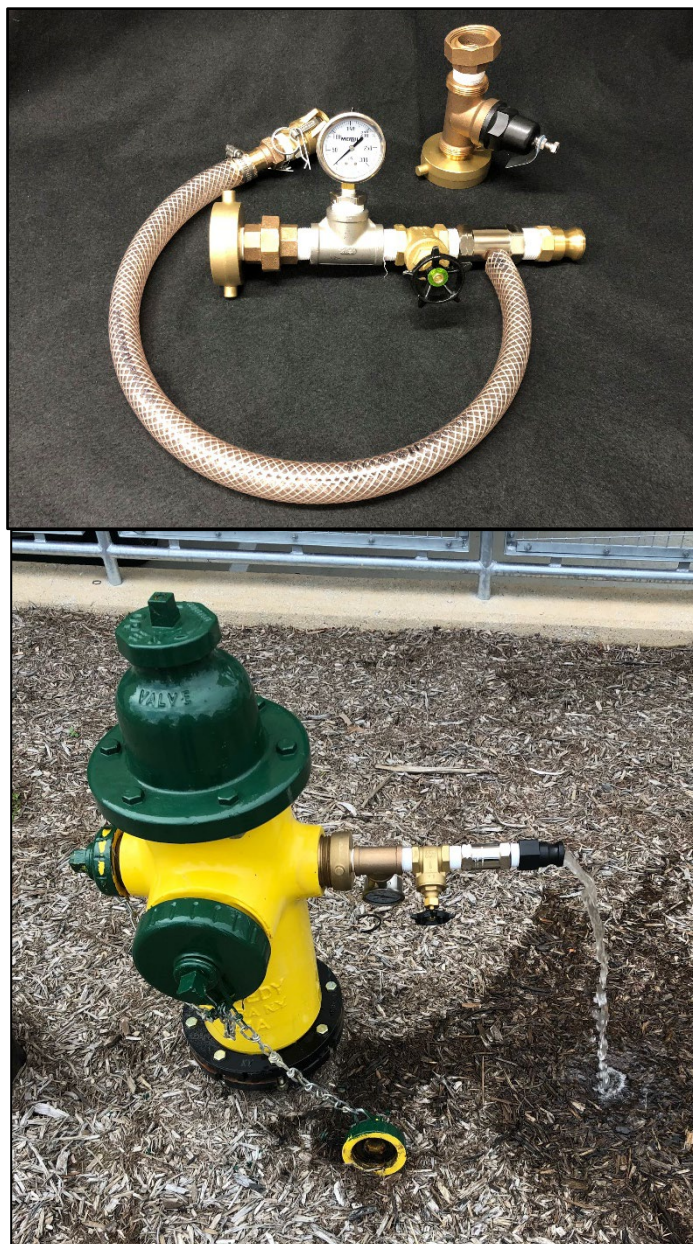


Hydrant Sampler Procedure



Hydrant Sampler Procedure

Introduction

The hydrant sampler was developed to enable system operators to sample water quality from a desired area of the distribution system, without accessing a residential or commercial tap. Additionally, this approach can also allow system operators to quickly assess water quality in the distribution system in the proximity of a routine compliance sample location. Dry barrel hydrants are the most common type of hydrant. They are designed to be operated with their valves fully open. The hydrant sampler referred to in this procedure was designed to allow the hydrant valve to be fully open while collecting samples in a controlled, safe manner.

Hydrant Sampling Procedure

1. Determine the time needed to flush the hydrant lead and riser (CFT) using the procedure starting on the page 6.
2. Ask the water system operator for the approximate pressure at the sample location. If the pressure is > 125 psi at the sample location, install a pressure reducing valve (PRV) adapter. **See Figure 1.**
3. Have the system operator remove the hydrant outlet cap (**Figure 2**) and connect the sampler to the hydrant, confirming the gate valve is closed (**See Figure 3 for identification of hydrant sampler parts and Figure 4 for hydrant sampler installation**).
4. Close the gate valve on the sampler (turn the valve clockwise).
5. Have the system operator slowly open the hydrant until it is fully open.
6. If the PRV Adapter is not being used (i.e., the system pressure is ≤ 125 psi), record the pressure reading from pressure gauge when both the sample and flush valves are closed.
7. Open the gate valve (turn the valve counterclockwise) on the sampler and start the timer. Note that the flow control valve restricts the hydrant flow to a constant rate of 20 gallons per minute (gpm). Allow the sampler to flush for the CFT, as shown in **Figure 5**.
8. After flushing for the CFT collect the sample, following the steps below:
 - Close the sampler gate valve and remove the discharge hose,
 - Open the gate valve to achieve a flow rate suitable for sample collection,
 - Close the gate valve between samples (if applicable) and when sampling is complete.
9. When sampling is complete, have the system operator
 - Slowly close the hydrant,
 - Slowly open the gate valve to release any remaining water pressure and confirm that the hydrant is closed,
 - Remove the sampler from the hydrant.

