



MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
DRINKING WATER AND ENVIRONMENTAL HEALTH DIVISION

SAMPLING PLAN - BACTERIOLOGICAL

Issued under the authority of 1976 PA 399 and Administrative Rules, as amended. Administrative Rule R 325.10704c requires a water supply to monitor for total coliform bacteria according to a written sample siting plan subject to department review and revision. Complete and submit this form to the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

WATER SUPPLY INFORMATION:

| | |
|-----------------------|-------------------|
| _____ | _____ |
| Supply Name | PWSID/WSSN |
| _____ | _____ |
| Address | Population Served |
| _____ | _____ |
| City, State, Zip Code | County |

CONTACT for EGLE:

| | | |
|---|-------|------------------|
| _____ | _____ | _____ |
| EGLE Revised Total Coliform Rule Analyst Name | Email | Telephone Number |

Pollution Emergency Alerting System Information (PEAS) – If you are unable to contact EGLE staff, call PEAS at 1-800-282-4706.

PUBLIC NOTIFICATION:

Means of Public Notification

| | | |
|-------------------------|-------|------------------|
| _____ | _____ | _____ |
| Newspaper Name and City | Email | Telephone Number |

| | | |
|---|-------|------------------|
| _____ | _____ | _____ |
| Radio/Television Name, Address, or City | Email | Telephone Number |

Submit your completed document to EGLE via your Michigan Environmental Health and Drinking Water Information System (MiEHDWIS) account, or via email to your EGLE district office email address.

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Bacteriological Sampling Requirements

Collect at least ____ routine samples per month from the routine sites listed below. For a chlorinated system, measure and record the chlorine residual at the same time and place as every routine and repeat sample collected. Results from all routine and repeat sites are used to determine compliance. Results from other sites might not be allowed for compliance. EGLE recommends a site map.

Map enclosed: YES NO

Distribution System Sample Sites (Dist. Site)

| Facility ID (Site Code) | Sampling Point ID | Routine Site Address | Number of Samples per month | Upstream Site Address | Downstream Site Address | Facility ID (Site Code) of All Sources that Serve the Routine Site* (Not required for surface water supplies) |
|-------------------------|-------------------|----------------------|-----------------------------|-----------------------|-------------------------|---|
| DIST | DIST | | | | | |
| DIST | DIST | | | | | |
| DIST | DIST | | | | | |
| DIST | DIST | | | | | |

* When a routine sample is positive for total coliform or *E. coli*, collect samples from repeat sites in the distribution system. Groundwater supplies must also sample all raw water sources (wells) for each positive routine sample result. With EGLE's approval, source water collection may be limited to those wells that were in use at any time within the 72-hour period prior to the collection of the routine positive sample. Supplies that purchase their water must notify their water supplier within 24 hours of a positive routine sample result. Surface water supplies are not required to sample their source water.

Source Sample Sites* and Other Non-Distribution Sites (e.g., raw water)

| Facility ID (Site Code) | Well Number or Other Designation | Location or Address | COMMENTS: |
|-------------------------|----------------------------------|---------------------|-----------|
| | | | |
| | | | |
| | | | |

* All sources **MUST** be sampled if a routine distribution sample is positive for total coliform or *E. coli*.

Laboratory (Lab) Certified to Analyze Bacteriological Samples - for more labs certified in total coliform, visit <http://www.Michigan.gov/eglelab>.

Primary Lab Name

Primary Lab Address, City, State, Zip Code

Primary Lab Email

Primary Lab Telephone Number

Alternate Lab Name

Alternate Lab Address, City, State, Zip Code

Alternate Lab Email

Alternate Lab Telephone Number

Plan Completed/Updated and Reviewed

Water Supply Name

PWSID/WSSN

Water Supply County

Signature

Print Name

Date

The following is to be completed by EGLE staff only.

Sample site plan has been reviewed by EGLE.

- No revisions necessary.
- Revisions necessary as indicated.

Signature of EGLE Staff

Date

Contact EGLE with questions.

Examples (Ex) for Distribution System Sample Sites

Ex. 1: A groundwater supply collects one routine sample per month. When the routine sample is positive for total coliform or *E. coli*, collect repeat samples in the distribution system from the routine site and its designated upstream and downstream repeat sites. Also collect a sample from **each source**. Treatment technique requirements and compliance with the *E. coli* Maximum Contaminant Level (MCL) are based on all distribution system site results.

