exceed a maximum of 50% of well depth without prior Department approval. Gravel may be placed in multiple water-bearing zones, not to exceed 50 feet for each zone. In no case shall gravel be placed above 18 feet below land surface.**

[ED. NOTE: Figures referenced in this rule are available from the agency.]

Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795

Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79, Renumbered from 690-063-0011; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01

[690-220-0050

*Abandonment of Uncased Wells in Consolidated Formations*

*Uncased water supply wells to be abandoned that penetrate a water-bearing rock formation shall be filled with concrete or cement grout, or with alternating layers of cement grout or concrete and clean gravel throughout the water-producing horizon. A concrete or cement grout plug shall be constructed from the top of the rock formation to a depth of at least 20 feet below the top of the rock formation. The remainder of the well above the rock formation shall be filled to land surface with cement grout or concrete. Plugs of cement grout, or concrete, at least three feet in length, shall be placed in non-producing zones between all water-bearing zones. In all cases, a cement grout or concrete plug, at least three feet in length, shall be constructed in a non-producing stratum immediately above the uppermost water-bearing zone. This class of water supply wells may be abandoned using unhydrated bentonite with special standard approval. (See Figure 220-2.)*

[ED. NOTE: Figures referenced in this rule are available from the agency.]

Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795

Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79, Renumbered from 690-063-0012; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01]

[690-220-0060

*Abandonment of Cased Wells*

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1  
2 *If the water supply well casing or the liner pipe is not removed during the abandonment of a*  
3 *well, the casing or liner shall be thoroughly ripped or perforated. The number and size of*  
4 *perforations may vary. However, the perforations must be sufficient enough to allow grout to*  
5 *migrate outside the casing and effectively prevent the vertical movement of water. Perforations*  
6 *are not required in the sealed interval provided proof of the original seal can be verified with the*  
7 *original well report. The annular space between the casing or liner and the drillhole wall shall*  
8 *be effectively and completely filled with cement grout applied under pressure. The remainder of*  
9 *the well shall be filled with cement grout or concrete. Uncased horizons in a cased well to be*  
10 *abandoned shall be filled in accordance with OAR 690-220-0030 through 690-220-0050. The*  
11 *well casing to be abandoned may be severed below land surface and removed. (See Figure 220-*  
12 *3.)*

13  
14 *[ED. NOTE: Figures referenced in this rule are available from the agency.]*

15  
16 *Stat. Auth.: ORS 536.090 & ORS 537.505 - ORS 537.795*  
17 *Stats. Implemented: ORS 536.090 & ORS 537.505 - ORS 537.795*  
18 *Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79, Renumbered from 690-063-*  
19 *0013; WRD 8-1993, f. 12-14-93, cert. ef. 1-1-94; WRD 7-2001, f. & cert. ef. 11-15-01]*

20  
21 690-220-0070

22  
23 Abandonment of Artesian Wells

24  
25 In addition to OAR 690-220-00[60]**40** **and 690-220-0050**, the flow of artesian water supply  
26 wells to be abandoned shall be confined or restricted by cement grout applied under pressure, or  
27 by the use of a suitable well packer, or a wooden plug placed at the bottom of the confining  
28 formation immediately above the artesian water-bearing zone. Cement grout or concrete shall be  
29 used to effectively fill the well to land surface. (See Figure 220-4, 1986.)

30  
31 *[ED. NOTE: Figures referenced in this rule are available from the agency.]*

32  
33 *Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540*  
34 *Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540*  
35 *Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79,; WRD 13-1986, f. 10-7-*  
36 *86, ef. 11-1-86, Renumbered from 690-063-0015; WRD 7-2001, f. & cert. ef. 11-15-01*

37  
38 690-220-0080

39  
40 Abandonment of Driven and Jetted Wells

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1  
2 Provided **an** annular seal meeting the requirements of OAR 690-210-0180 can be confirmed, a  
3 cement grout plug shall be placed by grout pipe opposite all perforations or openings in the water  
4 supply well casing. The remainder of the well shall be filled with cement grout. If no annular  
5 seal can be confirmed, the well shall be abandoned by removing the casing and filling the  
6 borehole with **cement grout***[an approved sealant]* (see OAR 690-220-0120).