Hydrant Sampler Procedure

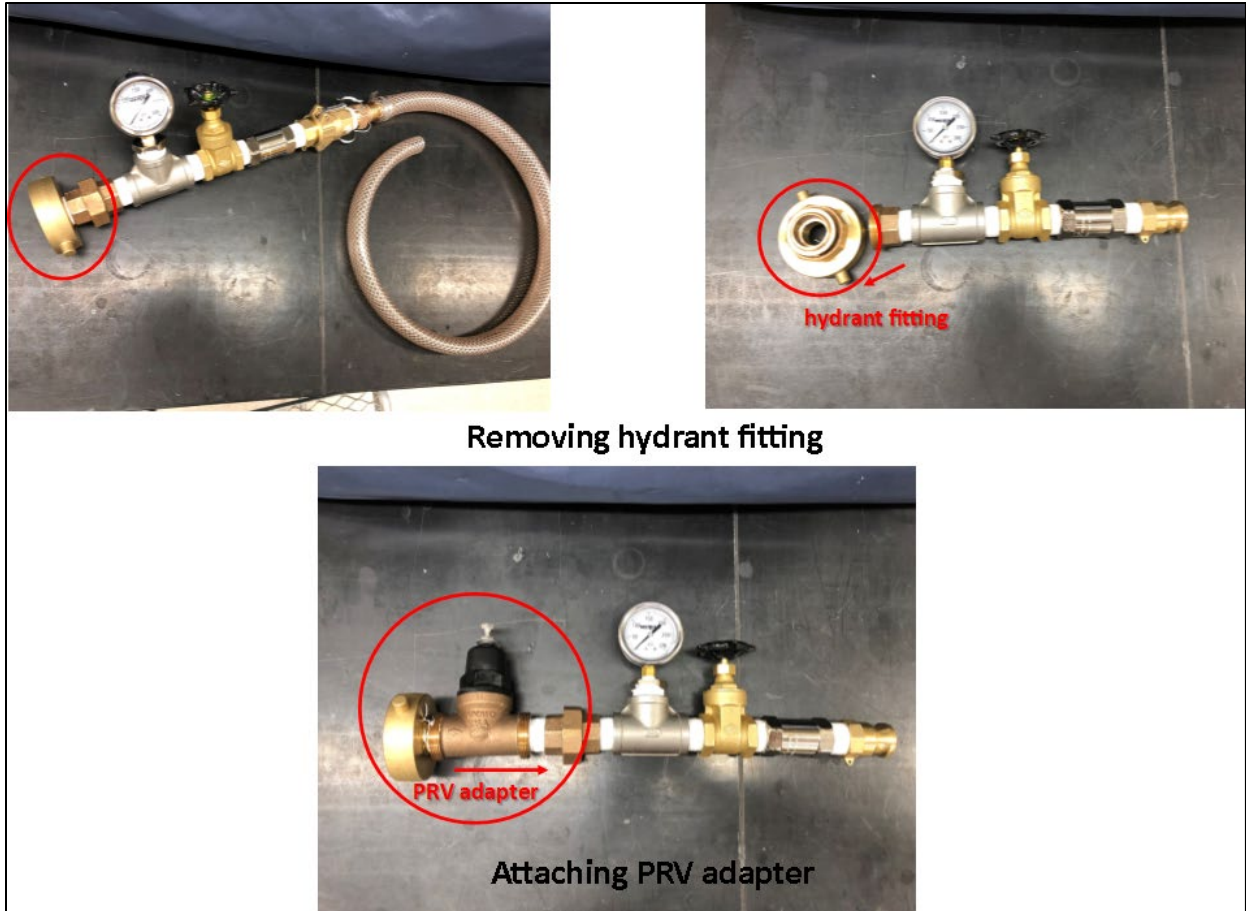


Figure 1. Removing hydrant fitting and attaching PRV adapter

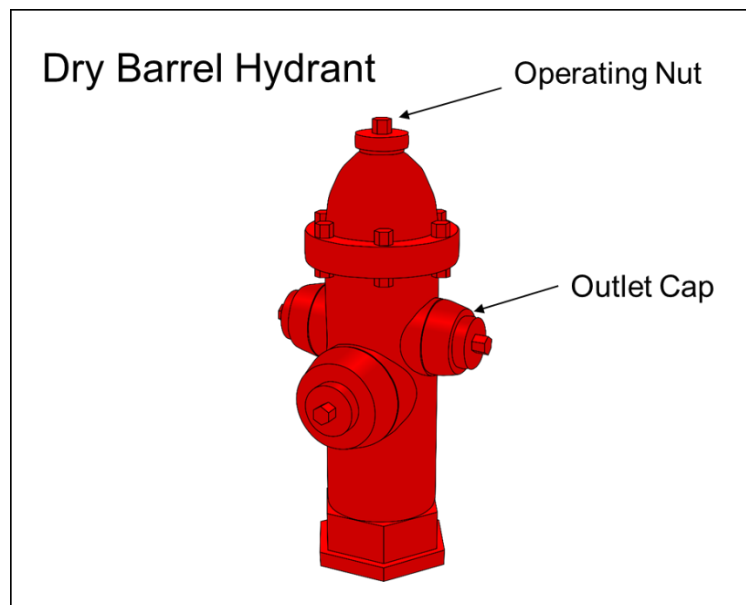


Figure 2. Dry barrel hydrant

Hydrant Sampler Procedure

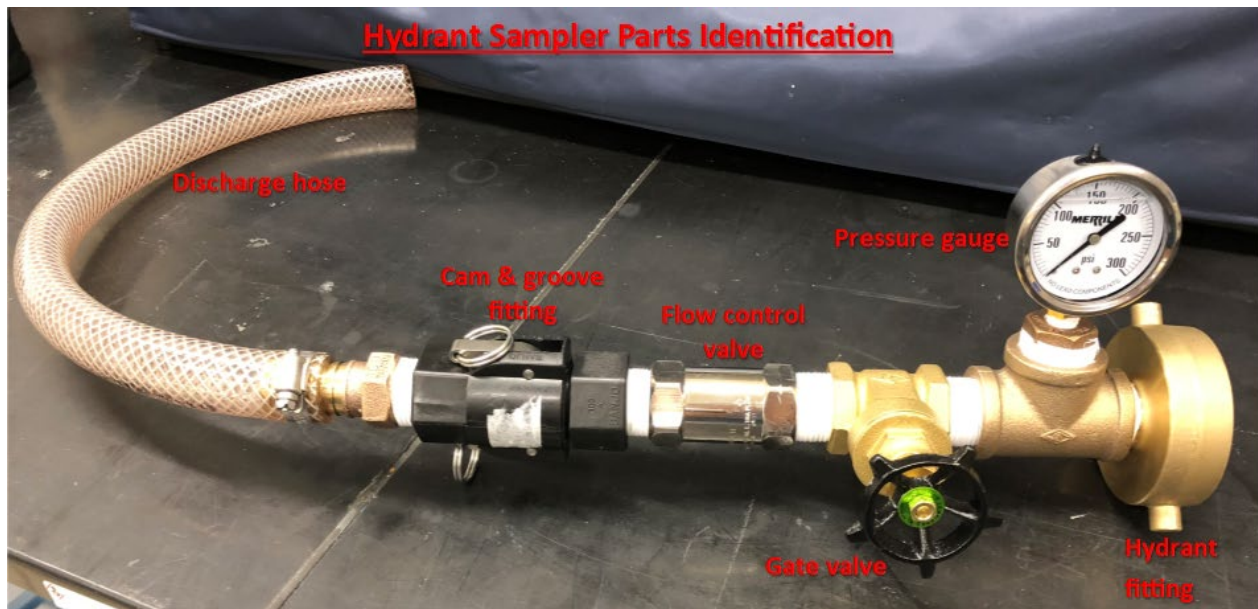


Figure 3. Hydrant sampler parts identification, without pressure reducing valve

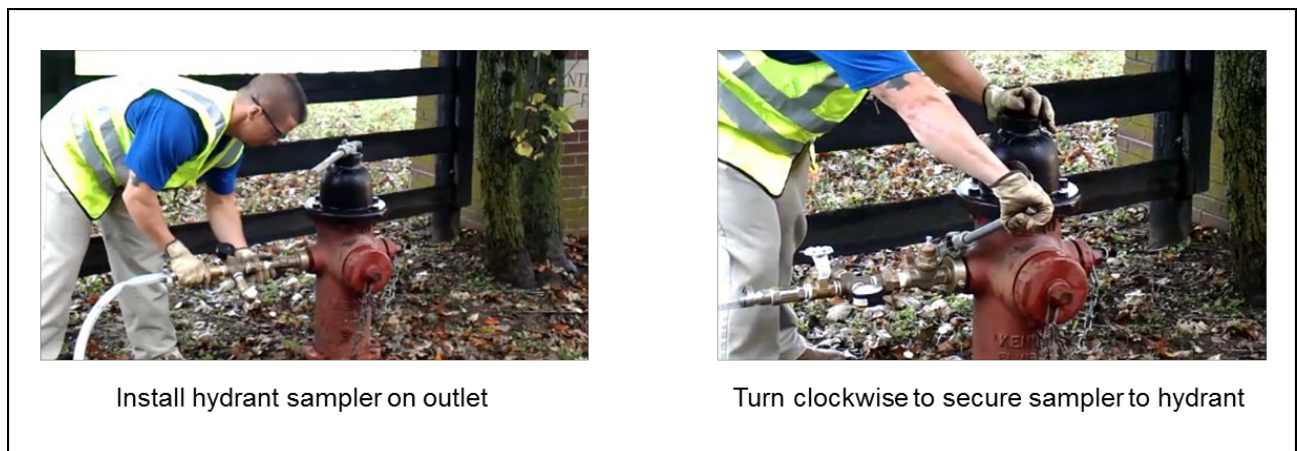


Figure 4. Install hydrant sampler on hydrant

Hydrant Sampler Procedure



Open flush valve, start timer, and flush for determined calculated time

Figure 5. Flushing the hydrant



Figure 6. Removing discharge hose for sample collection

Hydrant Sampler Procedure

Determining the Hydrant Flush Time

The use of the hydrant flushing improves the likelihood that the sample will be obtained from water main. Note that:

- Flushing for an insufficient amount of time may result in obtaining a water sample from the hydrant service line.
- Excessive over flushing may obtain a water sample from another part of the distribution system further away from the intended sample location, especially in smaller diameter distribution mains.

