



**GRAYS HARBOR COUNTY
DEPARTMENT OF PUBLIC SERVICES
ENVIRONMENTAL HEALTH DIVISION**

**100 W Broadway Suite 31
Montesano, WA 98563
360-249-4222
360-249-3203 fax**

Directions for Disinfecting Contaminated Wells and New Wells (Simple/Shock Chlorination)

First, BE SURE your well is protected in the following manner, otherwise, disinfection is useless, and the use of this water source should be discontinued until corrections are made.

1. Tight cover excluding surface water, insects and dirt.
2. Casing extends above the surface of the ground.
3. Tight casing down to water-bearing strata.
4. Safe distance from privy, cesspool, barnyard, or contaminated creek (in average soil conditions, about 150 feet).

New Wells: All newly constructed wells should be disinfected to neutralize contamination from equipment, material, or surface drainage introduced during construction. Every well should be disinfected promptly after construction or repair. If simple chlorination is unsuccessful at disinfection the existing well or if you have a flowing well, well with a deep well jet pump, well with a drawdown seal, or a well in a pit we recommend you contact a registered water well drilling contractor or other similar professional to perform well treatment.

1. **Remove Turbidity** – If the well water is not clear, pump it to waste until it clears up.
2. **Bypass Cartridge Filters** – If the water system has a cartridge filter, place its valve in the “bypass” position and remove the cartridge housing and cartridge. Discard the old cartridge. Rinse the housing with a solution of 1 tablespoon of bleach and a cup of water. Drain the housing and insert a new filter cartridge. Reinstall the cartridge housing and filter, but leave the cartridge filter valve in the bypass position until the chlorine has been completely flushed from the water supply after treatment.
3. **Bypass Other Water Treatment Units** – Bypass water treatment units, such as water softeners, reverse osmosis (RO) systems, and iron removal systems. Follow manufacturer’s recommendations pertaining to disinfection of treatment units. Then leave the units in by-pass position until all chlorine has been flushed. High concentrations of chlorine can damage softener resin and RO membranes.
4. **Turn Off Power to the Pump Before Removing the Well Cap.**
5. **Figure the Approximate Number of Gallons in the Well and/or Reservoir Using the Table Below.**

APPROXIMATE CAPACITIES OF CIRCULAR WELLS OR CYLINDRICAL TANKS									
Diameter	4 in.	6 in.	8 in.	1 ft.	2 ft.	3 ft.	4 ft.	5 ft.	6 ft.
Gallons per foot or depth or length	.65	1.5	2.6	6	24	53	94	147	212

6. **Prepare a Chlorine Solution** - Obtain one gallon of Clorox, Purex, or equal (5 ¼%) for each 1,000 gallons of well water. Only fresh stocks should be used. (Do NOT use scented products). Or use the table below.

WELL DISINFECTION: Amount of chlorine bleach to use	
Well volume in gallons (from chart above)	Chlorine dosage to achieve 50ppm
50	1 cup
100	1 ½ cups
150	2 ¼ cups
200	3 cups
250	4 cups
500	½ gallon
750	¾ gallon
1000	1 gallon

7. **Mix and Pour** – mix the bleach (from the above chart) with 5 gallons of clean water in a clean plastic or glass container. Slowly pour the mixture into the top of the well.
8. **Circulate** – Connect a new garden hose to the nearest outside faucet and circulate the water through the hose and back into the source. This will mix the chlorine with the water, and the pump will draw the chlorine to the bottom of the well. After you start smelling the chlorine in the water coming out of the hose, use the hose to rinse the upper portion of the well with the disinfectant. Note: if you cannot reach the well with the hose, mix one cup chlorine bleach per bucket of water and pour chlorinated water down the inside of the casing. The bucket method will also work when you are

disinfecting a gravity-flow spring box. Once completed shut off this hose and reinstall the well cap. Draw water from **all** outlets one at a time starting with the one closest to the pressure tank until a definite odor of the disinfectant appears. Close the tap and move on to the next one. Allow the disinfectant to stay in the system for at least 12 hours, preferably 24hrs.

9. **Flush** - Pump the well until the volume of water has been replaced at least twice by fresh water. Be sure chlorine odor is gone at all outlets (you can purchase an inexpensive chlorine test kit from a local pool/spa supply store). Observe proper precautions in disposing of chlorinated water, which could be harmful to the aquatic environment, also do not flush chlorinated water into the house plumbing as this may damage your septic tank/drainfield
10. **Reactivate Treatment Systems.** When all traces of chlorine are gone, place the disinfected water treatment units back online.
11. **Testing** - After normal usage for several days, test for bacteriological quality.

NOTE: In the case of deep wells having a high water level, it may be necessary to resort to special methods of introducing the disinfecting agent into the well so as to ensure proper diffusion.

