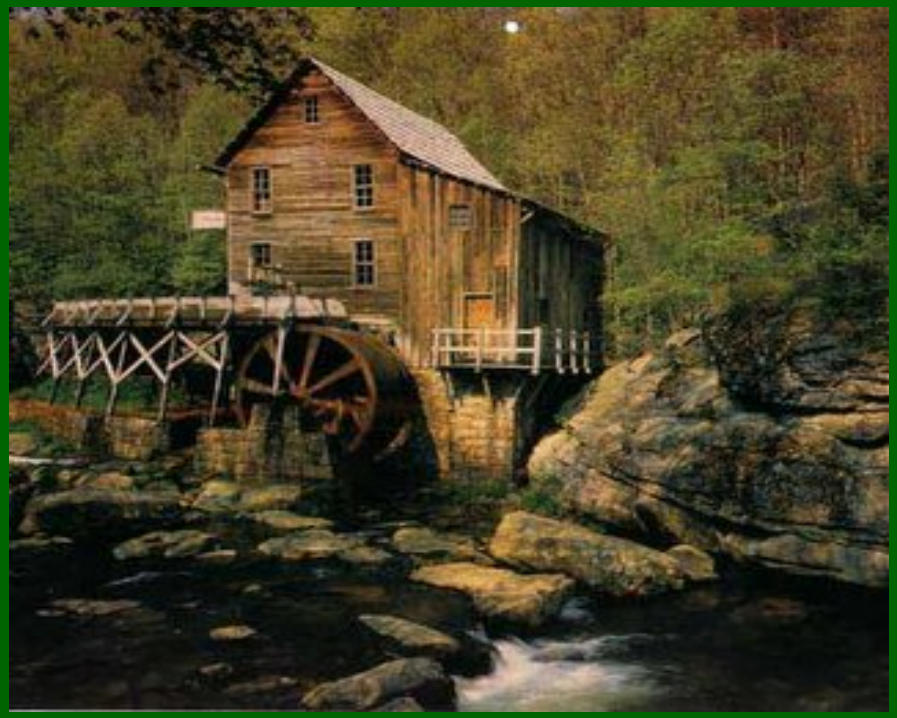
Stage 2 Disinfectants and Disinfection Byproducts Rule (Stage 2 DBPR)



Georgia

Environmental Protection Division

Drinking Water Program

2006

WELCOME!

Thank-you for coming!

Scheduled Stage 2 DBPR Training

- **February 28, 2006**

  Gainesville Flat Creek Water Reclamation Facility

- **March 2, 2006**

  EPD Tradeport Conference Room

- **March 7, 2006**

  Douglasville-Douglas County WS Auth. Board Room

- **March 8, 2006**

  Athens-Holiday Inn (E. Broad and Lumpkin Streets)

Scheduled Stage 2 DBPR Training

- **March 22, 2006**

  Cobb County Water System Laboratory Training Facility

- **March 28, 2006**

  Clayton County Water Authority Community Use Building

Scheduled LT2ESWTR Training

- **April 18, 2006**
  Gainesville Flat Creek Water Reclamation Facility Training Room
- **April 19, 2006**
  Douglasville-Douglas County WS Authority Board Room
- **April 25, 2006**
  Athens Holiday Inn
- **May 9, 2006**
  City of Barnesville Civic Center

Goals

- Review existing Stage 1 DBPR requirements and proposed revisions
- Understand Stage 2 DBPR concepts and requirements
- Review the Stage 2 DBPR **IDSE** requirements
- Review Stage 2 DBPR requirements
- Electronic Reporting (IDSE Tools)

Outline of Presentation

Introduction

Rules Update

1. Stage 1 DBPR Review

2. Stage 2 DBPR Overview

3. IDSE – Very Small System Waivers

4. IDSE – 40/30 Certification

5. IDSE – Standard Monitoring

6. IDSE – System Specific Studies

7. IDSE Report

8. Stage 2 DBPR Monitoring, Reporting and Compliance

Conclusion / IDSE Tools

Handout Materials

- You have:
  - Copy of the presentation
  - Quick Reference Guides available
    - http://www.epa.gov/safewater/publicoutreach/quickreferenceguides.html
  - Additional Reference Materials

Reference /EPA Contact Information

EPA Web site: www.epa.gov/safewater/disinfection/stage2

EPA E-mail: stage2mdbp@epa.gov

EPA ailing Address:

Stage 2 DBPR

US EPA - IPMC

P. O. Box 98

Dayton, OH 45401

EPD Web site:

http://www.gaepd.org/Documents/DWP_DBPRIDSE.html

RECENT RULES

Stage 2 DBPR – Signed December 15, 2005

TTHM, HAA5, IDSE

Applies to all CWS and NTNCWS that use a primary or residual disinfectant other than UV **or** delivers water that has been treated with primary or residual disinfectant other than UV.

IDSE applies to all CWS, and to NTNCWS serving ≥ 10,000 people.

LT2ESWTR – Signed December 15, 2005

***Cryptosporidium,* E. Coli, Turbidity**

LT2ESWTR applies to all Subpart H systems (SW and GWUDI systems)

TODAY'S FOCUS: IDSE and Stage 2 DBPR

- Builds on existing rules in M-DBP Suite
- Provides greater public health protection and equity through:
  - * Initial Distribution System Evaluations (IDSE) to identify compliance monitoring locations with high DBPs
  - * Basing compliance on Locational Running Annual Averages (LRAAs)
  - * Specifying requirements for Consecutive Systems

RULES UPDATE

Stage 2 DBPR – Signed December 15, 2005

LT2ESWTR – Signed December 15, 2005

Ground Water Rule – August 2006

Radon – Final December 2007

TCR & DSR – Propose July 2007; Final October 2009

UCMR2 - Final June 2006; (monitoring starts, Fall 2006)

LCR Revisions – Propose December 2005; Final December 2006

Effluent Guidelines for Water Treatment Plants – Propose April 2007; Final September 2007

Regulatory Determination on CCL2 – Propose Feb 2006; Final October 2006

CCL3 – Propose Feb 2007; Final Feb 2008

Aldicarb

MTBE

Stage 2 Disinfectants and Disinfection By-Products Rule

(Stage 2 DBPR)

IDSE

TTHM, HAA5

LRAA

Bromate

Chlorite

TOC

Stage 2 DBPR & LT2ESWTR

LT2ESWTR and Stage 2 DBPR signed on December 15, 2005

Stage 2 DBPR published: Jan. 4, 2006

LT2ESWTR published : Jan. 5, 2006

Stage 2 DBPR & LT2ESWTR Implementation Activities

Pre-promulgation Activities:

- Inventory of Systems
- Notifications
- Negotiations between States and EPA Regions
- Guidance Manuals and Fact Sheets
- Training – States and EPA Regions
- Information Processing and Management Center (IPMC)
- Data Collection and Tracking System development
- Violations and Enforcement planning

Stage 2 DBPR & LT2ESWTR Implementation Activities

Post-promulgation Activities:

- Training of water systems
- Notifications
- Technical Assistance
- IDSE Plan review
- LT2 Plan review & Monitoring
- Information Processing and Management Center (IPMC)
- Enforcement

Tools for Implementation

- Information Processing and Management Center (IPMC)
- LT2 & Stage 2 “Data Collection and Tracking System”
- IDSE Tool
  - Electronic tool helps utilities select IDSE Option, summarizes requirements, and helps systems complete IDSE plan and report
  - Allow utilities to submit information electronically
  - Paper version available in guidance manual for systems without computer/internet access
- Guidance Manuals, Fact Sheets, Quick Reference Guides
- Technical Assistance
- Enforcement Strategy

What is Information Processing and Management Center (IPMC)?

- "IPMC" will handle all data management **during IDSE**
  - Receive and process all IDSE submissions
  - Review submissions for required components
  - Track and send all notifications sent to PWSs
  - Generates reports on PWSs that have missed compliance deadlines
- Stage 2 "Tracking System" is an integral part of IPMC that allows all of this to happen

Information Processing and Management Center (IPMC)

- One-Stop, “All-in-One-Place” Collaboration
- Receives, sorts, scans, and tracks for compliance purposes all LT2 and Stage 2 submissions
- Handles administrative functions of implementation
- Track receipt of PWS submissions, follow-up conversations with PWSs, and approval decisions, and store all related records
- Review submissions for required components and categorize according to level of complexity for final review by State/EPA
- Generate reports, including a report of PWSs who missed their compliance deadlines (streamline violations & enforcement)
- Offer flexible options to States on how to mail notifications
- Electronically transfer all data to State’s database of record when over

What is Stage 2 Data Collection and Tracking System (DCTS)?

- "Web-based" system designed to be used during IDSE
- Tracks notifications sent to PWSs
- Tracks the receipt of all IDSE submissions
- Tracks approval/status of:
  - Very Small System Waivers
  - 40/30 Certifications
  - Standard Monitoring Plan
  - System Specific Study Plans
  - IDSE Reports

LT2 & Stage 2 Data Collection and Tracking System (cont.)

- Web-based system designed for IPMC, State and EPA use during early implementation activities
- For LT2 Monitoring, labs are required to electronically upload *Cryptosporidium*, *E. coli* and Turbidity data; PWS has opportunity to login and verify their data
- Database is capable of tracking all LT2 and Stage 2 early implementation requirements and making compliance determinations

How will PWSs know what to do?