Thus, the user should identify the calculated flush time (CFT) needed for at that location (particularly if this will be a routine sample location for the water system); however, field experience has shown that flushing the hydrant sampler for 3 minutes will generally be sufficient (e.g., for pipe diameters of 6 inches and a pipe length of 30 feet or less).

The CFT is determined using the following steps:

1. Estimate the total length and diameter of the piping (lead line) between the main and the hydrant (**see Figure 7**). Utilize operator's knowledge of system, a system/site map, and design standards as needed.

Vertical length/diameter:

- The diameter of the hydrant riser diameter is typically 6 inches and assume that the hydrant riser is 6 feet long based on design standards, unless indicated differently.

Horizontal length/diameter:

- The diameter of the hydrant lead is typically 6 inches, unless indicated differently.
- Measure or estimate the length of pipe between main and hydrant base. If the location of the main is unknown, measure the horizontal distance between the auxiliary valve to the hydrant and add one foot to account for distance from the main to the auxiliary valve.

2. Determine the necessary flush time from **Table 1** based on the vertical and horizontal pipe lengths and diameters, rounding up to the nearest length. Assume a 20 gpm flow rate due to the flow control valve on hydrant sampler.

Hydrant Sampler Procedure

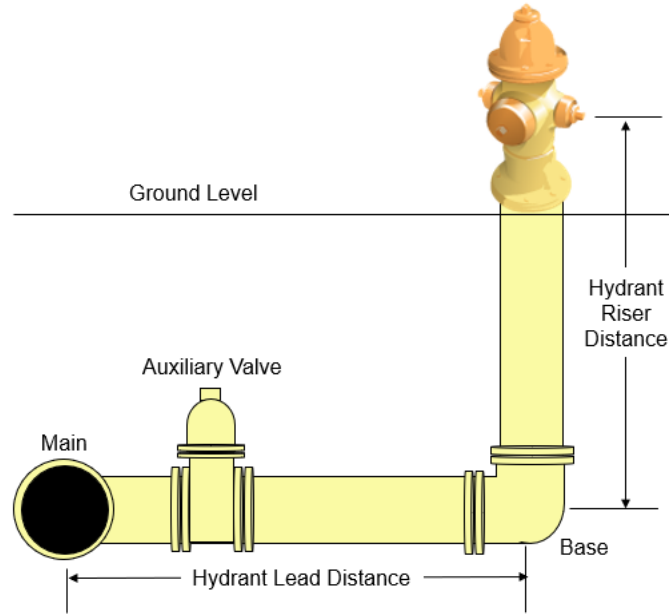


Figure 7. Typical Hydrant Installation

Line Length (feet)	4" ID	6" ID	8" ID
5	0.5	0.5	1.0
10	0.5	1.0	1.5
15	0.5	1.5	3.0
20	1.0	1.5	3.0
25	1.0	2.0	3.5
30	1.0	2.5	4.0
35	1.5	3.0	5.0
40	1.5	3.0	5.5
45	1.5	3.5	5.5
50	2.0	4.0	6.5
60	2.0	4.5	8.0
70	2.5	5.5	9.5
80	3.0	6.0	10.5
90	3.0	7.0	12.0
100	3.5	7.5	13.5

Table 1. Minimum CFTs (minutes) at 20 gpm for Various Line Sizes (inner diameter, ID, in inches).

Hydrant Sampler Procedure

Note: Depending on the type of pipe material and degree of corrosion inside the pipe, the inner diameter will vary. These diameters are meant to be approximations.