Turbidity as a result of the chlorination process

Water from a water supply system that has been treated with chlorine can be turbid due to the effect of the chlorine on minerals in the water (such as iron) and biofilms that may be present. Extended pumping normally clears the water of turbidity.

Cleaning a Water System

As a result of improper protection of a water system, surface water, sewage, insects, rodents and other material may enter it. The inside surface of the well casing, pump, pipes, etc., become coated with slime or scale which cannot be penetrated or removed even by repeated disinfections.

A recommended cleaning procedure is as follows:

1. Lower the water level in the well or spring or reservoir so that the inner surface can be cleaned with a coarse brush and a solution of warm water and a dish washing machine detergent (1 cup to 10 gallons), available at most food stores. Also, remove all debris, which may have settled on the bottom. See a well driller for the treatment of drilled wells.
2. Remove the pump and clean the pump foot valve. Place the suction of the pump in a solution of detergent (above) and by means of a hose, reverse circulate (15 minutes) the solution through each water service line and also the pressure tank (with air removed). Change direction of flow to normal for an additional 15 minutes.
3. Install the pump in the normal position and flush all lines thoroughly before disinfection as described above.

Shock Chlorination of a spring is more difficult. (It is recommended that a water purification or permanent disinfection system be installed on these types of sources) - If possible divert spring water away from the spring box. Mix about ½ cup of household bleach in 5 gallons of water and scrub the walls of the spring box or holding tank or both. Return the flow of spring water back into the spring box and let the fresh water carry the chlorine through the pipeline to disinfect the plumbing. (Additional bleach may need to be added after cleaning the spring box and/or holding tank. 1 gallon of 5 ¼% bleach per 1000 gallons of water is considered effective for shock chlorinating the system.)

Directions for Disinfecting Drinking Water for Emergency Use

Boiling is the best way to purify water that is unsafe due to the presence of protozoan parasites or bacteria. (Boiling should not be used when toxic metals, chemicals, or nitrates have contaminated the water) Water must be boiled for at least 5 minutes vigorously and cooled with the cover on.

Another convenient treatment for home use is with some form of liquid HYPOCHLORITE. This may be purchased from any grocer under the trade name of Clorox, Purex, or any other commercial bleach containing between 5% and 6% SODIUM HYPOCHLORITE (avoid using bleaches that contain perfumes, dyes or other additives. Be sure to read the label). Mix water and bleach in a clean container and allow to stand for at least 30minutes (60 minutes if the water is cloudy or very cold). NOTE: Chlorine and other chemicals will NOT kill oocysts of the parasite *Cryptosporidium*, which may be present in water supplies affected by untreated surface water. Mix bleach and water according to the table below.

<u>VOLUME OF WATER TO BE TREATED</u>	<u>BLEACH SOLUTION TO ADD (5-6% LIQUID BLEACH)</u>
1 Gallon	10 Drops OR 1/8 tsp.
5 Gallons	50 Drops OR ½ tsp.
10 Gallons	1 tsp. OR 5ml

Tsp. = teaspoon: ml = milliliter

NOTE: A highly colored or dirty, turbid water requires at least twice the above amounts of chlorine. Mix thoroughly and allow to stand for 10 minutes.



keeping your well, well

Disinfecting your well in 5 easy steps



For more information, contact:

Grays Harbor County Health Department
Environmental Health Division, (360) 249-4222

Follow these directions for disinfecting your well if your water has coliform bacteria in it. This disinfection process treats only biological contaminants, not chemical or mineral contaminants.

1. Flush the System.

- ◆ If your water is cloudy, let the water run for 10-15 minutes before disinfecting.

2. Chlorinate the well.

- ◆ Use household bleach which typically has a chlorine concentration of 6%. Do not use "ultra" concentrated bleach or bleach products with additives or perfumes.
- ◆ The amount of bleach to use is according to the chart on page 2. If you have problems calculating the amount of bleach to use, contact Thurston County Environmental Health.
- ◆ Mix bleach in a bucket of water. Remove well cap, plug, or vent (see diagrams on page 2); using a funnel, pour the bleach into your well.

3. Mix the bleach with the well water.

- ◆ Attach a hose to the nearest outside faucet and allow the water to run onto the ground for 1-2 minutes until you smell chlorine. Then place the hose in the hole where you poured the bleach, allow the water to run back into the well for 15-20 minutes.
- ◆ Remove the hose and replace the well cap, plug, or vent.

4. Chlorinate the lines.

- ◆ Turn on **each** tap attached to the well (kitchen, bathroom, outdoor spigot, etc.), starting with the nearest tap to the well, and let the water run until you smell bleach, turn off and then go to the next tap.
- ◆ Turn off electricity to the pump and **let sit overnight**.