7  
8 Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540  
9 Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540  
10 Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86,  
11 ef. 11-1-86, Renumbered from 690-063-0020; WRD 7-1988, f. & cert. ef. 6-29-88; WRD 7-  
12 2001, f. & cert. ef. 11-15-01

13  
14 690-220-0090

15  
16 Abandonment of Filter or Gravel Pack Wells

17  
18 Filter or gravel pack water supply wells may only be abandoned under a special standard. Any  
19 method of abandonment proposed must ensure that all perforated sections of the casing will be  
20 pressure grouted throughout, and that the remainder of the well is filled with cement grout. (See  
21 definition of pressure grout in OAR 690-200)

22  
23 Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540  
24 Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540  
25 Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86,  
26 ef. 11-1-86, Renumbered from 690-063-0016 & 690-063-0025; WRD 7-2001, f. & cert. ef. 11-  
27 15-01

28  
29 690-220-0095

30  
31 Abandonment of Dug Wells

32  
33 (1) Abandonment of a dug water supply well shall be approved by the Department before work  
34 is started. The Department shall be notified of the proposed abandonment. The notification shall  
35 include:

36  
37 (a) Location;

38  
39 (b) Name of the owner;

40  
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- 1 (c) Well diameter;
- 2
- 3 (d) Well depth;
- 4
- 5 (e) Depth to water;
- 6
- 7 (f) Type of well casing or liner material if any; and
- 8
- 9 (g) The proposed method of abandonment.

10

11 (2) A method to be used in the abandonment will be approved by the Department if the method  
 12 will adequately protect the ground water resource. Dug wells penetrating more than one water  
 13 bearing zone shall be abandoned in a manner to eliminate the possibility of leakage from one  
 14 water bearing zone to another.

15

16 (3) The well shall be abandoned by a licensed Water Supply Well Constructor, a landowner with  
 17 a landowner well construction permit and bond, or by a landowner in the presence of the  
 18 watermaster or other Department representative.

19

20 Stat. Auth.: ORS 183, 536, 537 & 540

21 Stats. Implemented: ORS 183, 536, 537 & 540

22 Hist.: WRD 7-1988, f. & cert. ef. 6-29-88; WRD 7-2001, f. & cert. ef. 11-15-01; WRD 2-2006, f.  
 23 & cert. ef. 6-20-06

24

25 690-220-0100

26

27 Obstructions and Possible Contaminants

28

29 All obstructions or debris which may interfere with effective sealing operations shall be removed  
 30 from the water supply well to be abandoned. Any foreign matter capable of causing ground  
 31 water contamination shall be removed prior to placing any sealing material.

32

33 Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540

34 Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540

35 Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86,  
 36 ef. 11-1-86, Renumbered from 690-063-0026; WRD 7-2001, f. & cert. ef. 11-15-01

37

38 690-220-0110

39

40 Removal of Well Casing During Abandonment

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If the casing of a water supply well is removed during abandonment, the well shall be plugged and sealed in accordance with OAR 690-220-0030 through 690-220-0050 and shall be filled with sealing materials as the casing is removed.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540

Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-063-0021; WRD 7-2001, f. & cert. ef. 11-15-01

**690-220-0115**

**Unhydrated Bentonite and Method of Placement**

**(1) When abandoning a pre-existing well with unhydrated bentonite the Water Supply Well Constructor shall provide additional notification to ~~notify~~ the Regional Well Inspector or the Well Construction Program Coordinator in Salem by fax, e-mail or telephone 72 hours prior to starting abandonment work. The additional notice referenced under this section ~~(1) of this rule~~ shall be effective January 1, 2009, through December 31, 2013.**

**(a) In case of an emergency, the additional notification is not required; however, the Water Supply Well Constructor shall notify the Department prior to beginning abandonment work as required in OAR 690-205-0200.**

**~~(b)~~ ~~(a)~~ The Department will review this provision prior to December 31, 2013, to evaluate the effectiveness of unhydrated bentonite in the abandonment of water supply wells.**

**(2) Unhydrated bentonite used in the abandonment of water supply wells shall meet the following requirements:**

**(a) Specifically designed for use in water supply wells; and**

**(b) Within industry tolerance for dry western sodium bentonite; and**

**(c) Free of polymers that promote bacterial growth; and**

**(d) Manufactured to be 3/8-inch or 3/4-inch; and**

**(e) National Sanitation Foundation (NSF) approved or have a swell index greater than 15**

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1 milliliters (ml) per 2 grams (gm).

2  
3 (3) Powdered bentonite, bentonite grout or bentonite slurry shall not be used to abandon  
4 water supply wells.