- **IDSE Guidance Manual**
  - Manual that provides an explanation of IDSE rule requirements and assists in determining eligibility for waivers
- **IDSE Tool**
  - Web-based electronic wizard that automates the explanation of IDSE rule requirements to determine rule requirements and eligibility of waivers

Additional Resources

- Guidance Manuals
  - Initial Distribution System Evaluation (IDSE) Guidance Manual
  - Initial Distribution System Evaluation (IDSE) Guide for Systems Serving < 10,000
  - Small System Compliance Document (SBREFA/STEP Guide)
  - Consecutive Systems Guidance Manual
  - Stage 2 DBPR/LT2ESWTR Simultaneous Compliance Guidance Manual
  - Operational Evaluation Guidance Manual

= These guidance documents are expected to be finalized in March 2006

Additional Resources (cont.)

- Stage 2 DBPR Fact Sheets
  - IDSE Standard Monitoring
  - IDSE System Specific Study
  - IDSE 40/30 Certification and Very Small System (VSS) Waiver
  - Quick Reference Guides
- IDSE Tool (Web-based)

Acronyms and Definitions

Acronym	Definition
ART	average residence time
BAT	best available technology
CCR	consumer confidence report
CWS	community water system
DBPs	disinfection byproducts
DBP Precursors	disinfection byproduct precursors
EPDS	entry point to the distribution system
GAC 10	granular activated carbon filter beds with an empty bed contact time of 10 minutes
GWUDI	ground water under the direct influence of surface water
HAA5	the sum of the concentration of 5 haloacetic acids: monochloro-, dichloro-, and trichloro-acetic acid and monobromo- and dibromo-acetic acid

Acronyms and Definitions (cont.)

Acronym	Definition
M-DBP Suite	Microbial-DBP suite of rules
MCL	maximum contaminant level
MRDL	maximum residual disinfectant level
MRT	maximum residence time
NOM	natural organic material/matter
NTNCWS	nontransient noncommunity water system
PN	public notification
PWS	public water system
RAA	running annual average
SDWA	Safe Drinking Water Act
Subpart H Systems	surface water or GWUDI systems

Acronyms and Definitions (cont.)

Acronym	Definition
TCR	Total Coliform Rule
Tier 1 Violation	violation requiring notification to customers within 24 hours
Tier 2 Violation	violation requiring notification to customers within 30 days
Tier 3 Violation	violation requiring notification to customers within 12 months
TNCWS	transient noncommunity water system
TOC	total organic carbon
TT	treatment technique
TTHM	total trihalomethanes, which is the sum of the trihalomethane compounds chloroform, bromoform, and dibromochloro- and bromodichloro-methane.

New Definitions

- New definitions from Stage 2 DBPR:
  - Combined Distribution System (CDS)
  - Consecutive System
  - Dual Sample Set
  - Finished Water
  - GAC20
  - Locational Running Annual Average
  - Wholesale System

Definitions

Combined Distribution System (CDS) – Interconnected distribution system consisting of the distribution systems of wholesale systems and of the consecutive systems that receive finished water from those wholesale system(s).

Consecutive System – PWS that receives some or all of its finished water from one or more wholesale systems.

Wholesale System - PWS that treats source water as necessary to produce finished water and then delivers some or all of that finished water to another PWS. Delivery may be made through a direct connection or through the distribution system of one or more consecutive systems.

Definitions

Dual Sample Set – Set of two samples collected at the same time and location, with one sample analyzed for TTHM and the other analyzed for HAA5.

Finished Water – Water introduced into distribution system of a PWS intended for distribution and consumption without further treatment, except as treatment necessary to maintain water quality in the distribution system.

Locational Running Annual Average (LRAA)- Average sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters.

Definitions

GAC10 – Granular activated carbon filter beds with an empty bed contact time of 10 minutes based on average daily flow and carbon reactivation frequency of every 120 days. (under Stage 1 DBPR, it was 180 days)

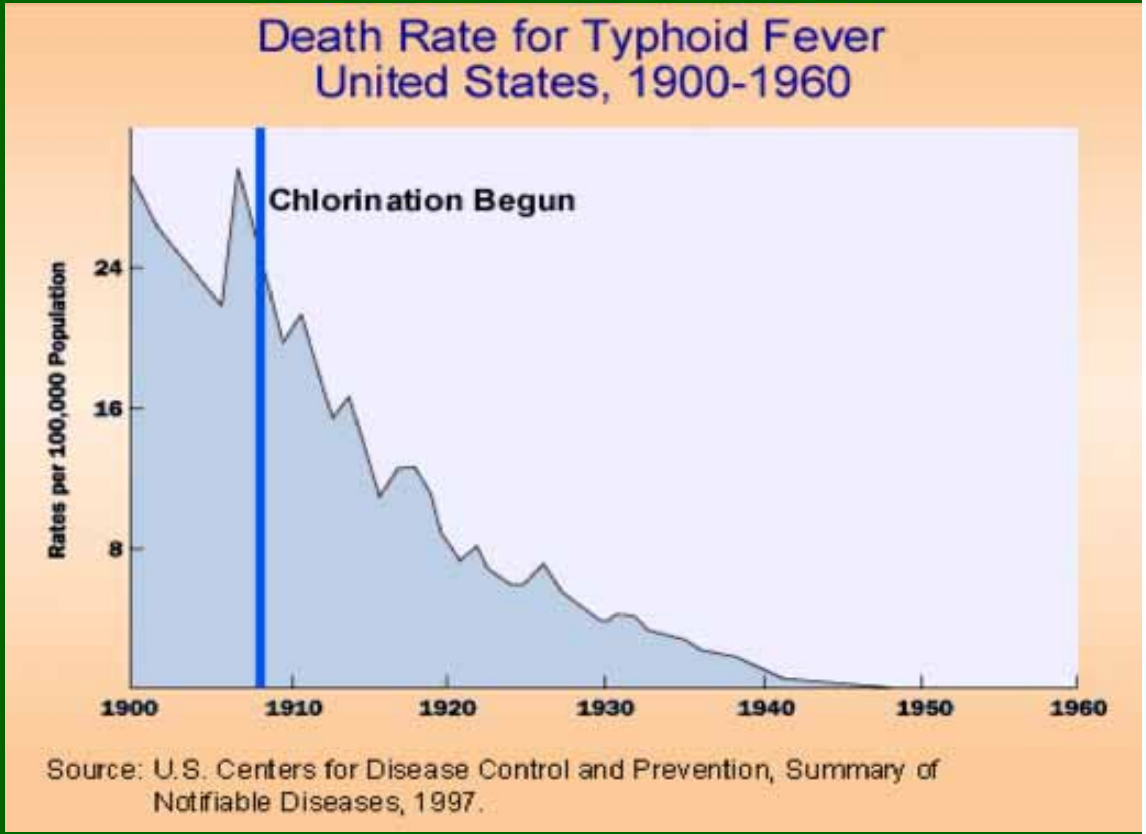
GAC20 – Granular activated carbon filter beds with an empty bed contact time of 20 minutes based on average daily flow and carbon reactivation frequency of every 240 days.

Additional New Acronyms

Acronym	Definition
40/30	IDSE - 40/30 Certification
CDS	Combined Distribution System
IDSE	Initial Distribution System Evaluation
LRAA	Locational Running Annual Average
SM	IDSE - Standard Monitoring
SSS	IDSE - System Specific Study
VSS	IDSE - Very Small System

Public Health & Disinfection

- Disinfectants:
  - Kill or inactivate disease-causing microorganisms
  - React with substances naturally in water to form harmful DBPs
  - Produce negative health effects when present in excessive levels

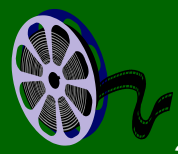


How Are DBPs Formed?

Precursor in Water		Added Disinfectant
NOM Bromide	+	Chlorine Chloramines Chlorine Dioxide Ozone

