§ 141.402 Ground water source microbial monitoring and analytical methods.

(a) Triggered source water monitoring—
(1) General requirements. A ground water system must conduct triggered source water monitoring if the conditions identified in paragraphs (a)(1)(i) and either (a)(1)(ii) or (a)(1)(iii) of this section exist.
   (i) The system does not provide at least 4-log treatment of viruses (using inactivation, removal, or a State-approved combination of 4-log virus inactivation and removal) before or at the first customer for each ground water source; and either
   (ii) The system is notified that a sample collected under §141.21(a) is total coliform-positive and the sample is not invalidated under §141.21(c) until March 31, 2016, or
   (iii) The system is notified that a sample collected under §§141.854 through 141.857 is total coliform-positive and the sample is not invalidated under §141.853(c) beginning April 1, 2016.
(2) Sampling requirements. A ground water system must collect, within 24 hours of notification of the total coliform-positive sample, at least one ground water source sample from each ground water source in use at the time the total coliform-positive sample was collected under §141.21(a) until March 31, 2016, or collected under §§141.854 through 141.857 beginning April 1, 2016, except as provided in paragraph (a)(2)(ii) of this section.
   (i) The State may extend the 24-hour time limit on a case-by-case basis if the system cannot collect the ground water source water sample within 24 hours due to circumstances beyond its control. In the case of an extension, the State must specify how much time the system has to collect the sample.
   (ii) If approved by the State, systems with more than one ground water
source may meet the requirements of this paragraph (a)(2) by sampling a representative ground water source or sources. If directed by the State, systems must submit for State approval a triggered source water monitoring plan that identifies one or more ground water sources that are representative of each monitoring site in the system’s sample siting plan under §141.21(a) until March 31, 2016, or under §141.853 beginning April 1, 2016, and that the system intends to use for representative sampling under this paragraph.

(iii) Until March 31, 2016, a ground water system serving 1,000 or fewer people may use a repeat sample collected from a ground water source to meet both the requirements of §141.21(b) and to satisfy the monitoring requirements of paragraph (a)(2) of this section for that ground water source only if the State approves the use of E. coli as a fecal indicator for source water monitoring under this paragraph (a). If the repeat sample collected from the ground water source is E. coli-positive, the system must comply with paragraph (a)(3) of this section.

(iv) Beginning April 1, 2016, a ground water system serving 1,000 or fewer people may use a repeat sample collected from a ground water source to meet both the requirements of subpart Y and to satisfy the monitoring requirements of paragraph (a)(2) of this section for that ground water source only if the State approves the use of E. coli as a fecal indicator for source water monitoring under this paragraph (a). If the repeat sample collected from the ground water source is E. coli-positive, the system must comply with paragraph (a)(3) of this section.

(3) Additional requirements. If the State does not require corrective action under §141.403(a)(2) for a fecal indicator-positive source water sample collected under paragraph (a)(2) of this section that is not invalidated under paragraph (d) of this section, the system must collect five additional source water samples from the same source within 24 hours of being notified of the fecal indicator-positive sample.

(4) Consecutive and wholesale systems.

(i) In addition to the other requirements of this paragraph (a), a consecutive ground water system that has a total coliform-positive sample collected under §141.21(a) until March 31, 2016, or under §§141.854 through 141.857 beginning April 1, 2016, must notify the wholesale system(s) within 24 hours of being notified of the total coliform-positive sample.

(ii) In addition to the other requirements of this paragraph (a), a wholesale ground water system must comply with paragraphs (a)(4)(ii)(A) and (a)(4)(ii)(B) of this section.

(A) A wholesale ground water system that receives notice from a consecutive system it serves that a sample collected under §141.21(a) until March 31, 2016, or collected under §§141.854 through 141.857 beginning April 1, 2016, is total coliform-positive must, within 24 hours of being notified, collect a sample from its ground water source(s) under paragraph (a)(2) of this section and analyze it for a fecal indicator under paragraph (c) of this section.

(B) If the sample collected under paragraph (a)(4)(ii)(A) of this section is fecal indicator-positive, the wholesale ground water system must notify all consecutive systems served by that ground water source of the fecal indicator source water positive within 24 hours of being notified of the ground water source sample monitoring result and must meet the requirements of paragraph (a)(3) of this section.

