

Cover Sheet
Standard Operating Procedure

Operation Title: Water Sample Collection from Water Supply Wells

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Distribution:

(x) Division of Remediation and Division of Technical Services
By: Becky Blais Date: 07/14/2026

1.0 Applicability

This Standard Operating Procedure (SOP) applies to all programs in the Maine Department of Environmental Protection's (MEDEP) Division of Remediation (DR). It may be utilized by other Divisions within MEDEP, as determined by the respective Division Directors or their designees.

This SOP is not a rule and is not intended to have the force of law, nor does it create or affect any legal rights of any individual, all of which are determined by applicable statutes and law. This SOP does not supersede statutes or rules.

2.0 Purpose

The purpose of this document is to describe the MEDEP/DR procedure for collecting water samples from water supply wells (e.g., a private well providing water to a residence). Water samples are collected from water supply wells to determine the extent of groundwater contamination and the impact of groundwater contamination on human health at the exposure point. This standard operating procedure (SOP) is designed to be a guideline for collecting water samples from these wells, either with or without filter systems, to ensure samples are collected in a consistent, appropriate manner that will provide accurate data for making decisions and meeting the data quality objectives (DQOs) of the task.

3.0 Key Definitions

Treatment System: A device which removes contaminants and/or naturally occurring compounds from the water. This may include granular activated carbon (GAC) filters, water softeners, particle filters, air strippers, or reverse osmosis systems.

MEDEP Installed Treatment System: Any treatment system device that a MEDEP administered program has placed on a water supply to remove contamination or to condition the water prior to contamination removal.

Sample Point: Any location from which a representative water sample may be obtained. Sample points can be located before the treatment system, between treatment system devices, or after the treatment system.

4.0 Responsibilities

All MEDEP/DR Staff must follow this procedure when performing this task. All Managers and Supervisors are responsible for ensuring that their staff are familiar with and adhere to this SOP. MEDEP/DR staff reviewing data by outside parties should ensure that this SOP (or an equivalent) was followed, depending on the specific Data Quality Objectives (DQOs) of the task.

Other MEDEP SOPs may also apply when performing this task, including, but not limited to MEDEP/DR SOP *RWM-DR-014 - Development of a Sampling and Analysis Plan* (SAP). The SAP should consider quality assurance and quality control (QA/QC) samples and measures, the specifics of which will depend on the DQOs for the task. Types of QA/QC samples are discussed in more detail in the DR Quality Assurance Plan (QAP). SAP development includes provisions for creating a Health and Safety Plan (HASP) associated with the activity, including compliance with [Dig Safe](#) notifications when disturbing soil with powered equipment or tools (i.e., not hand tools). Dig Safe notification does not include public utility clearance requests which must be completed separately (e.g., sewer and water lines). These utility marking requests typically do not extend onto marking private property (i.e., they may only mark lines in the public right of way), so hiring a private utility marking company may be necessary, depending on site specifics. Fieldwork and data collection tasks must be properly documented in accordance with applicable MEDEP SOPs and policies.

5.0 Guidelines and Procedures (or rename as needed)

5.1 Introduction

Correct sampling of household water supplies is essential to the proper investigation of groundwater contamination. Each well supplying a household(s) also represents a monitoring well for local groundwater. Such information/data must be factored into the groundwater investigation program.

5.2 Preparation

Other relevant SOPs may include MEDEP/DR SOP# RWM-DR-014 - Development of a Sampling and Analysis Plan); MEDEP/DR SOP# RWM-DR-013 - Documentation of Field Activities and Development of A Trip Report); MEDEP/DR SOP# RWM-DR-030 Per- and Polyfluoroalkyl Substances PFAS Sampling Considerations.

5.3 Equipment

Below is a list of recommended equipment to have when sampling a household:

- Bucket (to collect excess water when sampling treatment systems)
- Disposable nitrile gloves (to prevent exposure and/or cross-contamination)
- Flashlight (to enter dark basements/cellars)
- Field notebook (to record pertinent information)
- Chain of Custody Forms (to document chain-of-custody)
- Label tags (to label sample points at households with filters)
- Container of clean water (for rinsing)
- Container of soapy water (for washing)
- Sample containers from laboratory
- Short section of hose to attach to spigot
- Cooler(s) with ice to keep samples at appropriate temperatures

5.4 Health and Safety

Part of completing a successful household sampling assignment is conducting the sampling in a safe and healthy manner. When sampling water from any point, be sure to don disposable nitrile gloves and safety glasses. Hand and eye protection also decreases the chance of dermal exposure and reduces the chance of cross-contamination of samples.