=

DBP
TTHM HAA5 Chlorite Bromate

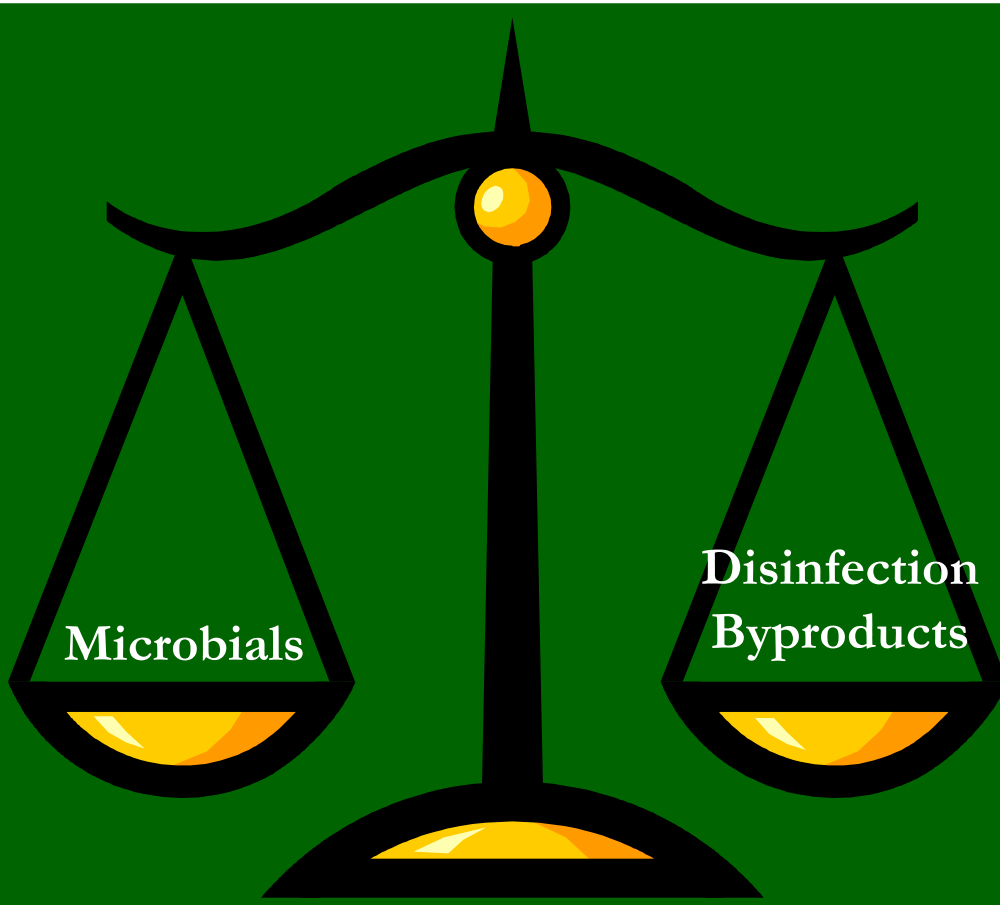


Health Effects

- Disinfectants (in large doses):
  - Eye and nose irritation
  - Stomach discomfort
  - Anemia
  - Other acute short-term health effects
- Byproducts:
  - Cancer
  - Liver problems
  - Kidney problems
  - Central nervous system problems
  - Anemia
  - Reproductive problems

A Delicate Balance

- ✓ Risk: microbial contamination vs. DBP formation
- ✓ EPA's solution: control health risks from microbials, disinfectants, and DBPs
- ✓ Result: M-DBP Suite of rules



Stage 1 DPBR Review

Stage 1 DBPR Review

- Key Point
  - Monitoring for Stage 1 DBPR
    - Plant, source water, and population based
  - Monitoring for Stage 2 DBPR
    - Only source water and population based

Stage 1 DBPR Overview

- Applied to all community and nontransient noncommunity water systems that added a chemical disinfectant
  - Subpart H systems serving ≥ 10,000 people (January 1, 2002)
  - Subpart H serving < 10,000 people and ground water systems that chemically disinfect (January 1, 2004)
- Requirements:
  - New disinfectant MRDLs for chlorine, chloramines, & chlorine dioxide
  - New DBP MCLs for TTHM, HAA5, bromate, & chlorite
  - New treatment technique regulations for TOC (Subpart H with conventional treatment only)

The requirements that apply to each system depend on treatment process and type of source water.

Stage 1 DBPR MRDL & MCL

- MRDLs

Disinfectant	MRDL
Chlorine*	4.0 mg/L
Chloramines*	4.0 mg/L
Chlorine Dioxide	0.8 mg/L

- MCLs

Disinfection Byproduct	MCL
TTHM*	0.080 mg/L
HAA5*	0.060 mg/L
Bromate*	0.010 mg/L
Chlorite	1.0 mg/L

*Based on a running annual average

MCLGs for DBPs

DBP	MCLG (mg/L)
Bromodichloromethane	0
Bromoform	0
Bromate	0
Chlorite	0.8
Chloroform	0.07
Dibromochloromethane	0.06
Dichloroacetic acid	0
Monochloroacetic acid	0.07
Trichloroacetic acid	0.02

Monitoring Plans

- Each system must have developed and implemented a monitoring plan
  - Plan must include:
    - Sample locations and schedules
      - Representative of entire distribution system
    - Compliance calculation methodology
- Plans must have been completed by:
  - January 2002 for subpart H systems serving ≥ 10,000
  - January 2004 for subpart H systems serving < 10,000 and all groundwater systems
- Subpart H systems serving > 3,300 must have submitted monitoring plans to the state by:
  - April 10, 2002 for systems serving ≥ 10,000
  - April 10, 2004 for systems serving 3,301 to 9,999

General

- **Compliance Calculation**
  - Calculate compliance at the end of every quarter in which the system monitors using the running annual average (RAA) of results from last 12 months and compare to MCL
- **Compliance Reporting**
  - Within 10 days of the end of each quarter in which samples are taken, report RAA, MCL violations, and information about samples to state.
- **Public Notification**
  - Tier 1: acute chlorine dioxide MRDL violations
  - Tier 2: all other MRDL, MCL, and TT violations
  - Tier 3: all monitoring violations not requiring Tier 1 or 2 notification

Start

1

2

3

4

5

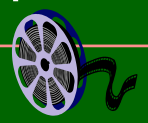
6

7

TTHM and HAA5 Monitoring and Compliance Calculations under Stage 1 DBPR

TTHM & HAA5 Routine Monitoring

Type of System	Monitoring Frequency	Locations
Subpart H serving ≥ 10,000	4 samples per plant per quarter	At least 25% at MRT Remaining samples representative of ART
Subpart H serving 500 – 9,999	GA Subpart H: 4 samples per plant per quarter	At least 25% at MRT Remaining samples representative of ART
GW serving ≥ 10,000	1 sample per plant per quarter	MRT
Subpart H serving < 500	GA Subpart H: 4 samples per plant per quarter	At least 25% at MRT Remaining samples representative of ART
GW serving < 10,000	1 sample per plant per year during month of warmest water temperature	MRT



TTHM & HAA5 Reduced Monitoring

Type of System	Qualify if:	Monitoring Frequency
Subpart H serving ≥ 10,000	TTHM RAA ≤ 0.040 mg/L and, HAA5 RAA ≤ 0.030 mg/L and, Source Water TOC RAA ≤ 4.0 mg/L (Subpart H only)	1 sample per plant per quarter at MRT
Subpart H serving 500 – 9,999		1 sample per plant per year during month of warmest water temperature
GW serving ≥ 10,000		
Subpart H serving < 500	N/A	N/A
GW serving < 10,000	TTHM RAA ≤ 0.040 mg/L and, HAA5 RAA ≤ 0.030 mg/L and, For 2 years **or** TTHM RAA ≤ 0.020 mg/L and, HAA5 RAA ≤ 0.015 mg/L and, For 1 year	1 sample per treatment plant per 3-year monitoring cycle at MRT

TTHM & HAA5 Increased Monitoring

Type of System	Trigger	Monitoring Frequency
Subpart H serving ≥ 10,000	N/A	N/A
Subpart H serving 500 – 9,999		
GW serving ≥ 10,000		
Subpart H serving < 500	Any TTHM or HAA5 result (or average of samples, if more than one is taken) > MCL	1 sample per treatment plant per quarter at MRT
GW serving < 10,000		

