State of New Jersey

# Ground Water Rule:
# Ground Water Source Water Tap Installation and Sampling for Public Water Systems

NJ Division of Water Supply & Geoscience
Date: 2/15/13; Revised 2/7/18, 11/19/18

## Objective

To identify requirements and best practices for the installation of ground water source taps and ground water source sample collection under the Ground Water Rule [40 CFR 141.400 et. seq.] to ensure that the sampled water quality is representative of the ground water source, and not influenced by other water system components (i.e. treatment, storage, distribution plumbing features, etc.).

## Definitions

1. Ground Water Source Sample – A sample collected prior to any treatment, storage/pressure tank, and/or distribution system component of the ground water source, unless the State approves an alternate sampling location.

2. Sanitary Survey – An onsite review of the water source, facilities, equipment, operation, maintenance, and monitoring compliance of a public water system to evaluate the adequacy of the system, its sources and operations and the distribution of safe drinking water.

3. Significant Deficiency – A cause or potential to cause, the introduction of contamination into water delivered to customers. This could include defects in design, operation, or maintenance of the source, treatment or distribution systems. They could also be represented by the failure or malfunction of those systems.

4. Confined Space – A space which has any one of the following characteristics: Limited openings for entry and exit, unfavorable natural ventilation, and not designed for continuous worker occupancy. These characteristics create hazards related to air quality such as lack of oxygen, toxic fumes/gases, access, use of equipment, and rescue. These spaces may include underground vaults, tanks, pits, and vessels. *Do not enter a confined space unless you are trained and authorized to do so.*

## Background

The physical components of a water system and their location within the water system significantly affect water movement within that water system. Therefore, system design and operation will affect the water captured in a water sample. To obtain a ground water source sample, as required by the Ground Water Rule, careful attention must be given to the design of the system and the controls operated while obtaining a sample. Any sample tap, other than a dedicated ground water source tap, may compromise the value of the data for its intended purpose, which is to characterize the source water quality.

**The New Jersey Division of Water Supply & Geoscience has identified the failure to have a Ground Water Source Tap immediately followed by a check valve as a significant deficiency under the Ground Water Rule.**

## Procedure for Ground Water Source Tap Installation

### I. Requirements

a. New public water systems are required to install a ground water source tap on each well that is immediately followed by a check valve prior to any treatment, storage/pressure tank, and/or distribution system component before commencing operations.

b. Existing public water systems are required to install a ground water source tap on each well that is immediately followed by a check valve prior to any treatment, storage/pressure tank, and/or distribution system component immediately.

   i. A significant deficiency will be identified by the inspector if there is not a ground water source tap installed on each well that is immediately followed by a check valve prior to any treatment, storage/pressure tank, and/or distribution system component.

c. The ground water source tap immediately followed by a check valve located prior to any treatment, storage/pressure tank, and/or distribution system component is described and shown in Diagram 1 below.

   i. Community Water Systems that have a ground water source tap, not piped to a sink or other cross connection risk, located on the air relief valve line that is installed in accordance with N.J.A.C. 7:10-11.7(g)4 before the check valve are not required to install a second check valve after the ground water source tap.

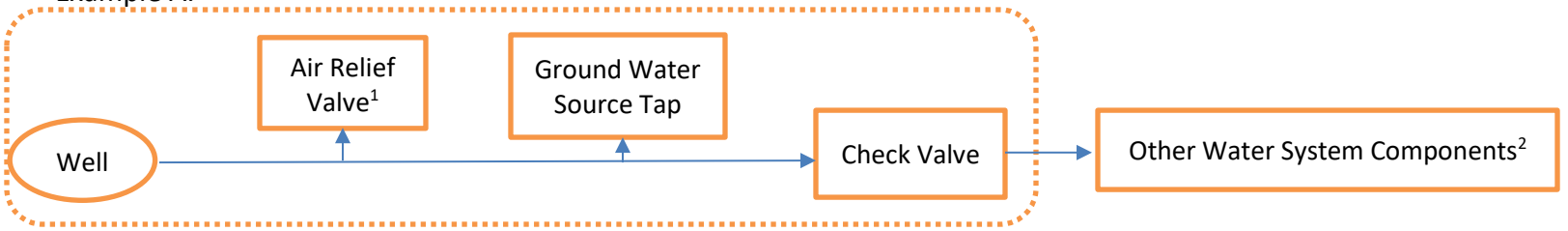
d. All ground water source tap installations and modifications must be performed by a New Jersey licensed Well Driller or Pump Installer.

