

## **Sampling Water Supply Systems**

### **FSOP 2.2.11 (August 31, 2016)**

## **Ohio EPA Division of Environmental Response and Revitalization**

### **1.0 Scope and Applicability**

- 1.1 This FSOP provides general procedures for collecting a representative water sample from a water supply system tap (valve or faucet). The water source for the system may be ground water or surface water.
- 1.2 Ensuring that the public has a safe source of potable water is the primary concern for sampling water supply systems. Other reasons may include, but are not limited to the following:
  - Investigating water quality concerns when directly sampling the water source is not practicable
  - Characterizing the extent of a ground water contamination plume
  - Evaluating the water quality at the point of use, including potential contaminants that may originate from the water distribution system components.
- 1.3 This FSOP does not apply when sampling directly from a water supply well using the ground water sampling techniques described in the following FSOPs:
  - FSOP 2.2.7, Ground Water Sampling Using a Bailer
  - FSOP 2.2.8, Ground water Sampling Using a Bladder Pump
  - FSOP 2.2.10, Ground Water Sampling Using an Electric Submersible Pump
- 1.4 Water supply system samples may be subject to contamination from the system components including piping (e.g., iron, copper, lead, plastics and solvent glues) and greases or oils from valves and pumps.
- 1.5 For water supply systems with ground water sources, information such as aquifer type and well depth, yield and construction may be obtained from The Ohio Department of Natural Resources (ODNR) Division of Water or the local health department.
- 1.6 All ground water sampling techniques and associated procedures should be consistent with Ohio EPA's [Technical Guidance Manual \(TGM\) for Hydrogeologic Investigations and Ground Water Monitoring](#), specifically [Chapter 10, Ground Water Sampling](#). For this FSOP, refer to [Appendix A, Additional Information for Sampling Water Supply Wells](#). The site-specific work plan (SSWP) will provide project objectives and data quality objectives (DQOs). In the event there appears to be inconsistency between the TGM and project objectives or DQOs, please contact the DERR SIFU supervisor and DERR site coordinator for clarification. The procedures described in the FSOP may vary based on site-specific work plan (SSWP) project objectives or data quality objectives (DQOs).

- 1.7 The procedures provided by the FSOP pertain to ground water samples collected to investigate the presence of CERCLA hazardous substances and petroleum. If sampling for bacterial content, please refer to Chapter 10, Appendix A of Ohio EPA's TGM or contact the local health department or the Ohio Department of Health (ODH) for appropriate sampling procedures. If sampling for other types of constituents (e.g., radionuclides), following the sampling procedures provided in the SSWP.

## 2.0 Definitions

Not applicable

## 3.0 Health and Safety Considerations

- 3.1 Always review the site-specific health and safety plan (HASP) for site-specific hazards before performing work.
- 3.2 Refer to FSOP 2.2.4, Ground Water Sampling (General Practices) as applicable for general ground water sampling and health and safety considerations.
- 3.3 Be aware of health and safety hazards associated with residential properties including but not limited to pets, clutter, fuels, household hazardous materials, staircases, low basement ceilings, work areas with limited space, etc.
- 3.4 **Never** enter an OSHA-defined confined space for any reason for sampling a water supply system or during any other field activity. Only Ohio EPA Office of Special Investigation (OSI) staff or other appropriately trained staff are qualified to enter confined spaces for reconnaissance or sampling activities, and will perform such work as necessary in accordance with Ohio EPA's Confined Space Entry Policy (OEPA-SM-10-002).

## 4.0 Procedure Cautions

- 4.1 Refer to FSOP 2.2.4, Ground Water Sampling (General Practices) as applicable for general ground water sampling procedure cautions.
- 4.2 If NAPL is encountered in a water supply system, immediately notify the DERR-SIFU supervisor and DERR site coordinator.
- 4.3 Evaluate the design, age and construction of the water system before selecting a sampling location to ensure that a representative water sample is obtained and to avoid damaging the system.
- 4.4 Collect samples from cold water taps only.
- 4.5 Avoid sampling leaking taps that allow discharge from around the valve-stem handle and down the outside of the faucet, or taps where water tends to flow up along the outside of the faucet lip. Samples from these taps may be contaminated

with greases or oils from the valve stem, or contamination located on the outside surface of the tap.

- 4.6 Avoid sampling taps where the water flow is not constant.
- 4.7 Avoid sampling taps that are so close to a sink bottom or the ground that it is difficult to fill sample containers.
- 4.8 Hoses, strainers, filters or aerators attached to tap may be potential sources of contamination and should be removed before sampling, if possible.
- 4.9 Water supply samples should never be filtered.