Ex. 2: A groundwater supply collects more than one routine sample per month. When any routine sample is positive for total coliform or *E. coli*, collect repeat samples in the distribution system from each positive routine site and its designated upstream and downstream repeat sites. Also collect a sample from **each source for each positive routine sample result**. Treatment technique requirements and compliance with the *E. coli* MCL are based on all distribution system site results.

Ex. 3: A water supply purchases its source water and collects one or more routine sample(s) per month. When any routine sample is positive for total coliform or *E. coli*, collect repeat samples in the distribution system from each positive routine site and its designated upstream and downstream repeat sites. Notify the seller of water **within 24 hours** that the routine site is positive for total coliform or *E. coli*. Treatment technique requirements and compliance with the *E. coli* MCL are based on all distribution system site results.

Ex. 4: A surface water supply collects one or more routine sample(s) per month. When any routine sample is positive for total coliform or *E. coli*, collect repeat samples in the distribution system from the routine site and its designated upstream and downstream repeat sites. No source water monitoring is required. Treatment technique requirements and compliance with the *E. coli* MCL are based on all distribution system site results.

| Facility ID (Site Code) | Sampling Point ID | Routine Site Address | Number of Samples per month | Upstream Site Address | Downstream Site Address | Facility ID (Site Code) of All Sources that Serve the Routine Site* (Not required for surface water supplies) |
|-------------------------|-------------------|----------------------|-----------------------------|-----------------------|-------------------------|---|
| DIST | DIST | 120 Park Place | 1 | 135 Park Place | 98 Park Place | WL001, WL002, WL003 |
| DIST | DIST | 120 Park Place | 2 | 135 Park Place | 98 Park Place | WL001, WL002, WL003 |
| DIST | DIST | 120 Park Place | 2 | 135 Park Place | 98 Park Place | Notify supplier of water of each positive routine sample result |
| DIST | DIST | 120 Park Place | 2 | 135 Park Place | 98 Park Place | Not required for surface water supplies |

* When a routine sample is positive for total coliform or *E. coli*, collect samples from repeat sites in the distribution system. Groundwater supplies must also sample all raw water sources (wells) for each positive routine sample result. With EGLE's approval,

source water collection may be limited to those wells that were in use at any time within the 72-hour period prior to the collection of the routine positive sample. Supplies that purchase their water must notify their water supplier within 24 hours of a positive routine sample result. Surface water supplies are not required to sample their source water.

Examples (Ex.) for Source Sample Sites

Ex. 1: A groundwater supply owns and operates groundwater wells. List the well facility ID, corresponding well number, and location/address for each groundwater well. Please provide comments regarding standby wells, alternate run schedules, etc.

Ex. 2: A groundwater supply that purchases source water. Leave the Source Sample Sites table blank; and include raw water supplier information in the comments. A supply that purchases groundwater must notify the supplier of water within 24 hours of a positive total coliform or *E. coli* routine sample result. The water supplier must collect a sample from each source within 24 hours of notification.

Ex 1: Source Sample Sites* and Other Non-Distribution Sites (e.g., raw water)

| Facility ID (Site Code) | Well Number or Other Designation | Location or Address |
|-------------------------|----------------------------------|-----------------------------|
| WL001 | Well 1 | 200 Park Place (Well House) |
| WL002 | Well 2 | 200 Park Place (Well House) |
| WL003 | Well 3 | 200 Park Place (Well House) |

COMMENTS:
Supply primarily uses well 1 and well 2. Well 3 is on stand-by.

* All sources **MUST** be sampled if a routine distribution sample is positive for total coliform or *E. coli*.

Ex 2: Source Sample Sites* and Other Non-Distribution Sites (e.g., raw water)

| Facility ID (Site Code) | Well Number or Other Designation | Location or Address |
|-------------------------|----------------------------------|---------------------|
| N/A | N/A | See Comments |
| N/A | N/A | See Comments |
| N/A | N/A | See Comments |

COMMENTS:
Supply purchases water from the City of XYZ.

* All sources **MUST** be sampled if a routine distribution sample is positive for total coliform or *E. coli*.



