

Trends

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Stage 2 DBPR Update: Which IDSE Will You Choose?

by Kenny Diehl and Joe Griffey

“The results of the IDSE will help you select new compliance monitoring sites that closely reflect potential high TTHM and HAA5 locations. The deadlines for completing an IDSE plan, study, and report are dependant on the size of your distribution system”

As you may know by now, the final Stage 2 Disinfection By-Products Rule (DBPR) and the final Long-Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) were signed by EPA on December 15, 2005. The Stage 2 DBPR was published in the Federal Register on January 4, 2006 (71 FR 388) and the LT2ESWTR was published on January 5th (71 FR 654). The final rule requires municipal and utility district water providers to prepare an Initial Distribution System Evaluation (with an exception for ground water systems). The purpose of this newsletter is to inform you of the requirements of the two types of IDSE and give you some tools to help you decide which format to choose.

RULE COMPONENTS:

Completion of an Initial Distribution System Evaluation (IDSE) will be required for all distribution systems that deliver water treated with a residual disinfectant other than ultraviolet light (UV). The results of the IDSE will help you select new compliance monitoring sites that closely reflect potential high TTHM and HAA5 locations. The IDSE results may also be used to verify and justify your existing Stage 1 monitoring sites.

Specific requirements for conducting an IDSE, selecting Stage 2 monitoring sites, and required number of monitoring sites are dependent upon source water and retail population served. Systems that are part of a combined distribution system will be required to follow the timeline associated with the largest system within the network of consecutive and whole-sale systems. IDSE requirements and final Stage 2 monitoring for each system are based on your individual retail population served.

You must submit an IDSE plan to your state agency outlining your anticipated IDSE method. After completing the system evaluation, an IDSE report must be submitted to your State indicating the locations of the final Stage 2 monitoring sites, justifications for the selection each site, and any aberrations from the EPA guidelines with supporting reasons.

SYSTEM TYPES:

All distribution systems are broken down into the following source water categories:

- Surface water systems
- Ground water systems

Any system that receives any potable water from another provider will be classified as a combined distribution system by the EPA. States have the ability to determine, on an individual basis, whether a network of distribution systems should be classified as a combined distribution system. Reporting schedules and compliance dates will be based upon the largest

retail population served within combined distribution systems. Therefore, smaller systems that are part of a combined system containing a larger system will be required to submit their IDSE plan and report, and meet the compliance dates at the same time as the larger system.

SCHEDULE:

Compliance with the IDSE requirements is dependant upon meeting the compliance dates as outlined below. The deadlines for completing an IDSE plan, study, and report are dependant on the size of your distribution system.

System Size (retail population served)

Event	>= 100,000	50,000 - 99,999	10,000 - 49,999	< 10,000
Final rule published in the CFR	January 4, 2006			
Submit IDSE Monitoring plan Submit IDSE System Specific Study plan Submit 40/30 Certification Receive Very Small System waiver	October 1, 2006	April 1, 2007	October 1, 2007	April 1, 2008
State reviews and approves submitted material	October 1, 2007	April 1, 2008	October 1, 2008	April 1, 2009
Complete IDSE	September 30, 2008	March 31, 2009	September 30, 2009	March 31, 2010
Submit IDSE Report	January 1, 2009	July 1, 2009	January 1, 2010	July 1, 2010
Begin compliance monitoring	April 1, 2012	October 1, 2012	October 1, 2013	October 1, 2013

Systems must provide a system description (including source water type, treatment method and retail population served), timeline for completing the IDSE, and any progress in conducting the study to date. The State will have up to one year to approve the IDSE plan. If a system has not received approval from the State after one year, the system’s plan is automatically approved and you may proceed forward with your evaluation.

- Standard Monitoring Program (SMP)
- System Specific Study (SSS)

In each case, final Stage 2 monitoring sites are selected from the results of the IDSE.

STANDARD MONITORING PROGRAM

An SMP monitors DBPs in your distribution system for one year. The number of required monitoring locations under the new rule for an SMP is dependent upon the population you serve. The chart below outlines the population categories, sampling frequency, and total number of monitoring locations.

IDSE OPTIONS:

Distributions systems may select between two methods for conducting an IDSE. They are

Population Size	Monitoring Frequency	Total Number of Monitoring Periods	Total Number of Monitoring Points	Total Number of Samples Taken for SMP
Less than 500	peak historical month	1	2	2
500 - 3,300	every 90 days	4	2	8
3,301 - 9,999	every 90 days	4	4	16
10,000 - 49,999	every 60 days	6	8	48
50,000 - 249,999	every 60 days	6	16	96
250,000 - 999,999	every 60 days	6	24	144
1,000,000 - 4,999,999	every 60 days	6	32	192
5,000,000 or more	every 60 days	6	40	240
Less than 500	peak historical month	1	2	2
500 - 9,999	every 90 days	4	2	8
10,000 - 99,999	every 90 days	4	6	24
100,000 - 499,999	every 90 days	4	8	32
500,000 or more	every 90 days	4	12	48

Dual samples sets (TTHM and HAA5 samples from the same site) are required for SMP sampling. Your Stage 1 monitoring sites cannot be selected as SMP sites. You must continue monitoring Stage 1 sites and comply with the Stage 1 DBP MCLs during the completion of your IDSE.