Start

1

2

3

4

5

6

7

Stage 2 DBPR Overview

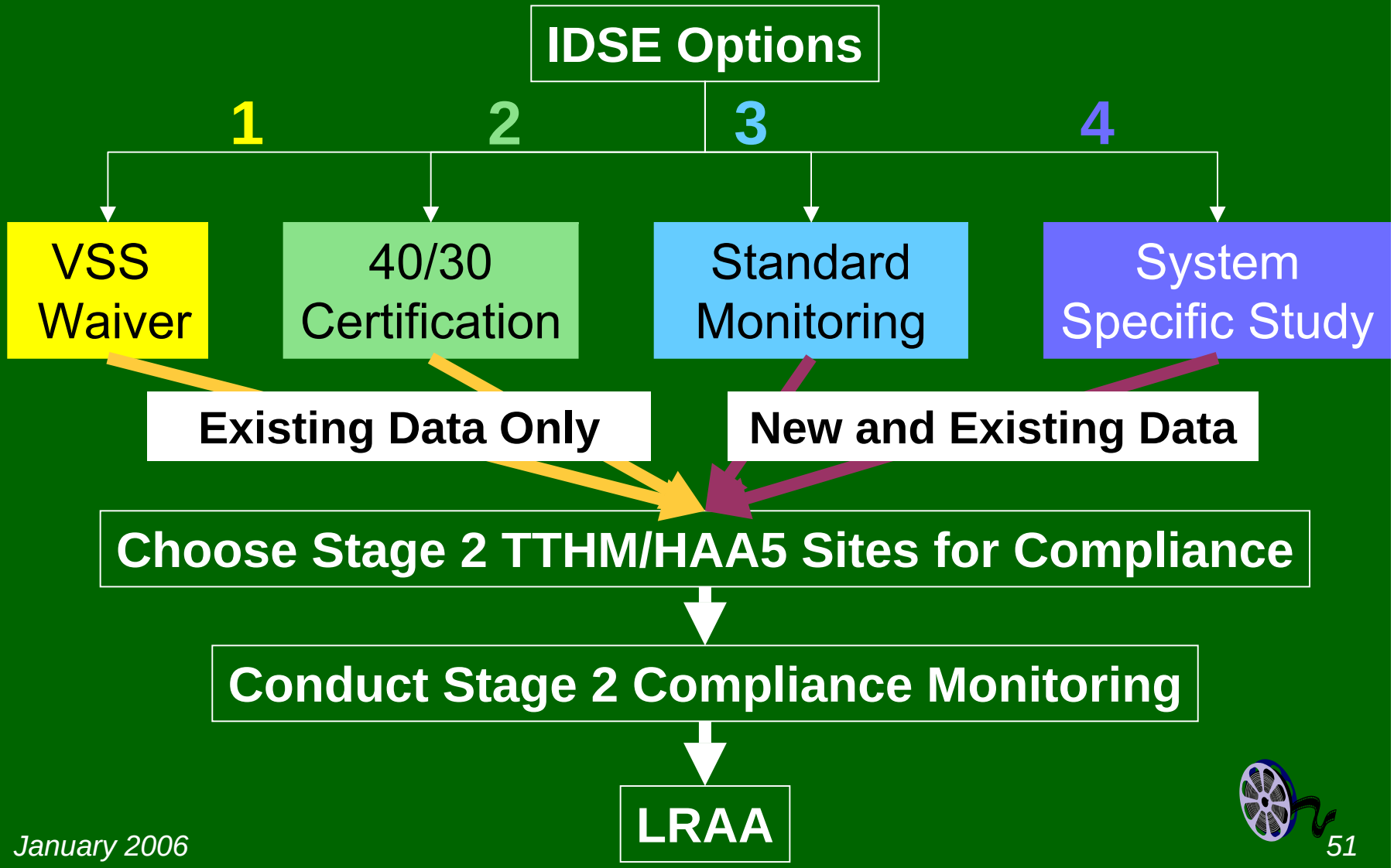
Purposes of the Stage 2 DBPR

- Build upon existing rules in M-DBP Suite
- Identify more appropriate monitoring sites for DBPs
  - Initial distribution system evaluations (IDSEs) to investigate TTHM and HAA5 levels in the distribution system
- Improve protection of public health by reducing exposure to DBPs
  - Locational Running Annual Averages (LRAAs) to calculate compliance

Stage 2 DBPR Overview

- **IDSE (Initial Distribution System Evaluation)**
  - Very Small System Waiver (VSS)
  - 40/30 Certification (40/30)
  - Standard Monitoring
  - System Specific Study
- **Stage 2 DBPR Compliance Monitoring**
  - Sites selected from IDSE and/or Stage 1 DBPR sites
  - Locational Running Annual Average (LRAA)
  - Operational Evaluations
- **Additional Issues**
  - Consecutive systems, population-based compliance
  - Revisions to Stage 1 DBPR
    - Reduced monitoring based on TOC, Bromate reduced monitoring

Stage 2 DBPR

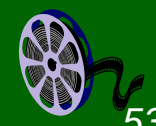

IDSE Options
1
2
3
4
VSS Waiver
40/30 Certification
Standard Monitoring
System Specific Study
Existing Data Only
New and Existing Data
Choose Stage 2 TTHM/HAA5 Sites for Compliance
Conduct Stage 2 Compliance Monitoring
LRAA

Stage 2 DBPR Overview

Implementation Issues

Population-Based Monitoring and Scheduling

- Stage 1 DBPR
  - Scheduling based on source water type and population served
  - Monitoring based on source water type, population served, *and number of treatment plants/wells*
- Stage 2 DBPR
  - Scheduling based on source water type, population served, *and population of the largest system in combined distribution system (CDS)*
  - Monitoring based on source water type and population served (excluding CDS)



Schedules

If you are this kind of system:	*You are on schedule number:*
Systems serving 100,000 or more people OR belonging to a CDS in which the largest systems serves 100,000 or more	1
Systems serving 50,000 to 99,999 people OR belonging to a CDS in which the largest systems serves 50,000 to 99,999	2
Systems serving 10,000 to 49,999 people OR belonging to a CDS in which the largest system serves 10,000 to 49,999	3
Systems serving fewer than 10,000 and not connected to a larger system	4

Population Based Monitoring Schedule

Schedule 1 Systems: ≥ 100,000 people

Schedule 2 Systems: 50,000 – 99,999 people

Schedule 3 Systems: 10,000 – 49,999 people

Schedule 4 Systems: < 10,000 people

IDSE Implementation Timeline

Sch.	Systems Serving:	Submit 40/30 Certification, SM, SSS Plan, or receive VSS Waiver by:	Complete SM or SSS By:	Submit IDSE Report (only systems conducting SM or SSS) by:
1	≥ 100,000	Oct. 1, 2006	Sept. 30, 2008	Jan. 1, 2009
2	50,000–99,999	Apr. 1, 2007	Mar. 31, 2009	July 1, 2009
3	10,000–49,999	Oct. 1, 2007	Sept. 30, 2009	Jan. 1, 2010
4	< 10,000	Apr. 1, 2008	Mar. 31, 2010	July 1, 2010

Schedule for systems in a combined distribution system is based on that of the largest system in the combined distribution system

TIMELINE for Stage 2 DBPR

- January 2006 – Rule Promulgated (published Jan. 4, 2006)
- February 2006 – Register with DCTS and Trainings
- March 2006 – Rule becomes effective
- Oct. 1, 2006 – Schedule 1 systems submit IDSE Plan:

  (40/30 Certification; Standard Monitoring Plans (SMP); System Specific Study Plans (SSS)
- Oct. 1, 2006 – EPD begins review and approval of plans for Schedule 1 systems until Sept. 30, 2007
- April 1, 2007 - Schedule 2 systems submit IDSE Plan:

  (40/30 Certification; Standard Monitoring Plans (SMP); System Specific Study Plans (SSS)
- April 1, 2007 – EPD begins review and approval of plans for Schedule 2 systems until March 31, 2008

TIMELINE for Stage 2 DBPR (cont.)

- Sept. 30, 2007 - Schedule 3 systems submit IDSE Plan:

  (40/30 Certification; Standard Monitoring Plans (SMP); System Specific Study Plans (SSS)

- Oct. 1, 2007 – EPD begins review and approval of plans for Schedule 3 systems until Sept. 30, 2008

- Oct.1, 2007 – Schedule 1 systems begin one-year IDSE monitoring until Sept. 30, 2008

- March 31, 2008 - Schedule 4 systems submit IDSE Plan

  (40/30 Certification; Standard Monitoring Plans (SMP); System Specific Study Plans (SSS)

- April 1, 2008 – EPD begins review and approval of plans for Schedule 4 systems until March 31, 2009

- April 1, 2008 - Schedule 2 systems begin one-year IDSE monitoring until March 31, 2009

TIMELINE for Stage 2 DBPR (cont.)

- Sept. 30, 2008 – Schedule 1 systems complete IDSE
- Oct. 1, 2008 - Schedule 3 systems begin one-year IDSE monitoring until Sept. 30, 2009
- January 1, 2009 – Schedule 1 systems submit IDSE report
- March 31, 2009 – Schedule 2 systems complete IDSE
- April 1, 2009 - Schedule 4 systems begin one-year IDSE monitoring until March 31, 2010
- April 1, 2009 – Schedule 1 systems begin Treatment Installation until April 1, 2012
- July 1, 2009 – Schedule 2 systems submit IDSE report
- Sept. 30, 2009 – Schedule 3 systems complete IDSE
- Oct.1, 2009 - Schedule 2 systems begin Treatment Installation until Oct. 1 , 2012
- January 1, 2010 - Schedule 3 systems submit IDSE report
- March 31, 2010 – Schedule 4 systems complete IDSE
- July 1, 2010 - Schedule 4 systems submit IDSE report

TIMELINE for Stage 2 DBPR (cont.)

- Oct. 1, 2010 - Schedule 3 systems Treatment Installation until Oct. 1, 2013
- Oct. 1, 2010 - Schedule 4 systems Treatment Installation until Oct. 1, 2013

- **April 1, 2012 – Schedule 1 sys. comply with Stage 2 DBPR monitoring**
- **Oct. 1, 2012 – Schedule 2 sys. comply with Stage 2 DBPR monitoring**
- **Oct. 1, 2013 - Schedule 3 sys. comply with Stage 2 DBPR monitoring**
- **Oct. 1, 2013 - Schedule 4 sys. comply with Stage 2 DBPR monitoring**

or Oct 1, 2014 - Schedule 4 sys. comply with Stage 2 DBPR monitoring

TIMELINE for Schedule 1 Systems

- January 2006 – Rule Promulgated
- February 2006 – Register with DCTS and Trainings
- March 2006 – Rule becomes effective

- Oct. 1, 2006 – Schedule 1 systems submit IDSE Plans:
  - 40/30 Certification
  - Standard Monitoring Plans (SMP)
  - System Specific Study Plans (SSS)

- Oct. 1, 2006 – EPD begins review/approval of Plans until Sept. 30, 2007
- Oct.1, 2007 – Begin one-year IDSE monitoring until Sept. 30, 2008
- Sept. 30, 2008 – Complete IDSE monitoring
- Jan. 1, 2009 – Submit IDSE report
- April 1, 2009 – Begin Treatment Installation until April 1, 2012
- April 1, 2012 – Must start complying with Stage 2 DBPR monitoring

TIMELINE for Schedule 2 Systems

- January 2006 – Rule Promulgated
- February 2006 – Register with DCTS and Trainings
- March 2006 – Rule becomes effective

- April 1, 2007 - Schedule 2 systems submit IDSE Plans:
  40/30 Certification
  Standard Monitoring Plans (SMP)
  System Specific Study Plans (SSS)

- April 1, 2007 – EPD begins review/approval of Plans until March 31, 2008
- April 1, 2008 - Begin one-year IDSE monitoring until March 31, 2009
- March 31, 2009 – Complete IDSE monitoring
- July 1, 2009 – Submit IDSE report
- Oct.1, 2009 - Begin Treatment Installation until October 1, 2012
- Oct.1, 2012 – Must start complying with Stage 2 DBPR monitoring

