

WATER SYSTEM START-UP PROCEDURE (2017 revisions)

Under the Revised Total Coliform Rule (RTCR), water systems that drain/depressurize all or any part of their water distribution system must complete start-up activities and collect a safe 'preseason' bacteriological sample before the facility opens and serves water to the public. These activities are designed to help identify potential contamination problems so they can be addressed before water is available to your customers.

A completed copy of the start-up procedure and safe 'preseason' bacteriological sample must be submitted by mailing, emailing, faxing or hand-carrying it to DENR-Drinking Water Program **before the facility opens to the public**. Questions and the completed procedure form can be directed to Barb Friedeman, DENR, 523 E. Capitol Avenue, Pierre, SD. 57501, phone 605-773-4052, SDDrinkingWater@state.sd.us, fax 605-773-5286, weekends only telephone 605-280-6831. Please keep a copy for files.

Name of Water System and EPA ID#: _____

Address of Water System: _____

Date Planning to Open to the Public This Year: _____

Date Tentatively Planning to Close to the Public This Year: _____

Print Name of Person/People Completing this Document: _____

Signature of Person/People Completing this Document: _____

Date Form Signed and Submitted: _____

Review each item below, identify and correct any issues, and indicate when each accomplished.

Pumphouse (if present)

- | | | | |
|---|-----|----|----|
| ~Is the pumphouse locked? | Yes | No | NA |
| ~Are walls, windows, door, floor and roof intact to prevent rodents, snakes, birds, etc. from entering and is it clean (no leaves, pinecones, rodent droppings, etc)? | Yes | No | NA |
| ~Have all gas, pesticides, paint and other chemicals removed from the pumphouse? | Yes | No | NA |
| ~If present, has the water meter been read? Reading: _____ | Yes | No | NA |

Comments: _____

Well

- | | | | |
|---|-----|----|----|
| ~Are all openings in the wellcap, exposed casing and conduit plugged/closed? | Yes | No | |
| ~Is the well cap intact and firmly affixed to top of well casing? | Yes | No | |
| ~Has the well been shock/super chlorinated? | Yes | No | |
| ~Is the wellhead in an underground vault/pit and it has been cleaned out and dry? (We recommend that a wellhead not terminate in a pit/vault in order to prevent contamination from flooding of the pit.) | Yes | No | |
| ~Is a functioning raw water tap present at wellhead? (If not, have one installed.) | Yes | No | NA |

Comments: _____

Continuous Chlorination (if present)

- | | | | |
|--|-----|----|----|
| ~Is the pump/feeder injecting/feeding the proper dosage of chlorine? | Yes | No | NA |
| ~Do you have a DPD type test kit to measure chlorine residual? (Chlorinated water will turn pink if using a DPD type kit and will turn yellow if using an OT type kit. An OT kit is not acceptable.) | Yes | No | NA |
| ~If you continuously chlorinate, can you measure at least 0.3 ppm free chlorine residual at all water service points? | Yes | No | NA |

Comments: _____

Treatment Other Than Chlorination (if present)

- | | | | |
|--|-----|----|----|
| ~Is device injecting at the proper rate or removing the target element properly? | Yes | No | NA |
|--|-----|----|----|

Comments: _____

Pressure Tanks (if present)

- ~Is an operating pressure gauge present? Yes No NA
- ~Has it been shock/super chlorinated? Yes No NA

Comments: _____

Storage Tank/Reservoir/Cistern (if present)

- ~Has the tank been cleaned and shock/super chlorinated? Yes No NA
- ~Is the access hatch safely secured? Yes No NA
- ~Are vents and overflows screened and is the structure intact? (No unsealed cracks, holes, openings. Make necessary repairs.) Yes No NA

Comments: _____

Distribution System/Piping

- ~Have water pipes been shock/super chlorinated and flushed? Yes No
- ~Have water pipes been checked for leaks and repaired? Yes No
- ~If you continuously chlorinate, can you measure at least **0.3 ppm free chlorine residual** at all water service points? Yes No NA

Comments: _____

Sampling

- ~Date and specimen # of safe preseason sample: _____ (Preseason sample is required but does not count as the monthly compliance routine sample. Collect in the distribution system, not directly from the well. Attach to this startup procedure and submit to DENR.)
- ~If the preseason sample was positive, have you collected a recheck sample(s) until a safe sample is obtained? Yes No NA

- ~Do you know where your approved, routine, repeat and GWR triggered sample sites are? Yes No
(If you do not know where your approved sites are, please call Barb Friedeman, 605-773-4052.)
- ~Do are any changes/updates to the sample site plan need to be made? Yes No
(If yes, please call Barb Friedeman, 605-773-4052.)

Comments: _____

Important points to remember:

- 1. This water system must collect a bacteriological sample once per month during the months you serve water to or are open to the public.**
2. If you do not continuously chlorinate but instead periodically hand feed chlorine into your water system, you must wait at least one week between adding the chlorine and collection of any bacteriological samples. Samples must be collected under normal operating conditions and representative of water that is consumed.
3. Collect bacteriological samples early in the month so if repeat or replacement sampling is necessary, those samples can be collected within the same month.
4. Write water system name and EPA ID# on all samples and correspondence.
5. On the sample submitter form, write the specific location and the site # where your bacteriological samples are collected each time you collect a sample (cabin #, campground site #, comfort station, lodge, etc).
6. Contaminants can enter the water system in water pipes or storage reservoirs/cisterns during the shut-down period and become stagnant. Water in the well that has been sitting for months without being used can also be stagnant. To help you address this, below are shock chlorination guidelines for wells and storage reservoirs.