(5) Exceptions to the triggered source water monitoring requirements. A ground water system is not required to comply with the source water monitoring requirements of paragraph (a) of this section if either of the following conditions exists:

(i) The State determines, and documents in writing, that the total coliform-positive sample collected under §141.21(a) until March 31, 2016, or under §§141.854 through 141.857 beginning April 1, 2016, is caused by a distribution system deficiency; or

(ii) The total coliform-positive sample collected under §141.21(a) until March 31, 2016, or under §§141.854 through 141.857 beginning April 1, 2016,
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is collected at a location that meets State criteria for distribution system conditions that will cause total coliform-positive samples.

(b) Assessment source water monitoring. If directed by the State, ground water systems must conduct assessment source water monitoring that meets State-determined requirements for such monitoring. A ground water system conducting assessment source water monitoring may use a triggered source water sample collected under paragraph (a)(2) of this section to meet the requirements of paragraph (b) of this section. State-determined assessment source water monitoring requirements may include:

(1) Collection of a total of 12 ground water source samples that represent each month the system provides ground water to the public,

(2) Collection of samples from each well unless the system obtains written State approval to conduct monitoring at one or more wells within the ground water system that are representative of multiple wells used by that system and that draw water from the same hydrogeologic setting,

(3) Collection of a standard sample volume of at least 100 mL for fecal indicator analysis regardless of the fecal indicator or analytical method used,

(4) Analysis of all ground water source samples using one of the analytical methods listed in the in paragraph (c)(2) of this section for the presence of E. coli, enterococci, or coliphage,

(5) Collection of ground water source samples at a location prior to any treatment of the ground water source unless the State approves a sampling location after treatment, and

(6) Collection of ground water source samples at the well itself unless the system’s configuration does not allow for sampling at the well itself and the State approves an alternate sampling location that is representative of the water quality of that well.

(c) Analytical methods. (1) A ground water system subject to the source water monitoring requirements of paragraph (a) of this section must collect a standard sample volume of at least 100 mL for fecal indicator analysis regardless of the fecal indicator or analytical method used.

(2) A ground water system must analyze all ground water source samples collected under paragraph (a) of this section using one of the analytical methods listed in the following table in paragraph (c)(2) of this section or one of the alternative methods listed in appendix A to subpart C of this part for the presence of E. coli, enterococci, or coliphage:

<table>
<thead>
<tr>
<th>Fecal indicator</th>
<th>Methodology</th>
<th>Method citation</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. coli</td>
<td>Colilert 3</td>
<td>9223 B.2</td>
</tr>
<tr>
<td></td>
<td>Colisure 3</td>
<td>9223 B.2</td>
</tr>
<tr>
<td></td>
<td>Membrane Filter Method with M1 Agar</td>
<td>EPA Method 1604.4</td>
</tr>
<tr>
<td></td>
<td>m-ColiBlue24 Test 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>E(Col) Test 6</td>
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<tr>
<td></td>
<td>EC-MUG 2</td>
<td>9221 F.2</td>
</tr>
<tr>
<td></td>
<td>NA-MUG 2</td>
<td>9222 G.2</td>
</tr>
<tr>
<td></td>
<td>EC-MUG 7</td>
<td>9230B.2</td>
</tr>
<tr>
<td></td>
<td>M1 Agar</td>
<td>9230C.2</td>
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<tr>
<td></td>
<td>Enterolert 9</td>
<td>EPA Method 1600.9</td>
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<tr>
<td></td>
<td>Membrane Filter Technique</td>
<td></td>
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<tr>
<td>Enterococci</td>
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<tr>
<td></td>
<td>Membrane Filter Technique</td>
<td></td>
</tr>
<tr>
<td>Coliphage</td>
<td>Two-Step Enrichment Presence-Absence Procedure 1</td>
<td>EPA Method 1601.10</td>
</tr>
<tr>
<td></td>
<td>Single Agar Layer Procedure</td>
<td>EPA Method 1602.11</td>
</tr>
</tbody>
</table>

Analyses must be conducted in accordance with the documents listed below. The Director of the Federal Register approves the incorporation by reference of the documents listed in footnotes 2–11 in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies of the documents may be obtained from the sources listed below. Copies may be inspected at EPA’s Docket Office, EPA West, 1301 Constitution Avenue, NW., EPA West, Room B102, Washington DC 20460 (Telephone: 202–566–2436); or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

1 The time from sample collection to initiation of analysis may not exceed 30 hours. The ground water system is encouraged but is not required to hold samples below 10 °C during transit.