*The Bureau of Water System Engineering discovered that source water samples collected from a raw water tap after closing the water system's shut off valve still had detectable chlorine. After further review, it was determined that the shut off valve was not able to close tight due to high pressure downstream; therefore, this configuration did not allow for a true representation of the source water and will no longer be acceptable. **Community water systems that were previously informed that they had an acceptable raw water source tap only followed by a shut off valve will now be required to move the raw water source tap prior to the check valve within 120 days of becoming aware.** In the meantime, we would accept a source water result collected when the tap was installed prior to a shut off valve as long as there is no chlorine residual detected.

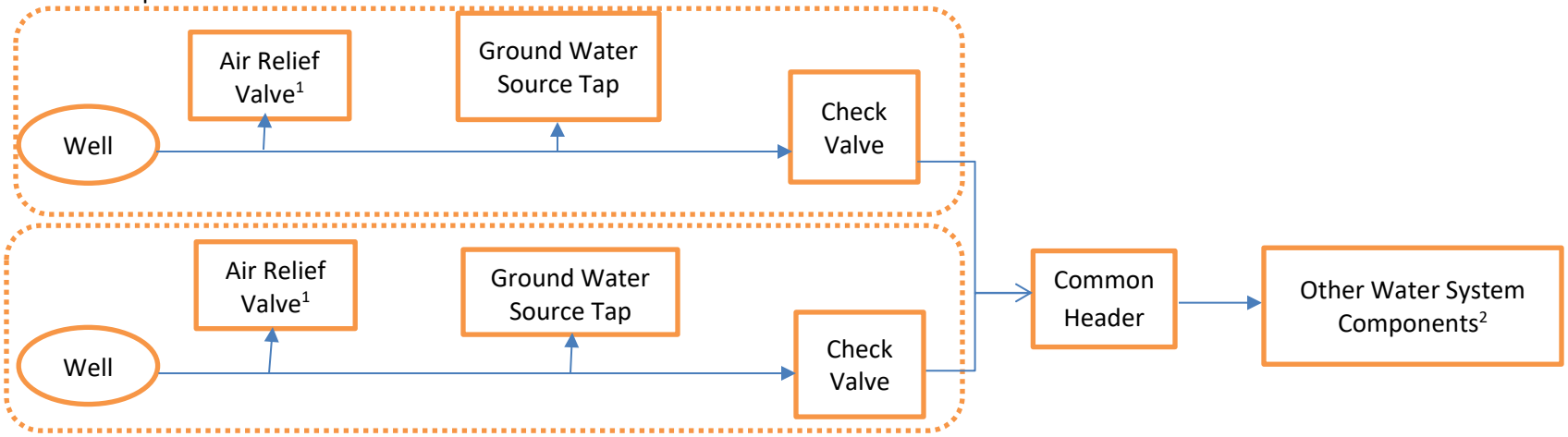
**Diagram 1: Examples of Appropriate Water System Components for Ground Water Source Taps**

*Note that the examples below incorporate various potential components of a public water system; therefore, not all components illustrated in the diagram may be applicable to your water system. In addition, your water system may have components not identified within the diagram.*

Example A:

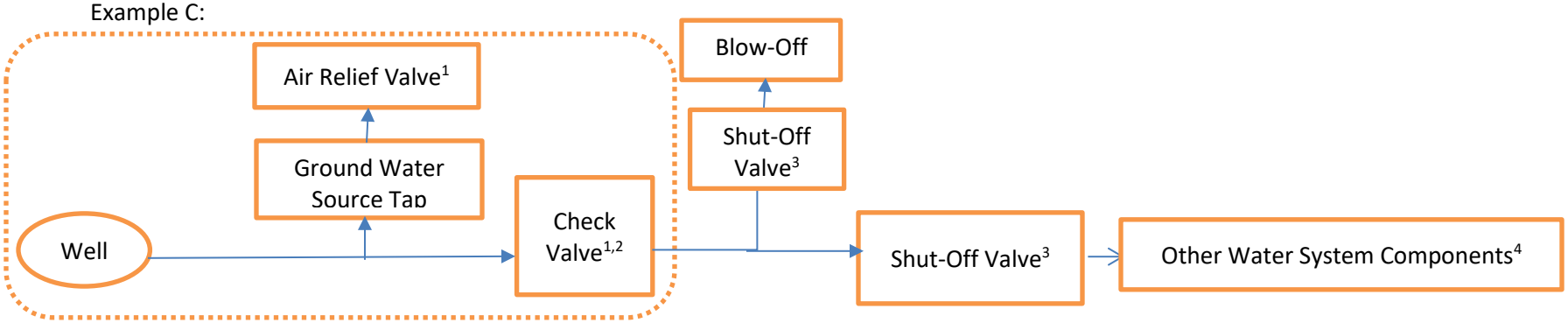



Example B:



