

Plugging Abandoned Wells

FACT SHEET - Well Driller/Pump Contractor



Water Well Abandonment and Plugging Rules And Regulations

The OWRB sets minimum well construction standards and licenses drillers of water wells, observation wells, water well test holes, monitoring wells, heat pump wells and geotechnical borings. The OWRB licenses water well pump installers, regulates the plugging and sealing of abandoned wells and requires exact steps in filling, sealing and capping these structures when they are removed from use.

The Rules and Regulations concerning well plugging are laws of the state, and they are set out to protect Oklahoma's fresh groundwater basins from pollution and waste and safeguard its citizens from accidents. Old wells, no matter how small or remote, offer the potential for injury - even death - to animals and humans, especially small children. These open holes, often hidden by overgrown weeds and brush, can be dangerous traps.

Pollution of a family well or the well that supplies water to a community has enormous potential for harm. Debris, small animals and runoff waters polluted with chemicals and other substances that enter the groundwater basin through open holes can spoil a water supply and make it unsafe for drinking for years.

The well driller is responsible for plugging the abandoned well or test hole if the well drilling equipment is on the drilling site. If a well is abandoned after the well drilling equipment has been removed from the drilling site, the owner of the land where the well or test hole is located is responsible for plugging.



Well Plugging Procedures

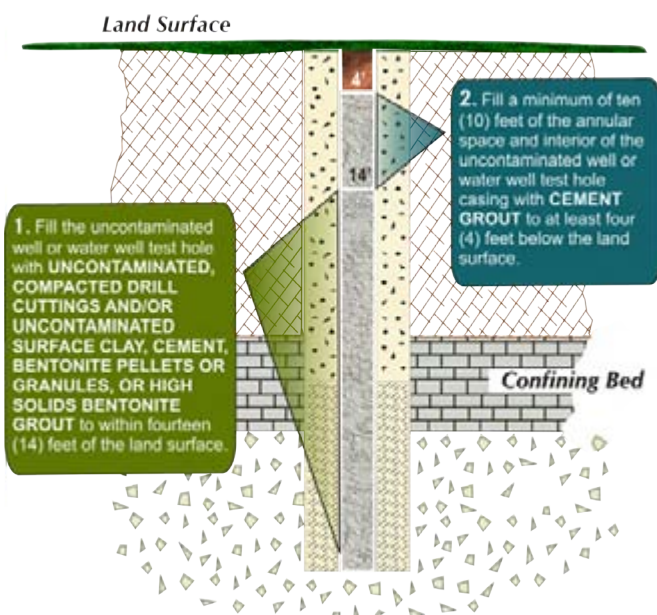
Water Wells and Water Well Test Holes

Uncontaminated

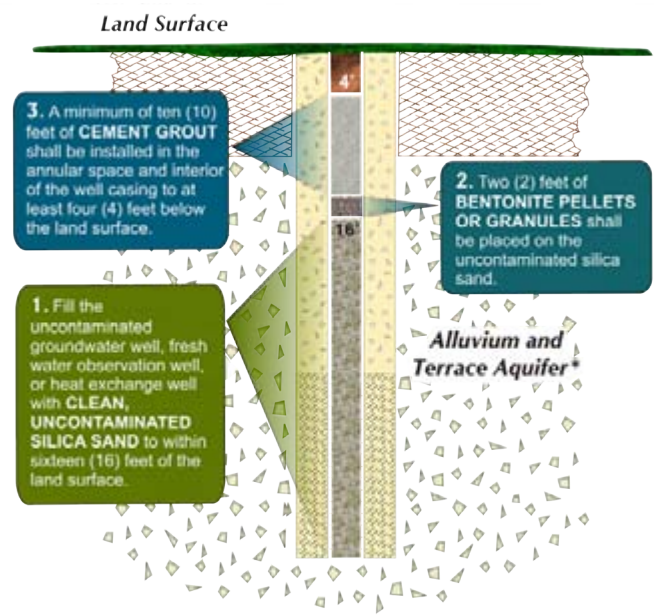
Fill uncontaminated wells or water well test holes with uncontaminated, compacted drill cuttings and/or uncontaminated surface clay, cement, bentonite pellets or granules, or high solids bentonite grout to within fourteen (14) feet of the land surface, and a minimum of ten (10) feet of the annular space and interior of the well casing shall be filled with cement grout to at least four (4) feet below the land surface. On

ordinary uncontaminated wells and test holes, fill the final four feet with clean, compacted native soil to prevent surface water and poor quality water from flowing down the well casing.

