Tips for Completing a Stage 2 Disinfection Byproducts Sample Monitoring Plan

All water systems required to monitor for Total Trihalomethanes (TTHM) and Haloacetic Acids, five (HAA5) must develop a sample monitoring plan detailing sample collection locations and dates.

Early requirements of the rule update asked water systems to conduct an Initial Distribution System Evaluation (IDSE). The IDSE involved conducting a one-year study of the distribution system and the sampling results helped to identify locations with high levels of TTHM and HAA5. The locations with the highest values were chosen as compliance locations for TTHM/HAA5 monitoring beginning in 2012.

What if my water system wasn't required to complete an IDSE?

Many systems were able to opt out of completing an IDSE. US EPA issued very small system (VSS) waivers to water systems serving populations less than 500. Other IDSE exemptions, 40/30 certifications, were approved for systems that could show TTHM/HAA5 levels consistently below half of the MCLs. All other systems were required to complete an IDSE, report the results, and identify new monitoring locations.

If your water system did not complete an IDSE report, received an IDSE waiver, or needs to choose more locations than you have currently identified, continue reading for help to develop a sample monitoring plan.

Where do I start?

If your water system submitted an IDSE report, you chose Stage 2 compliance monitoring locations as part of the IDSE reporting process. If the locations continue to be viable as monitoring locations for your TTHM and HAA5 monitoring, Ohio EPA incorporated these locations on the sample monitoring plan template sent to you. No other sampling plan needs developed.

If your water system did not submit an IDSE report, or if your system received an IDSE waiver, you were sent a blank template to use for your plan. If you do not have a copy of the template, a copy is available on Ohio EPA's website at www.epa.ohio.gov/ddagw/ddbp.aspx.

Minimum information required for the sample monitoring plan includes:

- **Monitoring Locations** (both a location address and a unique monitoring point code)
- **Monitoring Date(s):**
  - Monitoring *every 90 days*: choose a projected week and month, 90 days apart to sample.
  - Monitoring *once per year*: choose a projected sampling week and month between July and September to sample.

You will want to review all locations in the distribution system where TTHM and HAA5 samples have been collected in the past. If you did not conduct IDSE monitoring, you will still use this location for future TTHM and HAA5 monitoring.

How many sample locations do I need and how often will I collect samples?

The number of sampling locations depends on the source water type and population of your water system. The sample monitoring plan template will help you determine how many locations you will need. The following table lists sampling location requirements:

Population	Monitoring Frequency	Number of Samples to Collect
SURFACE WATER		
<500	once per year	2*
500-3,300	every 90 days	2
3,301-9,999	every 90 days	2
10,000-49,999	every 90 days	4
50,000-249,999	every 90 days	8
250,000-999,999	every 90 days	12
1,000,000-4,999,999	every 90 days	16
GROUND WATER		
<500	once per year	2*
500-9,999	once per year	2
10,000-99,999	every 90 days	4
100,000-499,999	every 90 days	6
>500,000	every 90 days	8

Sample Collection Note: 'Quarterly' monitoring is now required **90 days** apart. Regular sample collection

Ohio EPA, Division of Drinking and Ground Waters
P.O. Box 1049
Columbus, Ohio 43216-1049
(614) 644-2752

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provides a more accurate representation of the water quality. Water systems are scheduled for a specific month **and** week of each quarter for sample collection. **Starting in 2014,** all quarterly monitoring will be required during the first or second week of the scheduled month.

What if I need more locations?

If you need more locations than you have used in the past, or if you haven't collected TTHM and HAA5 samples before, you will need to use other knowledge about the water system to select appropriate locations:

- Consider the geographic distribution of monitoring locations and locations already used for compliance with other rules (like the total coliform rule).
- Always consider access to the locations you choose, as access will be necessary several times a year.
- Each chosen location must be unique; a location may only be listed once on the sample monitoring plan.

As shown on the templates, the required locations you choose for TTHM and HAA5 monitoring need designated as high TTHM or high HAA5 locations. This designation represents areas of the distribution system where you would expect to find higher levels of TTHM or HAA5.

Identifying high TTHM locations: These sites are often located near the ends of the distribution system, at or before the last group of customers (but NOT at dead ends). Downstream of storage facilities and areas where two sources of water mix are also good choices for high TTHM locations. High temperatures and increased residence time (low disinfectant residual usually indicates longer residence time) typically lead to higher TTHM concentrations. Poor choices include locations immediately prior to booster disinfection sites.

Identifying high HAA5 locations: These sites are often located in areas with low but existing disinfectant residual (above 0.2 mg/L chlorine). Other good choices for high HAA5 locations are downstream of storage facilities, near the ends of the distribution system, at or before the last group of customers (but NOT at dead ends), and areas where two sources of water mix. Poor choices include locations immediately prior to booster disinfection sites, locations with no disinfectant residuals, and areas with biofilm problems.

Are there changes in sample collection?

Most water systems monitoring for TTHMs and HAA5s must collect *dual sample sets* at each location chosen for monitoring. Collecting a dual sample set means collecting a sample for both TTHM and HAA5 at each location. Some water systems are allowed to collect individual samples instead of a dual sample set:

- *Surface Water and Ground Water Systems serving fewer than 500 people* may collect a sample for TTHM at a high TTHM location and a sample for HAA5 at a high HAA5 location during the week and month you indicate on the sample monitoring plan. Water systems eligible for this monitoring are indicated on the table with an *.
- If your highest TTHM and HAA5 concentrations occur at the same location, you can collect both TTHM and HAA5 at this single location and comply with rule requirements. *If your water system received a VSS waiver for the IDSE: continue to monitor at the same location for both TTHM and HAA5, unless you have results indicating that your highest TTHM and HAA5 concentrations occur at a different location.*
- Water systems serving fewer than 500 people only need to determine a week/month between July and September when monitoring will occur for the year. Surface water systems serving 500 people or greater will need to determine a week/month for each calendar quarter.

All water systems shall maintain and make available a copy of the plan for review by Ohio EPA and the public. All systems using surface water are required to submit a copy of their sample monitoring plan to Ohio EPA.

Any distribution system changes to a water system should be reflected in the plan and water systems should update the monitoring plan as soon as possible following the changes. Surface water systems must submit a new copy of the plan to Ohio EPA following any changes affecting their TTHM and HAA5 monitoring.

If I have questions, who should I call?

Your local Ohio EPA district office inspector is always a good resource for answers to your questions.

Compliance with TTHM and HAA5 monitoring and MCLs is determined from central office in Columbus and welcomes your questions:

Compliance Assurance Section
(614) 644-2752

*This guidance for public water systems is meant for use in conjunction with the guidance sheet **"Information for Public Water Systems on Recent Updates to Disinfectant Byproduct Monitoring"**.*

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