TIMELINE for Schedule 3 Systems

- January 2006 – Rule Promulgated
- February 2006 – register with DCTS and Trainings
- March 2006 – Rule becomes effective

- Oct. 1, 2007 - Schedule 3 systems submit IDSE Plans:
  40/30 Certification
  Standard Monitoring Plans (SMP)
  System Specific Study Plans (SSS)

- Oct. 1, 2007 – EPD begin review/approval of Plans until Sept. 30, 2008
- Oct. 1, 2008 - Begin one-year IDSE monitoring until Sept. 30, 2009
- Sept. 30, 2009 – Complete IDSE monitoring
- Jan. 1, 2010 - Submit IDSE report
- Oct. 1, 2010 - Begin Treatment Installation until October 1, 2013
- Oct. 1, 2013 - Must start complying with Stage 2 DBPR monitoring

TIMELINE for Schedule 4 Systems

- January 2006 – Rule Promulgated
- February 2006 – register with DCTS and Trainings
- March 2006 – Rule becomes effective

- April 1, 2008 - Schedule 4 systems submit IDSE Plans:
  40/30 Certification
  Standard Monitoring Plans (SMP)
  System Specific Study Plans (SSS)

- April 1, 2008 – EPD begins review/approval of Plans until March 31, 2009
- April 1, 2009 - Begin one-year IDSE monitoring until March 31, 2010
- March 31, 2010 – Complete IDSE monitoring
- July 1, 2010 - Submit IDSE report
- Oct. 1, 2010 - Begin Treatment Installation until October 1, 2013 / 2014
- Oct. 1, 2013 / 2014 - Must start complying with Stage 2 DBPR monitoring

Combined Distribution Systems (CDSs)

- All systems in a CDS (i.e., wholesalers, consecutive systems) must comply with Stage 2 DBPR requirements on the same schedule
  - Compliance date is based on the population of the largest system in the CDS
  - Largest system is not necessarily the wholesaler
- State has discretion to determine CDS
  - Emergency or seasonal connections

Consecutive Systems Schedule

Systems that are part of a combined distribution system (wholesale or consecutive system) must conduct IDSE at the same time with the earliest compliance date in the combined distribution system.

Consecutive Systems Schedule

- **Combined Distribution Systems**:

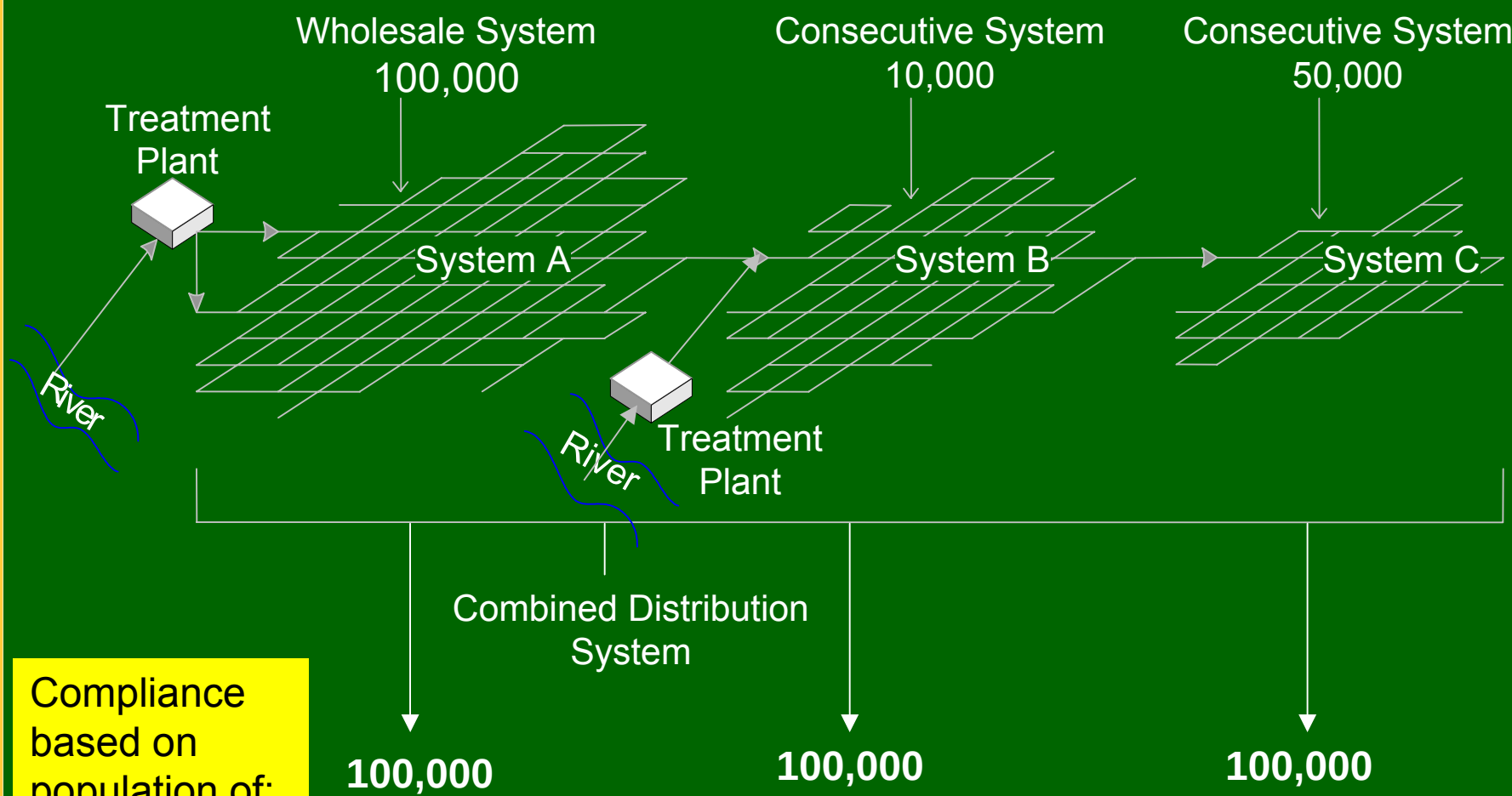
  EPD already determined that CDS does or does not include certain consecutive or wholesale systems based on factors such as:

  Emergency Connection: System receives water from wholesale system or delivers water to consecutive system only on emergency basis.

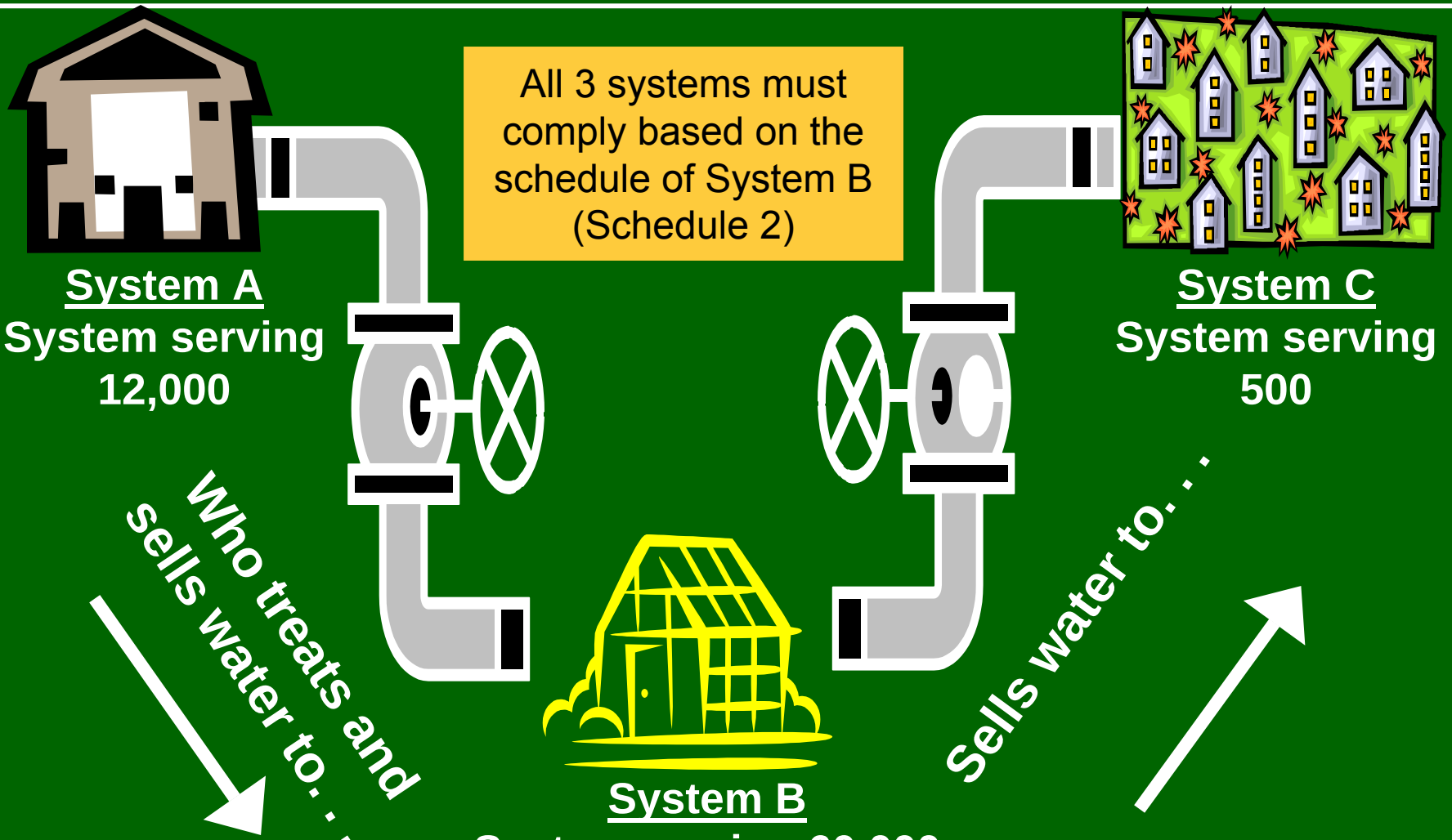
  Small Percentage and Volume: Only a small percentage and small volume of water received from a wholesale system or delivered to a consecutive system.