2 Methods are described in Standard Methods for the Examination of Water and Wastewater 20th edition (1998) and copies may be obtained from the American Public Health Association, 1015 Fifteenth Street, NW., Washington, DC 20005–2605.

3 Medium is available through IDEXX Laboratories, Inc., One IDEXX Drive, Westbrook, Maine 04092.
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5 EC–MUG (Method 9221F) or NA–MUG (Method 9222G) can be used for E. coli testing step as described in §141.21(f)(6)(i) or (ii) after use of Standard Methods 9221 B, 9221 D, 9222 B, or 9222 C.

6 A description of the m-ColiBlue24 Test, “Total Coliforms and E. coli Membrane Filtration Method with m-ColiBlue24® Broth,” Method No. 10029 Revision 2, August 17, 1999, is available from Hazco Company, 100 Dayton Ave., Ames, IA 50010 or from EPA’s Water Resource Center (RC–4100T), 1200 Pennsylvania Avenue, NW., Washington, DC 20460.


8 EPA Method 1600: Enterococci in Water by Membrane Filtration Using membrane-Enterococcus Indoxyl–β-D–Glucoside Agar (mEI) EPA 821–R–02–022 (September 2002) is an approved variation of Standard Method 9220C. The method is available at http://www.epa.gov/nerlcwww/1600ap02.pdf or from EPA’s Water Resource Center (RC–4100T), 1200 Pennsylvania Avenue, NW., Washington, DC 20460. The holding time and temperature for ground water samples are specified in footnote 1 above, rather than as specified in Section 8 of EPA Method 1600.


(d) Invalidation of a fecal indicator-positive ground water source sample. (1) A ground water system may obtain State invalidation of a fecal indicator-positive ground water source sample collected under paragraph (a) of this section only under the conditions specified in paragraphs (d)(1)(i) and (ii) of this section.

(i) The system provides the State with written notice from the laboratory that improper sample analysis occurred; or

(ii) The State determines and documents in writing that there is substantial evidence that a fecal indicator-positive ground water source sample is not related to source water quality.

(2) If the State invalidates a fecal indicator-positive ground water source sample, the ground water system must collect another source water sample under paragraph (a) of this section within 24 hours of being notified by the State of its invalidation decision and have it analyzed for the same fecal indicator using the analytical methods in paragraph (c) of this section. The State may extend the 24-hour time limit on a case-by-case basis if the system cannot collect the source water sample within 24 hours due to circumstances beyond its control. In the case of an extension, the State must specify how much time the system has to collect the sample.

(e) Sampling location. (1) Any ground water source sample required under paragraph (a) of this section must be collected at a location prior to any treatment of the ground water source unless the State approves a sampling location after treatment.

(2) If the system’s configuration does not allow for sampling at the well itself, the system may collect a sample at a State-approved location to meet the requirements of paragraph (a) of this section if the sample is representative of the water quality of that well.

(f) New sources. If directed by the State, a ground water system that places a new ground water source into service after November 30, 2009, must conduct assessment source water monitoring under paragraph (b) of this section. If directed by the State, the system must begin monitoring before the ground water source is used to provide water to the public.

(g) Public notification. A ground water system with a ground water source sample collected under paragraph (a) or (b) of this section that is fecal indicator-positive and that is not invalidated under paragraph (d) of this section, including consecutive systems served by the ground water source, must conduct public notification under §141.202.

(h) Monitoring violations. Failure to meet the requirements of paragraphs (a)–(f) of this section is a monitoring violation and requires the ground water system to provide public notification under §141.204.

[71 FR 65633, Nov. 8, 2006; 71 FR 67427, Nov. 21, 2006, as amended at 74 FR 39588, June 29, 2009; 78 FR 10033, Feb. 15, 2013]