BACTERIOLOGICAL MONITORING INSTRUCTIONS

Instructions to Develop Bacteriological Sampling Plan

1. Choose distribution system sample sites that are representative of water throughout the distribution system. If possible, choose sites where a smooth nonthreaded sampling tap is available or can be installed. A map of all sites listed in the Distribution System Sample Site chart can show that sites are representative of water throughout the distribution system. Including a site map with the Sampling Plan is strongly encouraged.
2. Indicate repeat sites within five service connections upstream and downstream of the routine site. If approved by EGLE, list an alternate fixed site that is further than five connections if the site helps the water supply to find the source of contamination. Use the Comment field to explain why the alternate site is indicated, for example: "Upstream repeat site is more than five service connections from the routine site but is the closest site that is consistently available to sample and the sample tap is known to be clean."
3. If your routine lab is not open on weekends, choose an alternate lab, that is in case sampling is required at that time.
4. Update the Sampling Plan when population changes, when existing sample sites are no longer representative of water throughout the distribution system, when routine or repeat sites become unavailable, or when supply contact information changes.
5. Submit the Sampling Plan to EGLE via your Michigan Environmental Health and Drinking Water Information System (MiEHDWIS) account, or via email to your EGLE district office email address.
6. Keep a copy easily accessible for the water operator and available for inspection by EGLE staff.

Monthly Monitoring

1. Collect samples at regular time intervals throughout the month. Groundwater supplies that serve fewer than 4,901 persons may collect all samples on a single day if the samples are from different sites.
2. Collect raw water samples each month (recommended). EGLE may require routine monitoring of raw water (wells) or from the entry point (plant tap). Collect raw water samples within 24 hours after learning of a distribution system routine total coliform positive result.
3. Failure to collect all required routine samples in a monitoring period is a violation. Another total coliform monitoring violation in the following 12 months will result in a fine. Notify EGLE if monitoring was not performed as required.

Sample Instructions

1. Remove the aerator, if present. Flush sample tap for a minimum of two minutes, allowing the water to reach a constant temperature.
2. Disinfect sample tap by either using chlorine bleach or flaming the tap with a torch.
3. Flush sample tap again.
4. Reduce water stream to a modest, non-splashing flow (pencil width in diameter).

5. If your water is chlorinated, measure and record the chlorine residual at the same time and place as every routine and repeat sample collected. Flush the tap until you feel a temperature change, then record the chlorine residual measurement.
6. Remove cap from the sample bottle and hold cap with the inner surface facing downward. Do not set cap down. Dust-like particles in the bottle are a preservative; do not empty out or rinse out this preservative.
7. Fill the sample bottle to the shoulder (1/4 inch from the top). Avoid contact with sample tap or other surfaces. Do not overfill.
8. Recap the sample bottle before turning off the water.
9. Complete the lab sample request form and attach it to the sample bottle.
10. Mail or deliver the sample bottle to a lab certified by the state to perform bacteriological analyses. Samples must be analyzed **within 30 hours** of collection. Note that some labs are not available to accept sample bottles on Fridays, weekends, holidays, etc. Having an alternative lab that is available on Fridays, weekends, and holidays is strongly advised.

Procedure When Sample Result Is POSITIVE

1. If a distribution system sample result is positive for total coliform bacteria or *E. coli*, collect repeat samples **within 24 hours** of learning of the positive result from all the following sites:
 - A. The site of the original positive sample result; and
 - B. An upstream site **within five service connections** of the original positive site; and
 - C. A downstream site **within five service connections** of the original positive site; and
 - D. Every raw water source (well) if using groundwater (not applicable to surface water or purchased surface water). With EGLE's approval, source water collection may be limited to those wells that were in use at any time within the 72-hour period prior to the collection of the original positive sample. A supply that purchases groundwater must notify the supplier of water within 24 hours of a positive total coliform or *E. coli* routine sample result.

Note: If approved by EGLE, when an upstream repeat site is temporarily not available, sample the closest available location to the repeat site that is also upstream of the routine site and similarly for the downstream side.

2. Notify the EGLE field office within 24 hours to learn what further action is required when more than one distribution system sample result is positive for total coliform bacteria (or greater than 5.0 percent are positive for supplies that collect more than 40 samples each month.) Follow up action includes a formalized assessment of the water supply.
3. Notify the EGLE field office **by the end of the day** if any sample result is positive for *E. coli*.

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