## **5.0 Personnel Qualifications**

Ohio EPA personnel working at sites that fall under the scope of OSHA's hazardous waste operations and emergency response standard (29 CFR 1910.120) must meet the training requirements described in that standard.

## **6.0 Equipment and Supplies**

Refer to FSOP 2.2.4, Ground Water Sampling (General Practices) for the ground water sampling equipment and supplies needed, which will vary based on SSWP project objectives and DQOs.

## **7.0 Procedures**

- 7.1 The DERR site coordinator will obtain written permission to access the property and perform water supply system sampling from the property owner and tenant (if applicable) prior to mobilizing for sampling activities.
- 7.2 After access permission has been granted in writing, contact the property owner and/or tenant (if applicable) to arrange a date and time to perform the sampling. Also contact the local health department or ODH for scheduling if they will be observing or participating in the sampling activities.
- 7.3 Before selecting a sampling point, inspect the water supply system to fully understand the location of all components and evaluate all potential sampling locations. Ideally, the tap selected for sample collection should be the closest to the water line entering the property and located upstream of any water treatment system components.
- 7.4 After obtaining permission from the property owner or tenant, remove any hoses, strainers, filters or aerators from the selected tap (if possible).
- 7.5 Open the sampling point valve (cold water only) and purge the water supply system as follows:

- 7.5.1 If sampling an actively used system, purge for at least 5 minutes.
- 7.5.2 If the system has not been actively used, purge for at least 15 minutes.
- 7.5.3 If the sampling location is located upstream of a pressurization or storage tank, taps inside the building (downstream of the tank) should be opened to prevent backflow from the tank to the tap being sampled.
- 7.5.4 In the event the water sample must be collected from a tap downstream of a pressurization or storage tank, purge enough water for a complete exchange of fresh water into the tank and at the sampling location.
- 7.6 If required by the SSWP, monitor ground water stabilization parameters.
- 7.7 When SSWP purging criteria have been met, collect the water sample by adjusting the flow to a moderately slow rate (e.g., 0.2 to 0.5 gpm) and filling the sampling containers. Do not touch the inside of lip of the sampling containers to any part of the tap, and when filling the sample containers be careful not to flush out chemical preservatives. Do not adjust the flow rate during sampling. Chemical-resistant (e.g., nitrile) gloves should be worn when sampling. Follow the sampling procedures in FSOP 2.2.4, Ground Water Sampling (General Practices) as applicable.
- 7.8 Handle water samples in accordance with FSOP 1.5, Sample Custody and Handling.
- 7.9 Dispose of any investigation derived waste in accordance with FSOP 1.7, Investigation Derived Wastes.

## 8.0 Data and Records Management

- 8.1 Document the water supply system components, configuration and condition. Take photographs as needed.
- 8.2 Follow FSOP 1.3, Field Documentation.

## 9.0 Quality Assurance and Quality Control

Refer to the SSWP and FSOP 2.2.4, Ground Water Sampling (General Practices) as applicable.

## 10.0 Attachments

DERR Water Supply Well Sampling Logsheet

## 11.0 References

FSOP 1.3, Field Documentation.

FSOP 1.5, Sample Custody and Sampling

FSOP 1.7, Investigation Derived Wastes

FSOP 2.2.4, Ground Water Sampling (General Practices)

Ohio EPA, May 2012, Technical Guidance Manual for Hydrogeologic Investigations and Ground Water Monitoring, Chapter 10, Ground Water Sampling, Appendix A, Additional Information for Sampling Water Supply Wells: Ohio EPA Division of Drinking and Ground Waters

# DERR Water Supply Well Sampling Log Sheet

Site Name: \_\_\_\_\_ Date: \_\_\_\_\_

Sample ID: \_\_\_\_\_ Time: \_\_\_\_\_

Duplicate  
Sample ID #: \_\_\_\_\_ Time: \_\_\_\_\_

Sampled by: \_\_\_\_\_

Sample Type:    FIELD        DUP        BKG        MS/MSD

Parameters	VOCs	SVOCs	Metals	Pest				
# Containers								

<b>Owner's Name:</b>	<b>Phone:</b>
<b>Owner's Address:</b>	
<b>Number Served by Well:</b>	
<b>Sample Collection Point:</b>	
<b>Water Supply System/Notes:</b>	