Recommended Procedure for Shock Chlorinating a Well

AMOUNT OF CHLORINE NECESSARY PER 10 FEET OF WATER IN WELL

Inside diameter of well casing	5.25% sodium hypochlorite (bleach)			65% calcium hypochlorite		
	100 ppm for 2 hrs	50 ppm for 8 hrs	25 ppm for 24 hrs	100 ppm for 2 hrs	50 ppm for 8 hrs	25 ppm for 24 hrs
1 1/4 inches	1/8 fl oz	--	--	--	--	--
2 inches	1/2 fl oz	1/4 fl oz	1/8 fl oz	--	--	--
3 inches	1 fl oz	1/2 fl oz	1/4 fl oz	--	--	--
4 inches	1 1/2 fl oz	3/4 fl oz	3/8 fl oz	--	--	--
6 inches	4 fl oz	2 fl oz	1 fl oz	1/4 oz	1/8 oz	1/16 oz
8 inches	7 fl oz	3 1/2 fl oz	1 3/4 fl oz	1/2 oz	1/4 oz	1/8 oz
10 inches	10 fl oz	5 fl oz	2 fl oz	3/4 oz	3/8 oz	3/16 oz
12 inches	2 cups	1 cup	1/2 cup	1 oz	1/2 oz	1/4 oz
18 inches	4 1/2 cups	2 1/4 cups	1 1/8 cups	2 1/2 oz	1 1/4 oz	5/7 oz
24 inches	7 1/2 cups	3 3/4 cups	1 7/8 cups	4 1/2 oz	2 1/4 oz	1 1/8 oz
36 inches	17 1/2 cups	8 3/4 cups	4 3/8 cups	10 oz	5 oz	2 1/2 oz

*ppm = parts per million 1 heaping tablespoon of 65% chlorine powder = 1/2 oz. 8 fluid ounces = 1 cup

1. Determine chlorine dosage for the desired contact time from the table above.
2. Prepare a chlorine solution, lift well pump, and pour the chlorine solution into the well.
3. Lower the pump and operate until a chlorine odor is noticed at all discharge points.
4. Leave the chlorine solution in the well for the recommended contact time. Do not use the water.
5. At the end of the contact time, pump the well to waste until the chlorine odor cannot be detected. **DO NOT ALLOW THE WATER TO ENTER A RIVER, LAKE OR STREAM.**
6. Pump the well for a considerable period of time until the chlorine is all gone before collecting bacteriological water samples.
7. Do not use scented bleach or chlorine tablets that contain a chlorinated isocyanurate a.k.a. "stabilized chlorine" (check the label).

Recommended Procedure for Shock Chlorinating a Reservoir or Cistern

AMOUNT OF CHLORINE NECESSARY FOR DOSAGE AND TIME COMBINATIONS

Volume of Box, Basin, Reservoir or cistern	5.25% sodium hypochlorite (bleach)			65% calcium hypochlorite		
	100 ppm for 2 hrs	50 ppm for 8 hrs	25 ppm for 24 hrs	100 ppm for 2 hrs	50 ppm for 8 hrs	25 ppm for 24 hrs
50 gal	1 1/2 cups	3/4 cup	3/8 cup	--	--	--
100 gal	3 cups	1 1/2 cups	3/4 cup	--	--	--
200 gal	6 cups	3 cups	1 1/2 cups	--	--	--
500 gal	1 gal	7 1/2 cups	3 3/4 cups	9 1/2 oz	--	--
1,000 gal	2 gal	1 gal	7 1/2 cups	1 lb 3 oz	9 1/2 oz	--
2,000 gal	4 gal	2 gal	1 gal	2 lb 6 oz	1 lb 3 oz	9 1/2 oz
5,000 gal	--	5 gal	2 1/2 gal	6 lb	3 lb	1 lb 8 oz
10,000 gal	--	--	5 gal	12 lb	6 lb	3 lb
20,000 gal	--	--	--	24 lb	12 lb	6 lb
50,000 gal	--	--	--	60 lb	30 lb	15 lb
100,000 gal	--	--	--	120 lb	60 lb	30 lb

*ppm = parts per million

1. The unit to be disinfected should be full of water.
2. Determine recommended chlorine disinfection dosage for the desired contact time from the table above.
3. Completely mix the chlorine dosage throughout the unit to be disinfected.
4. Leave the chlorine solution in the unit for the recommended contact time.
5. Do not use the heavily chlorinated water.
6. At the end of the contact time, remove the water from the unit and discharge to waste. **DO NOT ALLOW THE WATER TO ENTER A RIVER, LAKE OR STREAM.**
7. Fill the unit with clean water and collect a water sample for bacteriological testing after all the chlorine is gone.
8. Do not use scented bleach or chlorine tablets that contain a chlorinated isocyanurate a.k.a. "stabilized chlorine" (check the label).