Be aware of physical hazards. Treatment systems are usually located in the basement, so make sure to take a flashlight. Watch for overhead hazards, such as low ceilings and/or hanging objects. Be especially careful of electrical hazards such as outlets near the sampling area and/or bare wires. Lastly, try not to splash the water when sampling. Splashing contaminated water in the eyes or on exposed skin could be harmful if the water is significantly contaminated. If water supplies are known or suspected to be contaminated, care should be taken to avoid cross-contamination with other water samples being collected as part of the same sampling event.

5.5 Sampling

5.5.1 Sampling Water Supplies Without an MEDEP-Installed Treatment System

When sampling a water supply well without any treatment system, samples may be obtained from an indoor faucet (kitchen, bathroom, other) or an outside faucet (spigot). If MEDEP has sampled the well previously and conditions have not changed, samples should be obtained from the same location as previously sampled. If MEDEP has not sampled the well before, or if conditions have changed, samplers should inspect the plumbing and select a sample location closest to the pressure tank or pump where the water line enters the house. Samplers should make sure that the sample point is visibly clean and that no possible sources of cross-contamination (i.e. gas cans, solvents, etc.) are nearby. If a water treatment system (such as radon, sediment filters, or water softeners) is present, the sample should be collected prior to these systems (i.e. at the pressure tank tap). If sampling from a faucet, remove the aerator; if sampling from an outside spigot, remove existing hoses from the spigot.

Run the water on cold at full flow for least ten (10) minutes prior to collecting a sample. Running the water will accomplish two goals: first, it will purge the pipes of any stagnant water; second, it will drain the pressure tank and cause the pump to turn on and start pumping water from the well. This should allow the collection of a representative sample from the well.

Record any observations and/or comments about matters pertinent to the sample location or to the site.

After the water has run for approximately 10 minutes, reduce the flow to facilitate sample collection with minimal aeration and begin filling the laboratory containers. See Section 6.4.3 below for special procedures when sampling for EPH or VPH. If sampling for PFAS, refer to MEDEP/DR SOP# RWM-DR-030 Per- and Polyfluoroalkyl Substances PFAS Sampling Considerations

5.5.2 Sampling Households With an MEDEP-Installed Treatment System

For households with a MEDEP installed treatment system, samplers should collect samples after the treatment system first (post-treatment), between treatment devices second, and before the treatment system (pre-treatment) last to reduce likelihood of cross-contamination. The pre-treatment samples should be collected before any filter, softener, or other device that the landowner or MEDEP has installed.

The plumbing system, including any treatment devices, should be purged by turning on a faucet located on the downstream end of the devices. This may be a kitchen or bathroom faucet. If sampling from a faucet, remove the aerator prior to purging and sampling. Sufficient water should be purged to flush the treatment devices as completely as possible (approximately 10 minutes). In most situations, purging can continue while samples are being collected at the designated sample points. The sample before the filter system is taken last due to its highest probability of being contaminated. If multiple treatment systems are present, sampling should proceed from point of use to point of entry, in order to reduce potential for cross-contamination. Care should be taken to accurately label the sample containers with the correct sample location designation (pre-, mid-, and post-filter). Each sample port location should be purged for 10 to 20 seconds to remove stagnant water prior to sample collection. When sampling, it may be appropriate to attach polyethylene tubing to the sampling port and collect purge water in a bucket. Properly preserved laboratory containers should be filled using a flow rate that is appropriate for the type of analysis and container type.

If multiple treatment devices are present, it may be necessary to take more samples. Samplers should take care to accurately identify and label sample locations and associated laboratory containers.

Filtration devices can often be bypassed with bypass valves included in the plumbing. When sampling any of these devices, trace the route of the plumbing (pipes) to make sure the sample is being taken from the correct sampling port and that the filtration system is not set to bypass mode. Be sure to include contingencies for such devices in the sampling plan.