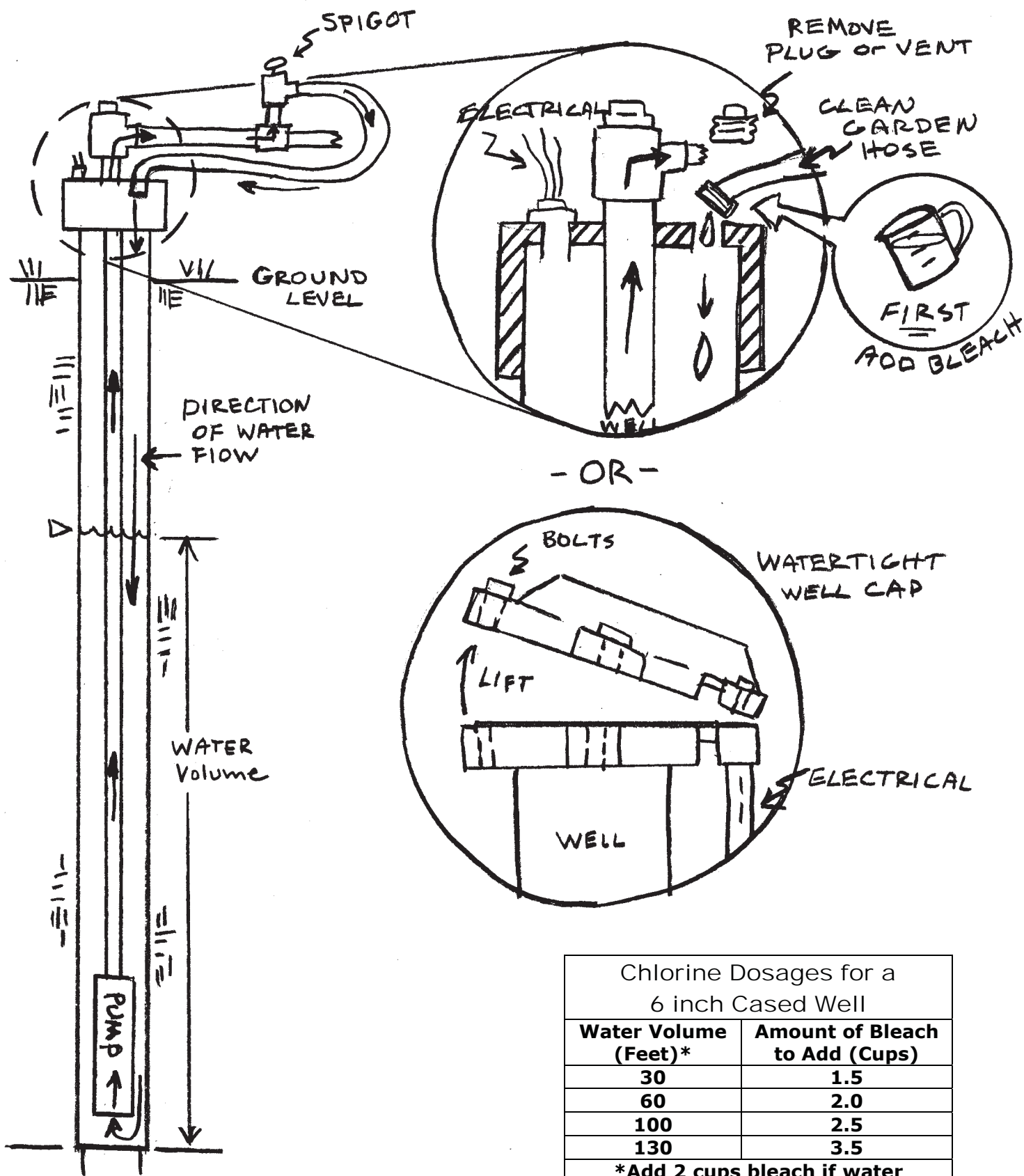
5. Flush the chlorinated water out of the system.

- ◆ Choose any outdoor spigot and let the water run onto the ground, away from your septic system (also keep water flow from going into creeks, streams, or where fish or vegetation can be harmed), until you no longer smell bleach. This empties the bleach from the well.
- ◆ Turn on **each** faucet inside the house until you no longer smell bleach.

Once the system has been flushed of all bleach, the water can be used for laundry and bathing but you should **not** yet use it for drinking, brushing teeth, making ice or preparing food.

Wait 3-4 days after flushing the bleach out to collect coliform bacteria samples. You may need to repeat this process several times before coliform test results are "satisfactory". Also, be aware that the bleach may disturb built-up minerals in your pipes and temporarily discolor your water. This discoloration should disappear once the bleach is flushed out of your system.

For more information, call Grays Harbor County Environmental Health Division at (360) 249-4222 or visit the drinking water web site at http://www.co.grays-harbor.wa.us/info/pub_svcs/EnvWaterWells.html.



If you have a hand dug well, sand point, or spring, please call Grays Harbor County Environmental Health Drinking Water Program at 360-249-4222, for additional instructions.