



## Municipal Water System Inspection Checklist

The checklist below was created to help owners and operators of a Municipal Water System with a groundwater source know what WDNR Engineers might look for during a sanitary survey. A WDNR Water System Engineer out on a sanitary survey will critique some or all of the following components of your treatment facility and your distribution system:

### Wellhouse

1. Building Integrity.
2. Grounds and immediate surrounding area are free of contaminant sources.
3. Vacuum breakers are installed on all hose bibs to prevent backflow conditions.
4. All vents or lines that may expose water to the atmosphere must be screened. This includes those extruding out of the Wellhouse (these must terminate in a downward direction).
5. Piezometer and pressure gauges must function properly.
6. Flow meters and totalizer must function properly and be calibrated at the frequency specified, according to their size, in the Public Service Commission (PSC) Standards.
7. All wellhouse pipes and valves must function and have no leaks.
8. No excessive corrosion and good equipment paint jobs.
9. Solution tanks should be vented to the outside to eliminate chemical deterioration of electronics. Vents must be screened and terminated in a downward direction.
10. No hazardous chemicals shall be stored in the well house or in the immediate vicinity of the well.
11. Must have smooth ended sample taps.
12. Make sure operators are routinely operating auxillary engines.
13. Check seals between pump base and pump to ensure it is water tight. Also seal where airline presses through pump base.

### Liquid Chemical Addition

1. Chemicals to be used must be approved by the National Sanitation Foundation (NSF).
2. Solution containers must have overlapping, sealed lids. They must be clean and in good condition. They must also be labeled.
3. Chemical feeder pumps must operate within 30% to 70% of stroke and function at a speed greater than 12 strokes/minute. They must be energized by the well pump or booster pump if fed after the reservoir.
4. Fluoride feeder pumps must have a secondary flow (no flow condition) activated shutoff switch.
5. Chemical transfer lines must not leak and be in good condition.
6. Chemical scales or volume measurement method must be accurate.
7. All chemical feed pumps must have anti-siphon valves installed.
8. Make sure chemicals are being injected properly and in the correct locations.

### Gas Chlorine Chemical Addition

1. Room must have an outwardly opening entrance door.
2. The chlorine room's entrance must be to the outside.
3. The chlorine room must have a door activated vent and light switch or external switches.
4. Gas chlorine room needs an observation window.
5. Chlorine cylinders shall be secured at all times.
6. No chlorine leaks are permitted and a bottle of leak detector (ammonia) must be present.
7. Scales must function properly.
8. Safety equipment must be available and in good condition.
9. Room shall be equipped with proper intake and exhaust ventilation.

### Filtration

1. Head loss gauges must be in good working order.
2. Piping and valves must not leak and be in good condition.
3. Media must be in good condition and effective for removing iron and/or manganese.
4. Sample ports must be installed before and after each filter unit.

5. Iron must be monitored at least 2 times a week before and after filtration.

## Aeration

1. Intake and exhaust ducts must be screened and projected in a downward direction. This prevents insects, rodents, birds, rain, and wind from entering the system. Ducts and the aeration unit must be properly sealed to prevent the same. The intake must have a safe source of air free from fumes, exhausts, or other adverse public health pollutants.
2. Intake filter must be replaced on a periodic schedule.
3. Air compressor aerators must also intake air from a safe source and be the oil-less variety.

## Pump and Lift Stations

1. Must have a properly functioning pressure gage, flow meter, and totalizer.
2. Pump, piping, and valves must be in good working order without leaks and excessive corrosion.

## Reservoir

1. Overflows and vents must be properly screened.
2. Reservoir must be free of major structural problems (ie. cracks, rebar protrusions) and have a secure foundation, and adequate caps.
3. Above ground tanks must have an adequate paint job.
4. Trees and roots in the vicinity of the ground reservoir must be removed.
5. Reservoir must be emptied, inspected, and cleaned every 5 years by qualified professionals.
6. Altitude valves and switches must function properly.
7. Hatch covers must be watertight and overlap the framed opening and extends down around the frame at least two inches.
8. Must be locked.
9. Overflow line should extend down to a minimum of 12 inches above the surface and discharge over a concrete splash pad or rip rap material.

## Distribution Systems

1. The condition of the mains must be ok (no major leaks, deterioration, etc.).
2. Static pressures must be greater than 35 psi at ground level.
3. Hydrants must produce a minimum of 500 gpm with pressures greater than 20 psi. If not, hydrants must be tagged or color coded and written notification to the fire chief must be done.
4. No hydrant is permitted to be connected to mains less than 6 inches in diameter.
5. Residential meters must be tested and calibrated every 8 years according to PSC requirements. Industrial and commercial meter testing is recommended more frequently.
6. Water supply systems with unaccounted losses greater than 10% (as computed on the Public Service Commission Report) should begin a program for reducing these losses.
7. Valves and hydrants should be exercised on an annual basis and documented in a record tracking system.
8. Dead end mains should be flushed twice a year or more and this flushing should be documented.

## Work Plans or Programs

1. A current emergency chlorination plan should be kept at each well house and at the utility office.
2. A current bacti sampling plan must be kept on file.
3. A valve/hydrant exercising program should exist and records kept.
4. A private well abandonment ordinance must be passed and an implementation program (ie. inspection/permitting program) must be established with adequate record keeping practices. Utilities must have a permitting program that ensures private wells within corporate limits produce safe bacti test results and are properly constructed.
5. A cross-connection ordinance must be passed and an implementation program (ie. inspection program) must be established with adequate record keeping practices.
6. A meter testing and calibration program with adequate record keeping must exist.
7. A current distribution system map must be kept on file with the WDNR.
8. Ensure that your lead and copper corrosion plan is approved by the WDNR, is kept current, and that your facility is operating by it (if you are required to have one by the WDNR).

## Drinking Water Quality Monitoring Program

1. Depending on population, systems must collect the correct number of bacti samples each month.
2. If chlorinating, chlorine must be tested a minimum of at least two times a week at the entry point and the distribution system.

3. If filtering and adding sequestering agents, iron must be tested at least two times a week at the entry point and the distribution system.
4. If fluoridating, fluoride must be tested daily at the entry point and the distribution system.
5. If adding sodium hydroxide, pH must be tested a minimum of at least 3 times a week at the entry point and the distribution system.
6. Ensure that the test instruments are calibrated and function properly.
7. Ensure that all your state SDWA chemical monitoring requirements are satisfied each year (VOCs, Inorganics, lead and copper, etc.)
8. Ensure you are testing for the required parameters dictated in your corrosion control plan (if required by the WDNR).

## Miscellaneous

1. Ensure your chief responsible operator(s) have the correct WDNR certification and credits. Also ensure other operators are adequately trained to perform water supply tasks.
2. Ensure you have addressed or corrected all issues or deficiencies documented in your last annual water supply inspection and state sanitary survey inspection.
3. Ensure that your local WDNR representative is aware and kept informed of any major anticipated projects.
4. Ensure that operators are capable of initiating emergency chlorination measures at any time, under any conditions.
5. Ensure all projects are approved by the WDNR. Please submit plans 90 days prior to construction.

For more information, contact: [Margie Damgaard](#), IS Professional, Public Water Section

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