Once all the samples have been collected at a water supply, remove gloves, and return all plumbing to its original position (aerator back on faucet, all sample ports closed, etc.). Record water meter readings if the residence is equipped with a meter. Be sure to note if the meter reading is in cubic feet or gallons. The water meter reading will give (in conjunction with the previous reading) the amount of water being used, which is useful in predicting/explaining the breakthrough in GAC filters. Place the samples in a cooler on ice for transport to the laboratory.

5.5.3 Special Situations

If sampling for PFAS, refer to MEDEP/DR SOP# RWM-DR-030 Per- and Polyfluoroalkyl Substances PFAS Sampling Considerations. When sampling for petroleum hydrocarbons by either the VPH or EPH methods, it may be necessary to collect samples from spigots at high flow rates. Under these circumstances, a section of hose fitted with a “Y”-control valve may be required to ensure that grease associated with the moving parts of the fixture or spigot is not introduced into the sample by opening or closing the fixture just prior to sampling. Special circumstances should be outlined in the sampling plan.

6.0 Quality Assurance/Quality Control (QA/QC)

In order to ensure that the samples are representative of the water at a given sampling point, the sampler must pay close attention to QA/QC procedures. At each household, the sampler must be aware of three areas which may be sources of cross-contamination of the samples: 1) sampler's hands--wear a new pair of gloves at every residence sampled and at each sample point; 2) sampling order--sample at the least contaminated households first, the most contaminated last, and at the least contaminated point in any filtration system first (post-filter) and the most contaminated point last (pre-filter), and; 3) self-contamination--make sure the sampling area is free of any possible sources of contamination (grease on the tap, containers of chemicals stored near the sample port, etc.). Also, ask the resident if any work has recently been done on the well, plumbing, or any other components of the water system.

If sample results indicate that contamination is present at unanticipated levels, or between filters, re-sampling may be warranted. All sample data should be reviewed for possible sources of error before re-sampling the water supply. Re-check all field documentation from the trip to ensure the sample numbers were recorded correctly

in both the field notebook and on the laboratory analysis request sheet and/or chain of custody. If the documentation check fails, it may be necessary to re-sample, depending on data quality objectives for the site. When re-sampling, be sure to check the plumbing to make sure all valves are in the correct operating orientation as an open bypass valve would bypass the filters and supply unfiltered raw water to the house.

7.0 References

- U.S. Environmental Protection Agency, "A Compendium of Superfund Field Operations Methods," EPA-540/P-87/001, December 1987.
- U.S. Environmental Protection Agency, "Sampling of Hazardous Materials," EPA, April 1990.

Maine DEP SOP No. RWM-DR-001

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ATTACHMENT A

Well Questionnaire

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

Well Questionnaire

A. CURRENT OWNER

Name: _____
Address: _____
Telephone: _____

PREVIOUS OWNERS (if any)

Name: _____
Address: _____
Telephone: _____

B. WELL LOCATION

Tax Map _____ Lot Number _____ Street Location _____
GPS well location? _____

C. DESCRIPTION OF WELL

1. Date Installed: _____

2. Who installed the well?

___ Contractor Name: _____
___ Owner/Occupant Address: _____
___ Unknown
___ Other (_____) _____

3. Type of Well:

___ Dug Well ___ Drilled Well ___ Other (gravel or sand packed)
___ Spring ___ Well Point

4. Well Specifications:

Depth of Well _____ Type of Pump _____
Casing Length _____ Pump Depth _____
Casing Material _____ Piping Material _____
Casing Diameter _____

5. Is the top of the well above ground? Yes ___ No ___

6. Well Covering: ___ Concrete ___ Roof ___ Board ___ Other

7. Depth to Bedrock or Ledge: _____

Water Bearing Material:

___ Sand/Gravel ___ Sand ___ Till ___ Silt/Clay ___ Bedrock

8. Estimated Yield (gal / min or gal / day) _____ Date _____
Estimated Consumption (gal / day) _____ Date _____

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION

9. Is the water currently being treated?

☐ Chlorinator ☐ Softener ☐ Other (_____
☐ Iron Removal ☐ pH control

10. Have you experienced any problems with water quality (odor/taste) or quantity?

11. Has the water quality ever been tested? By whom?

Today's Date: _____

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