To plug uncontaminated groundwater wells, fresh water observation wells, or heat exchange wells in the alluvium and terrace deposits of the Arkansas, Cimarron, Salt Fork of the Arkansas, North Canadian, Canadian, Washita, North Fork of the Red, Salt Fork of the Red River, Red River, and other streams or rivers authorized by the Board, fill the well with clean, uncontaminated silica sand to within sixteen (16) feet of



Uncontaminated water well or water well test hole plugging procedures.



Water well or water well test hole plugging procedures. (in certain alluvium and terrace aquifers as authorized by the Oklahoma Water Resources Board)

the land surface, then two (2) feet of bentonite pellets or granules shall be placed on the uncontaminated silica sand, and finally, a minimum of ten (10) feet of cement grout shall be installed in the annular space and interior of the well casing to at least four (4) feet below the land surface.

Contaminated

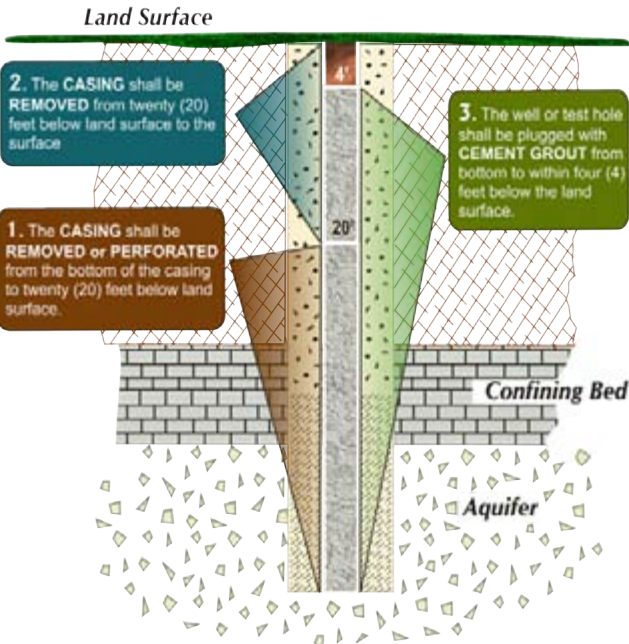
Contaminated water wells or water well test holes require more precautions and greater protection. If the well or water well test hole is contaminated or it is located at an underground tank site or within 300 feet of the outside perimeter of an existing wastewater lagoon or is located on a tract of land where a wastewater lagoon is proposed, the casing shall be



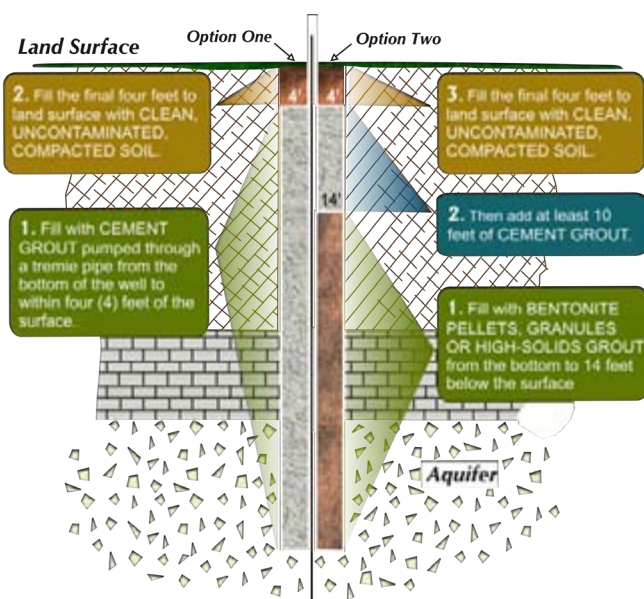
removed or perforated from the bottom of the casing to twenty (20) feet below land surface. If the total depth of the well is in excess of twenty feet (20') below land surface, the cement grout shall be placed by pumping from the bottom of the hole to the land surface. The pipe used to accomplish this is called a "tremie pipe".