You should formulate your sampling schedule around the “peak historical month” (previously called the controlling month), which is the month with the highest historical TTHM and HAA5 levels. One sample must be taken from the peak historical month. A monitoring schedule must be included within the IDSE plan. All samples must be tested by an EPA or State certified laboratory.

SELECTING SMP SITES

There are four types of SMP sampling sites. The number and type of sites is dependant upon your source water category and retail population.

- Near entry point (NEP) – site between the treatment plant (or consecutive entry point) and the first customer
- Average residence time – site with the average water age that is delivered to the majority of the customers
- High TTHM/HAA5 – sites that consistently display elevated levels of TTHM and HAA5 respectively (not intended to identify peak daily or hourly DBP levels)

Your final SMP sites should include the following criteria:

- located in hydraulically different areas
- located in geographically different areas
- select high TTHM sites located after storage facilities
- select high TTHM sites in areas with low

- or no residual disinfectant
- select high HAA5 sites in areas with at least 0.2 mg/L chlorine residual
- locate one high TTHM in a remote area

SYSTEM SPECIFIC STUDY (SSS)

An SSS must provide equivalent or superior data for the monitoring sites as compared to that of an SMP. SSS can be accomplished using two approaches – a historical approach that includes using existing TTHM/HAA5 data or a calibrated system model and one round of sampling to predict high TTHM/HAA5 locations. A combination of both methods is permitted if both historical data and a calibrated water model are available.

An SSS using historical data may not include data from more than 5 years prior to the date of the IDSE plan submission. All historical data must be collected and analyzed in accordance to 40 CFR 141.131.

An SSS must use a calibrated water model that should include the following:

- A majority of pipes in the system (50% by length and 75% by volume)
- All 12” and larger pipes
- All 8” pipes believed to be major conveyors of water
- All 6” pipes that connect remote areas
- All storage facilities and pumping stations with controls
- All active control valves that could influence the flow in the distribution system

Demand data should include large commercial and industrial use, domestic water use, system losses, and seasonal changes. The data returned from your model

should be used to select preliminary sampling sites equal to or exceeding the required number of sites in a SMP. These sampling sites should also not include your Stage 1 monitoring sites. One round of sampling from each preliminary site should be completed in the peak historical month. Once again, dual sample sets should be taken and tested for TTHM and HAA5 to select final Stage 2 monitoring sites.

If your system has calibrated and conducted one round of sampling during the peak historical month prior to the IDSE plan submittal date, you have the option of submitting both the IDSE plan and IDSE report simultaneously. Both the requirements for the IDSE plan and report should be met when submitting a single document for both the plan and report.

IDSE COMPLIANCE:

Compliance with IDSE regulations is based upon timely submittal of an IDSE plan and an IDSE report describing the actual procedures and results of your new Stage 2 monitoring sites. The required components for your IDSE report under each IDSE method are presented below. In both cases, systems must retain a copy of the plan and report for a period of ten years after the date of submittal.

IDSE report for SMP

Systems completing an SMP must submit a report to your State with the following information:

- approved SMP plan and explanations regarding any deviations
- all TTHM/HAA5 analytical results
- all TTHM/HAA5 analytical results from
- a schematic of the distribution system with SMP sites noted
- data supporting the selection of the SMP sites

- proposed Stage 2B compliance monitoring sites with justification
- proposed Stage 2B monitoring schedule

IDSE report for SSS

Systems completing an SSS must submit a report to your State with the following information:

- approved SSS plan and explanations regarding any deviations
- time series graph for 24 hour residence time under modeled conditions
- all supporting studies, reports, data, analytical results, and modeling
- all TTHM/HAA5 results from Stage 1
- proposed Stage 2 monitoring sites with justifications
- proposed Stage 2B monitoring schedule

APPLICABILITY AND EXEMPTIONS/WAIVERS:

Some systems may be exempted from conducting an IDSE. The systems that meet the following requirements may be exempt from completing an IDSE:

- NTNCWS that serve less than 10,000 people
- Those systems receiving a very small system waiver
- Those systems receiving a 40/30 Certification

Systems desiring to receive 40/30 certification must submit data verifying that Stage 1 DBP MCLs have not been violated and no single reading is above 40 mg/L for TTHM and 30 mg/L for HAA5 for 8 consecutive quarters. Applicable data for the 40/30 certification is dependent upon when the system's IDSE plan would be due. The specific criterion is as follows:

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IDSE Plan Due	Data may be no earlier than
October 1, 2006	January 2004
April 1, 2007	January 2004
October 1, 2007	January 2005
April 1, 2008	January 2005

Systems must submit information supporting a 40/30 certification on the same schedule as the IDSE plan for a system of the same size. Your State may require systems seeking 40/30 certification to submit accompanying data regarding the system's performance. Systems exempted from completing an IDSE will still be required to comply with disinfectant byproduct MCLs as set forth by the Stage 2 DBPR.

CONCLUSION:

Hopefully this explanation will give you the guidance you need to select an IDSE method and understand the requirements of these reports. Should you need any additional information in this regard please feel free to contact Kenny Diehl (kdiehl@ssr-inc.com) or Joe Griffey (jgriffey@ssr-inc.com) at (615) 383-1113 or toll free at (800) 545-6732.



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