5  
6 (4) Unhydrated bentonite shall only be used to abandon water supply wells when in contact  
7 with water having less than 800 parts per million (ppm) total dissolved solids (TDS).

8 (a) Unhydrated bentonite may be used to abandon water supply wells exceeding 800  
9 ppm TDS if the bentonite manufacturer provides documentation that their product can be  
10 used in water that exceeds 800 ppm TDS.

11 (1) Prior Department approval is required before placement.

12 (2) The bentonite manufacturer's documentation and Department approval  
13 shall be submitted with the Water Supply Well Report as required in OAR 690-205-  
14 0210.

15 (b) In all cases, the TDS shall be reported on the Water Supply Well Report as  
16 required in OAR 690-205-0210.

17  
18 (5) Water supply wells with casing that is at least four inches in diameter and less than  
19 eight inches in diameter may be abandoned with unhydrated bentonite to a maximum well  
20 depth of 700 feet, if being placed through water. Unhydrated bentonite may be used deeper  
21 with prior Department approval.

22  
23 (6) Water supply wells with casing that is at least four inches in diameter and less than  
24 eight inches in diameter may be abandoned with unhydrated bentonite to a maximum well  
25 depth of 1000 feet, if being placed through air. Unhydrated bentonite may be used deeper  
26 with prior Department approval.

27  
28 (7) Water supply wells with casing that is at least eight inches in diameter may be  
29 abandoned with unhydrated bentonite to a maximum well depth of 1200 feet, if being  
30 placed through water. Unhydrated bentonite may be used deeper with prior Department  
31 approval.

32  
33 (8) Water supply wells with casing that is at least eight inches in diameter may be  
34 abandoned with unhydrated bentonite to a maximum well depth of 1500 feet, if being  
35 placed through air. Unhydrated bentonite may be used deeper with prior Department  
36 approval.

37  
38 (9) Unhydrated bentonite shall be screened across a minimum 1/4-inch mesh screen during  
39 placement to minimize the introduction of bentonite dust into the sealing interval. The  
40 resulting seal shall be free of voids or bridges.

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**(10) A sounding or tamping tool shall be used in the sealing interval during placement to measure the fill rate and to break up possible bridges or cake formations.**

**(11) Unhydrated bentonite shall be poured at the manufacturers recommended rate in the water-filled portion of the drillhole and shall not be less than two minutes per 50 pound sack.**

**(12) In a dry sealing interval, (above the water level), bentonite shall be hydrated from land surface to a minimum depth of 50 feet below land surface. U/~~u~~/nhydrated bentonite shall be hydrated with potable water in maximum ten foot lifts to ensure activation. [Hydration shall be limited to a maximum depth of 50 feet below land surface.]**

**(13) The estimated and actual volume of sealing material used shall be calculated and reported on the Water Supply Well Report as required by OAR 690-205-0210.**

690-220-0120

Cement Grout

Cement grout for use in abandonment operations shall conform to the requirements of OAR 690-210-0310.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540

Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78; ef. 1-1-79, Renumbered from 690-63-031 by WRD 13-1986, f. 10-7-86, ef. 11-1-86

690-220-0130

Concrete

Concrete for use in abandonment operations shall conform to the requirements of OAR 690-210-0315.

Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540

Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540

Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79,; WRD 13-1986, f. 10-7-86, ef. 11-1-86, Renumbered from 690-063-0035; WRD 7-2001, f. & cert. ef. 11-15-01

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**Final Proposed Rules**

1 690-220-0140

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3 Method of Placement of Concrete or Cement Grout

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5 Concrete or cement grout used as a sealing material in abandonment operations shall be  
6 introduced at the bottom of the well or required sealing interval and placed progressively upward  
7 to the top of the well. All such sealing materials shall be placed by the use of a grout pipe or by  
8 dump bailer in order to avoid segregation or dilution of the sealing materials.

9

10 Stat. Auth.: ORS 183, ORS 536, ORS 537 & ORS 540

11 Stats. Implemented: ORS 183, ORS 536, ORS 537 & ORS 540

12 Hist.: WRD 3, f. & ef. 2-18-77; WRD 9-1978, f. 12-12-78, ef. 1-1-79,; WRD 13-1986, f. 10-7-

13 86, ef. 11-1-86, Renumbered from 690-063-0040 by WRD; WRD 7-2001, f. & cert. ef. 11-15-01

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