Monitoring Wells

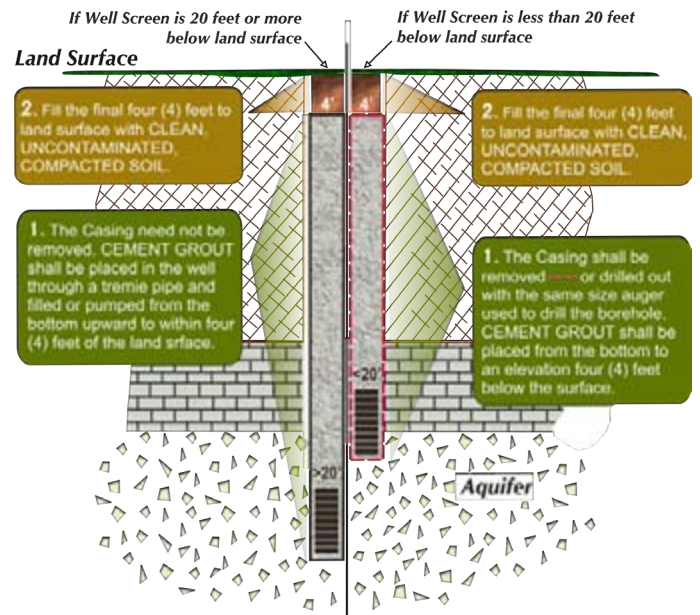
The OWRB requires monitoring wells to be plugged within three days after final use. **Option One:** Fill monitoring wells with cement grout, pumped through a tremie pipe, to four (4) feet below the surface, or **Option Two:** fill from the bottom to fourteen (14) feet below the surface with bentonite pellets, granules or high-solids grout. Then add at least ten (10) feet of cement grout to within four feet of the land surface. Fill the remaining four (4) feet with clean, uncontaminated, compacted soil



Contaminated water well or water well test hole plugging procedures.



Uncontaminated Monitoring well plugging procedures; two options



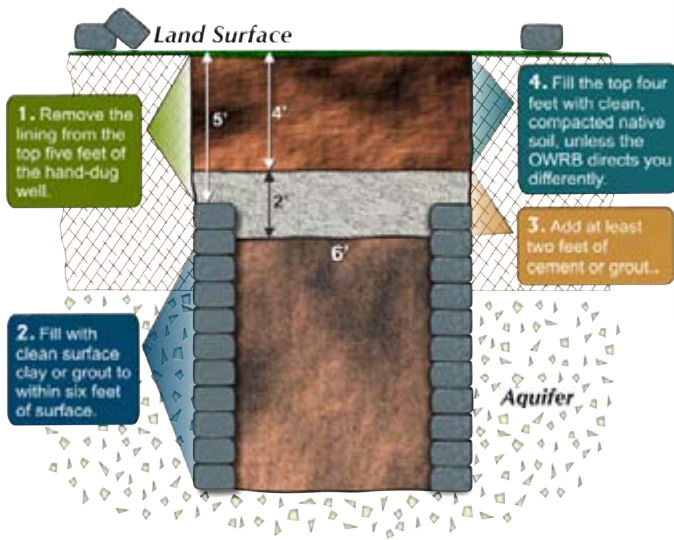
Contaminated Monitoring well plugging procedures.

(both options). If the depth of the well is less than fourteen (14) feet, fill from bottom to top with cement grout.

If contaminated soil or contaminated groundwater is present or was previously present in the well and the top of the screen is less than twenty (20) feet below land surface, the casing shall be removed or drilled out. Over-drilling of the casing of the monitoring well is required when plugging monitoring wells. The same size auger used to drill the borehole shall be used to drill out the casing. Cement grout shall be placed from the bottom of the well to an elevation four (4) feet below land surface and the well meets current minimum construction standards, then the casing need not be removed and cement grout shall be placed in the well through a tremie pipe and filled or pumped from the bottom upward to within four (4) feet of land surface or to land surface. The remaining four (4) feet to land surface shall be backfilled with compacted uncontaminated soil.