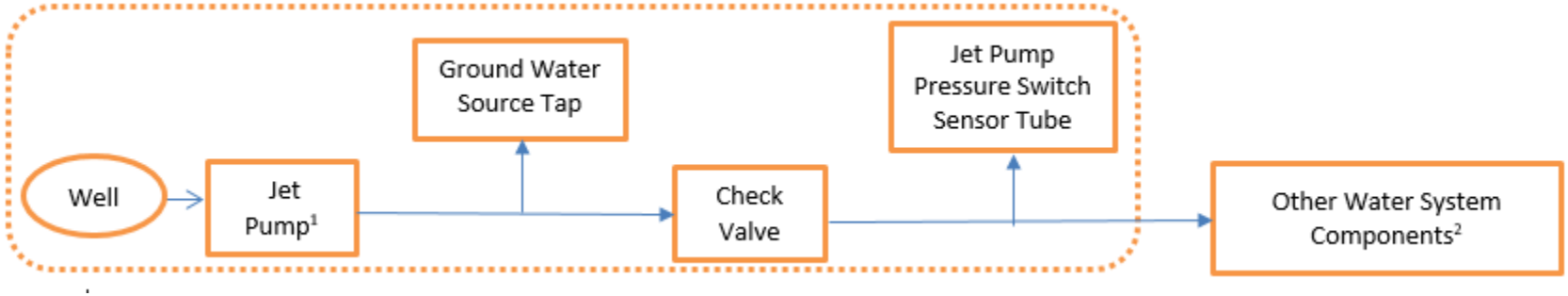

[1] Community Water Systems are required to have an air relief valve line installed in accordance with N.J.A.C. 7:10-11.7(g)4 before a check valve.
[2] Other water system components refer to pneumatic tanks, treatment, storage, and/or distribution system components.

Example C:




[1] Community Water Systems are required to have an air relief valve line installed in accordance with N.J.A.C. 7:10-11.7(g)4 before a check valve.
[2] Community Water Systems that have a ground water source tap located on the air relief valve line that is installed in accordance with N.J.A.C. 7:10-11.7(g)4 before the check valve are not required to install an additional check valve after the ground water source tap.
[3] The Bureau of Water System Engineering discovered that source water samples collected from a raw water tap after closing the water system's shut off valve still had detectable chlorine. After further review, it was determined that the shut off valve was not able to close tight due to high pressure downstream; therefore, this configuration did not allow for a true representation of the source water and will no longer be acceptable. **Community water systems that were previously informed that they had an acceptable raw water source tap only followed by a shut off valve will now be required to move the raw water source tap prior to the check valve within 120 days of becoming aware.** In the meantime, we would accept a source water result collected when the tap was installed prior to a shut off valve as long as there is no chlorine residual detected.
[4] Other water system components refer to pneumatic tanks, treatment, storage, and/or distribution system components.

Example D:




[1]Jet pump configuration is necessary to maintain prime for pump and communicate pressure changes from pneumatic tank to Jet Pump pressure switch, while providing representative raw source sample.
[2]Other water system components refer to pneumatic tanks, treatment, storage, and/or distribution system components.

II. **Recommendations**

a. Horizontal valve with short outlet

b. Outlet can be disinfected easily with bleach

c. Valve and outlet are located off the floor, targeting at least 2-3 feet off the floor, for proper flushing and sample collection to minimize contamination.

d. Label the source water tap for easy identification.

e. Secure the ground water source tap to ensure the tap is only used for its intended sampling purposes and to further prevent any potential contamination.

## Procedure for Ground Water Source Sample Collection

I. **Requirements**

a. The well pump must be running in order to obtain a ground water source sample (regardless of system design); therefore, a demand shall be placed on the system by pumping to waste via a well blow-off or running a tap/fixture within the distribution system until the well pump turns on.

    i. The well pump should <u>not</u> be turned on manually without system demand, as it may lead to over pressurization of the system and potential personal danger.

b. Flush the sample tap thoroughly prior to sample collection.

c. If the source water tap is located within a confined space, a person with confined space training is to collect the sample.

    i. If the source water sample is not collected within the 24-hour timeframe due to confined space access, the water system will incur a Monitoring and Reporting Violation.

**A water system will incur a Monitoring and Reporting Violation if required to collect triggered ground water source sample(s), but is unable to collect the samples within the 24-hour timeframe due to non-installation/unavailability of ground water source tap(s) as established within this document.**

*Special thanks to the State of Maine's Drinking Water Program*