  Consecutive or Wholesale systems must comply with Stage 2 DBPR at the same time as the system with the earliest compliance date in the CDS.

Combined Distribution Systems (cont.)



Combined Distribution System Example

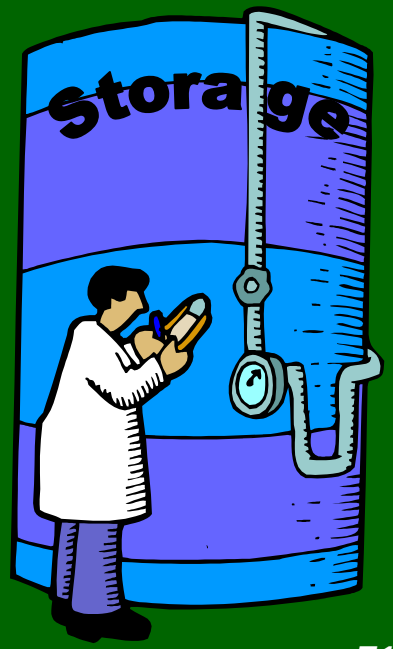


Challenges for Consecutive Systems

- May lack data to determine appropriate monitoring locations for Stage 2 DBPR
  - May not be eligible for VSS Waiver or 40/30 Certification under IDSE if lacking data
    - Would need to do Standard Monitoring or SSS
  - Work with wholesaler
    - Work together
    - May have taken samples in consecutive system's distribution system

Challenges for Consecutive Systems (cont.)

- Receive water that has already been treated
  - May contain DBPs
  - May contain high levels of precursors and disinfectants
- BATs for systems with their own source focus on precursor removal
  - Not an option for consecutive systems
- Stage 2 DBPR introduces new BATs for consecutive systems
  - Chloramination (≥10,000 only)
  - Management of distribution system and storage



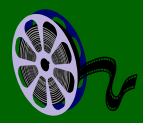
BATs for Consecutive Systems

Systems Serving ≥ 10,000	Improved distribution system and storage tank management to reduce detention time, plus Use of chloramines for disinfection residual maintenance (EPD does not encourage this)
Systems Serving < 10,000	Improved distribution system and storage tank management to reduce detention time

Revisions to the Stage 1 DBPR

Source Water TOC for Reduced DBP Monitoring

- Stage 1 DBPR
  - Systems with
    - TTHM ≤ 0.040 mg/L, and
    - HAA5 ≤ 0.030 mg/L, and
    - TOC ≤ 4.0 mg/L as a running annual average (at a location prior to treatment)
  - Can qualify for reduced monitoring of TTHM and HAA5
  - No sampling frequency specified
- Stage 2 DBPR
  - Eligibility criteria unchanged, but sampling frequency added
  - Beginning **April 1, 2008** or earlier if specified by the state, systems must:
    - Sample every 30 days to qualify for reduced monitoring
    - Sample every 90 days to stay on reduced monitoring



Source Water TOC Reduced Monitoring (cont.)

- Stage 2 DBPR: Monitor every 30 days

July						
S	M	T	W	Th	F	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

August						
S	M	T	W	Th	F	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

September						
S	M	T	W	Th	F	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

- NOT: Monitor monthly

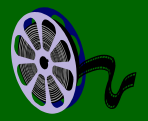
July						
S	M	T	W	Th	F	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

August						
S	M	T	W	Th	F	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

September						
S	M	T	W	Th	F	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

Reduced Monitoring for Bromate

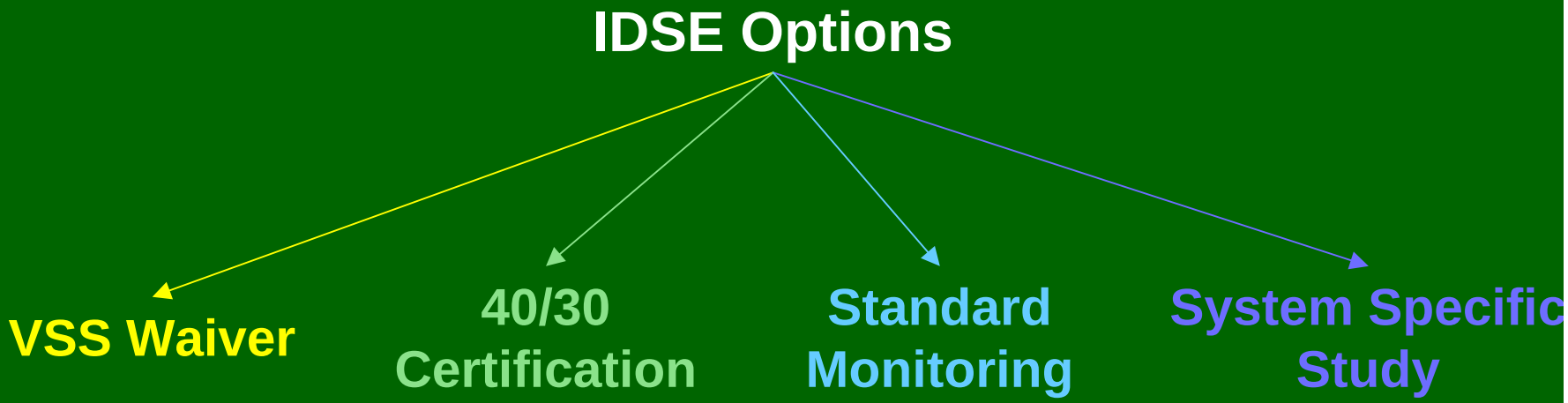
- Stage 1 DBPR
  - Systems that use ozone monitor for **bromate** at the entry point to the distribution system
  - Systems qualify for reduced monitoring if **bromide** *in source water* is < 0.05 mg/L
  - Stays in effect until March 31, 2009
- Stage 2 DBPR
  - Systems can qualify for reduced monitoring if **bromate** is ≤ 0.0025 mg/L RAA at the entry point to the distribution system
    - New analytical method for **bromate** with lower detection limit
    - System must have 12 months of data utilizing new method
  - Goes into effect **April 1, 2009**



New Requirements of the Stage 2 DBPR

Stage 2 DBPR IDSEs

Required of all CWS and all NTNCWS serving > 10,000 people



Stage 2 DBPR Compliance Monitoring

- Stage 2 DBPR monitoring
  - Number and frequency of sampling is determined by system's source water type and population served
  - Monitoring locations determined by:
    - IDSE results if conducting Standard Monitoring or System Specific Study
    - Stage 1 DBPR data (if granted VSS Waiver or approved 40/30 Certification)
  - Locational Running Annual Averages (LRAAs) to calculate compliance
  - Additional requirements for consecutive systems
  - Conduct Operational Evaluations
  - Conduct Stage 1 DBPR monitoring until Stage 2 DBPR monitoring takes effect

Consecutive Systems

- Must comply with IDSE requirements
- Must conduct Stage 2 DBPR TTHM and HAA5 compliance monitoring
- Must comply with the Stage 1 DBPR requirements for chlorine and chloramines beginning April 1, 2009

Consecutive Systems

"**Consecutive Systems**" delivering water that has been treated with disinfectant other than UV must comply with chlorine and chloramine monitoring and MRDL beginning **April 1, 2009** (or earlier if required by EPD)

Reporting & Recordkeeping

- Report no later than 10 days after the end of any quarter in which monitoring was conducted
- Systems must retain monitoring results for 10 years
- Systems must retain monitoring plans for 10 years

Stage 2 DBPR
Consumer Confidence Reports

- Include in the CCR:
  - Highest LRAA for TTHM and HAA5
  - LRAA for all locations exceeding MCL
  - Range of individual sample results for all locations
  - *Range of individual sample results from IDSE monitoring for the calendar year in which the IDSE samples were taken*

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Very Small System (VSS) Waivers

Contents

- Eligibility Requirements
- Systems Not Granted a Waiver
- Recordkeeping

Eligibility Criteria

- **Systems must:**
  - Serve < 500 people
  - Have taken TTHM and HAA5 samples
    - Reduced monitoring acceptable
    - Operational data acceptable

Note: State or the EPA may deny a VSS Waiver for any reason, even if system meets all eligibility criteria

VSS Waivers

- Waivers effective immediately
  - No application necessary
  - Systems must meet all criteria
- State can require SM or SSS
- VSS Waiver is only a waiver from additional IDSE activities
  - No Standard Monitoring or Study Plan for IDSE
  - No IDSE Report
- Continue compliance with Stage 1 DBPR until Stage 2 DBPR compliance begins
  - Complete a "Compliance Monitoring Plan" for the Stage 2 DBPR