Hand-Dug Wells

Remove the lining from the top five (5) feet of the hand-dug well, then fill with clean surface clay or grout to within six (6) feet of surface. Add at least two (2) feet of cement or grout. Fill the top four (4) feet with clean, compacted native soil, unless the OWRB directs you differently.



Hand-dug well plugging procedures.

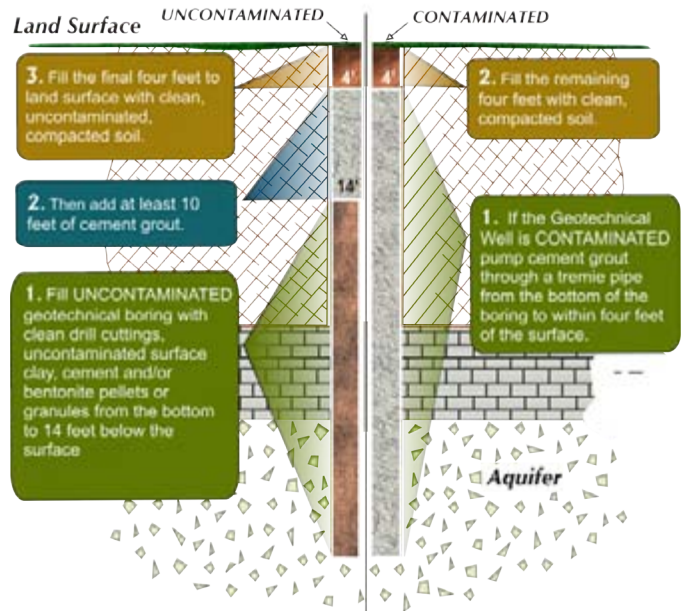
Geotechnical Borings

The OWRB requires geotechnical borings to be plugged within thirty (30) days after final use.

Fill geotechnical borings with clean drill cuttings, uncontaminated surface clay, cement and/or bentonite pellets or granules from the bottom to fourteen (14) feet below the surface, then at least ten (10) feet of cement grout, and the final four feet to land surface with clean, uncontaminated, compacted soil.

If there is contaminated water or contaminated soil, pump cement grout through a tremie pipe from the bottom of the boring to within four feet of the surface. Fill the remaining four (4) feet with clean, compacted soil.

If the boring is twenty (20) feet deep or less and there is no evidence of groundwater, fill the boring with clean, compacted, uncontaminated soil or drill cuttings to land surface. If it is fourteen (14) feet or less and clean



Geotechnical boring plugging procedures; uncontaminated and contaminated.

groundwater has been encountered, fill the hole with cement grout or bentonite pellets, granules or high solids grout to within four feet of the surface. Fill the final (4) four feet with clean, compacted soil. (If cement grout is used, mix one 94-pound sack of cement with no more than six gallons of water.)



Useful Definitions

Commercial Plugging: plugging wells or boring as a business, trade or occupation in exchange for payment

Geotechnical Boring: a hole drilled or bored to sample soil, geologic formations or to check groundwater quality

Geothermal Well: a heat pump well

Groundwater Well: any excavation constructed for the production of groundwater

Heat Pump Well: a boring or cased hole that uses the temperature of the geologic formations or groundwater for heating/cooling purposes

Monitoring Well: a well that is used to obtain groundwater samples (for determining chemistry or quality), to detect or remediate pollution or to monitor the unsaturated zone above the water table

Observation Well: any well used to measure the depth to the water table or to determine groundwater flow direction

Piezometer: a cased hole that monitors water pressure or soil moisture tensions

Tremie Pipe: any rigged PVC or metal pipe that can be inserted to the bottom of the well or hole and used to place cement grout pumped for plugging

Water Well Test Hole: any excavation that is constructed to determine the location of fresh groundwater and/or the ability of the aquifer to yield groundwater

Well Driller: an individual, owner-proprietor or partnership, firm or corporation engaged in the business of commercial drilling, plugging, reconstructing or testing for wells

The Oklahoma Water Resources Board requires these procedures
in order to Protect Oklahoma's Groundwater and the Health and
Safety of its Citizens.

Oklahoma Water Resources Board Planning and Management Division

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