Reconsidering a Waiver

- EPA or EPD may consider the following in deciding not to allow VSS Waiver:
  - Consecutive system not required to conduct Stage 1 DBPR monitoring
  - Difficulty maintaining disinfectant residual across entire system
  - Stage 1 DBPR sites are not representative of highest TTHM and HAA5 concentrations
  - Systems with branched or poorly looped distribution systems
  - System personnel are inexperienced or do not have adequate knowledge of the system
  - High DBP levels

Systems Not Receiving Waiver

- Systems must comply with IDSE through:
  - Standard Monitoring

  OR

  - System Specific Study
- Work with EPD to determine a timeline for compliance

Very Small System Recordkeeping

- No IDSE recordkeeping requirements
- Systems must prepare a "Compliance Monitoring Plan" for Stage 2 DBPR and keep it on file for State, EPA and public review

Implementation Issues

- EPD will notify VSS if they must conduct Standard Monitoring or a System Specific Study
  - State may disallow any or all VSS Waivers
- If system is denied waiver, completing Standard Monitoring or a System Specific Study on time could be challenging
  - State may work with system to determine alternate timeline

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40/30 Certification

Eligibility Criteria

- Systems must have taken all required Stage 1 DBPR TTHM and HAA5 samples:
  - For eight consecutive calendar quarters
  - No individual sample can have exceeded:
    - 0.040 mg/L for TTHM
    - 0.030 mg/L for HAA5
  - No TTHM or HAA5 monitoring violations within specified time period

Note: State may deny the certification for any reason, even if system meets all eligibility criteria

Operational Data

- EPD may allow systems to use operational data to qualify for certification
  - Should be equivalent to Stage 1 DBPR data
- Considerations
  - Samples taken and analyzed by approved methods at a certified lab
  - Adequate number of sample sites for system size
  - Samples taken at appropriate locations (average to maximum residence time)
  - Samples taken at appropriate frequency and during month of warmest water temperature

40/30 Eligibility Period and Deadline

Sch.	Population	Eligibility Period Beginning No Earlier Than*:	Submit 40/30 Certification By:
1	≥100,000	January 2004	Oct. 1, 2006
2	50,000-99,999		Apr. 1, 2007
3	10,000-49,999	January 2005	Oct. 1, 2007
4	<10,000		Apr. 1, 2008

*System is required to base the 40/30 Certification on 8 consecutive calendar quarters of Stage 1 DBPR compliance monitoring results

Example: Reviewing 40/30 Data

Subpart H system serving 5,000 with 1 treatment plant on routine monitoring

- System is required to take 1 sample per plant per quarter
- System is on Schedule 4
- System must take samples for 8 consecutive quarters beginning no earlier than January 2005
- System chooses to sample quarterly from October 2005 – September 2007 and use these results as the 8 consecutive quarters of data

Example: Reviewing 40/30 Data

Subpart H system serving 5,000 with 1 treatment plant on routine monitoring

	TTHM	RAA	HAA5	RAA
10/9/2005	0.034	0.035	0.023	0.022
1/7/2006	0.039	0.037	0.020	0.022
4/7/2006	0.036	0.036	0.025	0.023
7/6/2006	0.034	0.036	0.022	0.023
10/4/2006	0.030	0.035	0.019	0.022
1/2/2007	0.027	0.032	0.024	0.023
4/2/2007	0.032	0.031	0.029	0.024
7/1/2007	0.030	0.030	0.026	0.025

Example: Reviewing 40/30 Data

System's data qualifies for 40/30 Certification

Subpart H system serving 5,000 with 1 treatment plant on routine monitoring

		RAA	HAA5	RAA
10/9/2005	0.034	0.035	0.023	0.022
1/7/2006	0.039	0.037	0.020	0.022
4/7/2006	0.036	0.036	0.025	0.023
7/6/2006	0.034	0.036	0.022	0.023
10/4/2006	0.030	0.035	0.019	0.022
1/2/2007	0.027	0.032	0.024	0.023
4/2/2007	0.032	0.031	0.029	0.024
7/1/2007	0.030	0.030	0.026	0.025

Example #2: Reviewing 40/30 Data

Subpart H system serving 5,000 with 1 treatment plant on routine monitoring

- System is required to take 1 sample per plant per quarter
- System is on Schedule 4
- System must take samples for 8 consecutive quarters beginning no earlier than January 2005
- System chooses to sample quarterly from October 2005 – September 2007 and use these results as the 8 consecutive quarters of data

Example #2: Reviewing 40/30 Data

Subpart H system serving 5,000 with 1 treatment plant on routine monitoring

	TTHM	RAA	HAA5	RAA
10/9/2005	0.034	0.035	0.023	0.022
1/7/2006	0.039	0.037	0.020	0.022
4/7/2006	0.036	0.036	0.025	0.023
7/6/2006	0.034	0.036	0.022	0.023
10/4/2006	0.030	0.035	0.019	0.022
1/2/2007	0.027	0.032	0.024	0.023
4/2/2007	0.032	0.031	0.032	0.024
7/1/2007	0.030	0.030	0.029	0.026

Example #2: Reviewing 40/30 Data

System's data does not qualify for 40/30 Certification

Subpart H system serving 5,000 with 1 treatment plant on routine monitoring

		RAA	HAA5	RAA
10/9/2005	0.034	0.035	0.023	0.022
1/7/2006	0.039	0.037	0.020	0.022
4/7/2006	0.036	0.036	0.025	0.023
7/6/2006	0.034	0.036	0.022	0.023
10/4/2006	0.030	0.035	0.019	0.022
1/2/2007	0.027	0.032	0.024	0.023
4/2/2007	0.032	0.031	0.032	0.024
7/1/2007	0.030	0.030	0.029	0.026

Individual sample exceeded 0.030 mg/L for HAA5.

Example 40/30 Certification Letter

System Information

PWS Name_____ PWS ID:_____

Street Address:_____ City, State, Zip:_____

Population Served:_____ Source Water Type: ☐ Ground ☐ Surface/GWUDI

System Type: ☐ CWS ☐ NTNCWS

Combined Distribution System: ☐ Wholesale ☐ Consecutive ☐ Neither

Contact Person

Name: _____Title: _____

Phone Number:_____Fax Number (if available):_____

Email Address (if available):_____

Certification

I hereby certify that each individual Stage 1 DBPR compliance sample collected from _____ to _____ were less than or equal to 0.040 mg/L for TTHM and 0.030 mg/L for HAA5. I understand that to be eligible, each individual sample must be below these values. I also certify that this PWS did not have any monitoring violations during this time period.

Signature:_____ Date:_____

40/30 Certification

- EPD can require Standard Monitoring or System Specific Study
- Certification is only a waiver from additional IDSE activities
  - No IDSE Report
- Continue compliance with Stage 1 DBPR until Stage 2 DBPR compliance begins
  - Must complete a "Compliance Monitoring Plan" for Stage 2 DBPR

Information EPD may look for during its 40/30 Review

- Requirements
  - Certification based on appropriate dates
  - Certification received by deadline
  - Files verify that DBP levels below 40/30
- Additional elements maybe required
  - Schematic
  - Stage 1 DBPR results
  - Stage 2 DBPR site selection
- Other helpful information
  - System type
  - Population served
  - Part of combined distribution system?

40/30 Stage 2 DBPR Timeline

Sch.	Systems Serving:	Submit 40/30 Certification By:	Complete Standard Monitoring or SSS By:	Submit IDSE Report By:
1	≥ 100,000	Oct. 1, 2006	N/A	
2	50,000–99,999	Apr. 1, 2007		
3	10,000–49,999	Oct. 1, 2007		
4	< 10,000	Apr. 1, 2008		

Schedule for systems in a combined distribution system is based on that of the largest system in the combined distribution system

EPD Review Considerations

- Issues EPD may consider in requiring a system to conduct an IDSE, and not grant a 40/30 Certification
  - Stage 1 DBPR Sites Inadequate to Select Stage 2 DBPR Sites
    - Large population and few plants
    - Consecutive system with very little data
  - Other DBP Data
    - State is aware of other data indicating higher levels of DBPs
  - Eligibility Period Not Representative
    - Natural Circumstances
    - Distribution System Changes
    - Disinfection or Other Treatment Changes
    - Source Changes

System Not Receiving 40/30 Certification

- Systems must comply with IDSE through:
  - Standard Monitoring

  OR

  - System Specific Study
- Work with EPD to determine a timeline for compliance

System Recordkeeping

- Systems must keep a copy of their 40/30 Certification and supporting data for **10 years** after date of submittal
- Make 40/30 Certification and any EPA or state correspondence available for review by EPA, the state or the public

Implementation Issues

- EPD may or may not separately notify systems that may qualify for 40/30 Certification
- If you think your system may qualify for 40/30, make sure you are aware of:
  - Eligibility criteria and eligibility period
  - Appropriate schedule and submittal deadline
- If additional information is required, State/EPA will let systems know as soon as possible

Implementation Issues (cont.)

- For systems whose TTHM and HAA5 levels are close to the 40/30 Certification limits, EPD may want to discuss the possibility of developing a Standard Monitoring Plan or System Specific Study Plan

- If EPA or the State decides to require Standard Monitoring or System Specific Study, systems will be notified as soon as possible and work with the system to determine an alternate schedule

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Standard Monitoring

What is Standard Monitoring?

- One of 4 options for compliance with IDSE requirements
- Most systems that need to complete an IDSE will use this option
- Process is set by EPA
  - Frequency, number, and location of samples
- Purpose:
  - Find more appropriate sites for Stage 2 DBPR compliance monitoring to better protect public health

Standard Monitoring
IDSE Steps

- Select locations for Standard Monitoring
- Prepare and submit "Standard Monitoring Plan"
  - EPD must approve or modify the plan
- Conduct Standard Monitoring
  - 1 year of monitoring for TTHM and HAA5
- Select Stage 2 DBPR compliance monitoring locations
- Prepare and submit IDSE Report

IDSE Schedule for Standard Monitoring

Sch.	Systems Serving	Submit Plan	Complete Monitoring	Submit IDSE Report
1	≥ 100,000	10/1/2006	9/30/2008	1/1/2009
2	50,000 –99,999	4/1/2007	3/31/2009	7/1/2009
3	10,000 –49,999	10/1/2007	9/30/2009	1/1/2010
4	< 10,000	4/1/2008	3/31/2010	7/1/2010

Schedule for systems in a combined distribution system is based on that of largest system in the combined distribution system

Standard Monitoring IDSE Steps

1 Select Standard Monitoring Locations

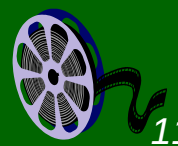
2 Prepare and Submit IDSE Standard Monitoring Plan

Primacy agency approves or modifies the Standard Monitoring Plan

3 Conduct Standard Monitoring

4 Select Stage 2 DBPR compliance monitoring locations

5 Prepare and Submit IDSE Report



Required Components of "Standard Monitoring Plan"

- Distribution system schematic
  - Entry points, sources, and storage facilities
  - Locations and dates of proposed IDSE Standard Monitoring sites
  - Locations and dates of Stage 1 DBPR monitoring sites
- Population served
- Source water type
- Justification of Standard Monitoring sites
  - Must include a summary of data used to justify selection of Standard Monitoring sites

Standard Monitoring Requirements

- What, where, and how often do I monitor?
  - **Samples Collected**
    - Dual sample set (both TTHM and HAA5) collected at all locations
  - **Monitoring Locations**
    - High TTHM levels
    - High HAA5 levels
    - Average Residence Time
    - Near Entry Points
  - **Number of sites**
    - Based on system type
  - **Monitoring Frequency**
    - 1, 4, or 6 monitoring periods during the year at each location
    - Number based on population served and source type

IDSE Standard Monitoring Requirements

- When do I sample?
  - **Sample months**
    - Peak historical month
      - Peak TTHM levels

      OR

      - Peak HAA5 levels

      OR

      - Month of warmest water temperature
    - All systems sample during this month
    - Systems sampling more than once will set sample months every 60 days or every 90 days around peak historical month

TTHM and HAA5
IDSE Standard Monitoring

- **For groundwater systems or systems that purchase groundwater**

Population	Frequency	Total	Near EP	ART	High TTHM	High HAA5
< 500 consecutive	1 (during peak historical month or warmest water temperature)	2	1	-	1	-
< 500 non-consecutive		2	-	-	1	1
500-9,999	4 (every 90 days)	2	-	-	1	1
10,000 – 99,999		6	1	1	2	2
100,000-499,999		8	1	1	3	3
≥ 500,000		12	2	2	4	4

(1) A dual sample set (i.e., a TTHM and an HAA5 sample) must be taken at each monitoring location during each monitoring period.
(2) The peak historical month is the month with the highest TTHM or HAA5 levels or warmest water temperature.

TTHM and HAA5
IDSE Standard Monitoring

- **For Subpart H systems and systems that purchase Subpart H water**

Population	Frequency	Total	Near EP	ART	High TTHM	High HAA5
<500 consecutive	1 (during peak historical month or warmest water temperature)	2	1	-	1	-
<500 non-consecutive		2	-	-	1	1
500-3,300 consecutive	4 (every 90 days)	2	1	-	1	-
500-3,300 non-consecutive		2	-	-	1	1
3,301-9,999		4	-	1	2	1
10,000-49,999	6 (every 60 days)	8	1	2	3	2
50,000- 249,999		16	3	4	5	4
250,000-999,999		24	4	6	8	6
1,000,000-4,999,999		32	6	8	10	8
≥ 5,000,000		40	8	10	12	10

Standard Monitoring Example

- Stage 2 DBPR: Monitor every 90 days

July						
S	M	T	W	Th	F	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

October						
S	M	T	W	Th	F	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

- NOT: Every quarter

July						
S	M	T	W	Th	F	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

December						
S	M	T	W	Th	F	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

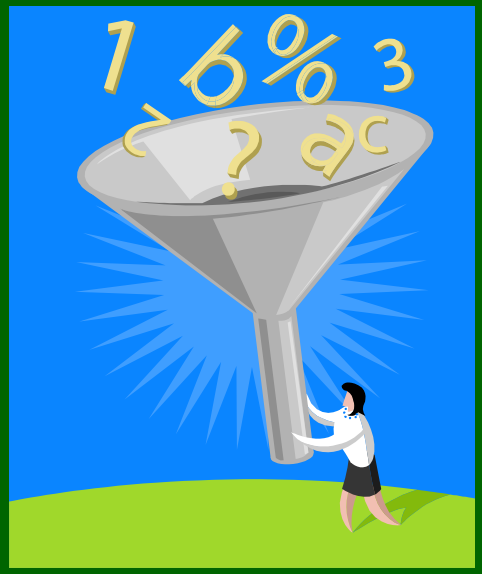
Standard Monitoring Site Selection – Justification

- Plan must include a justification for the selection of sites to be sampled during Standard Monitoring

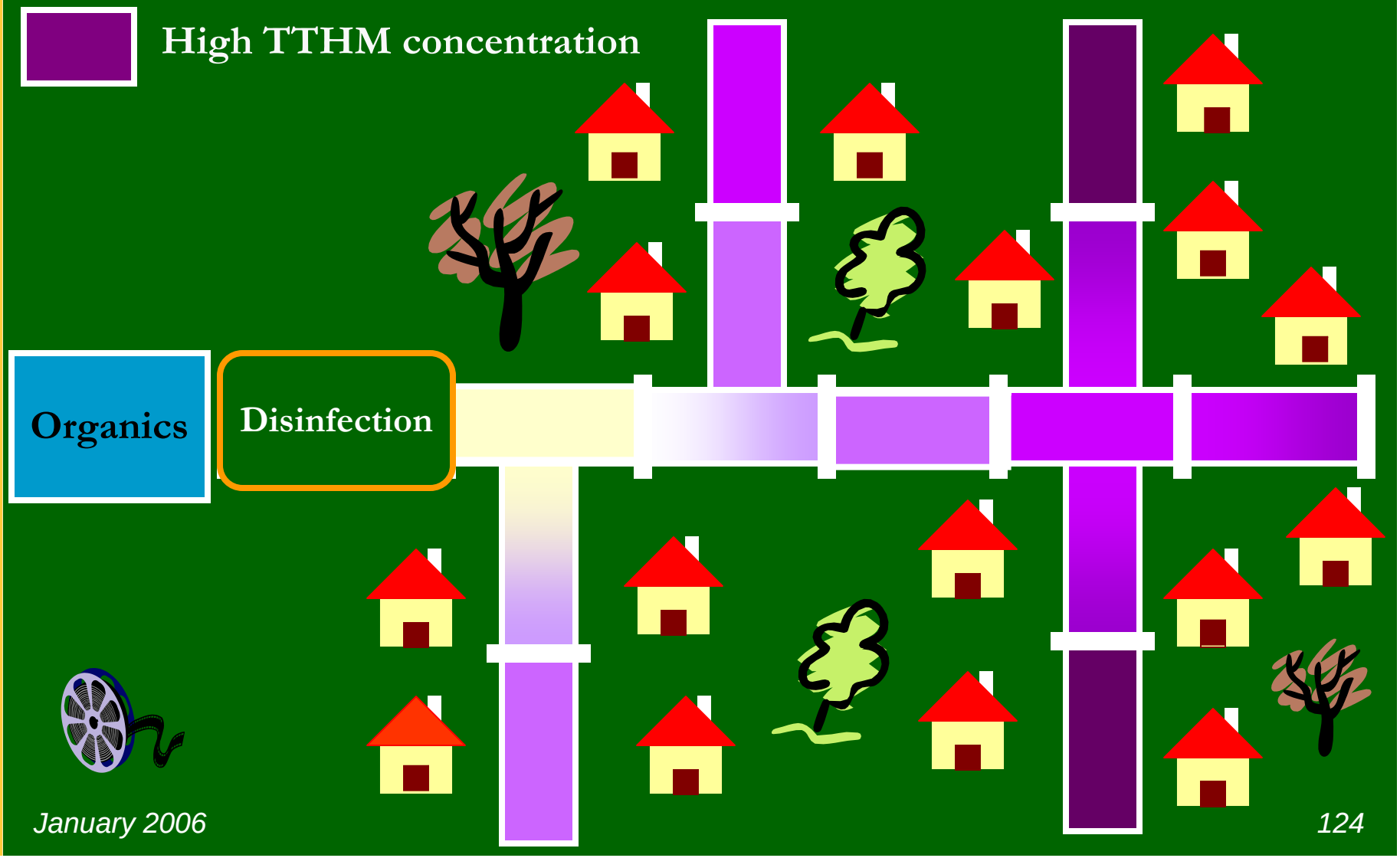
- Data sources and tools
  - Distribution system maps
  - Water quality data
  - Distribution system operating data

Factors Affecting DBP Formation

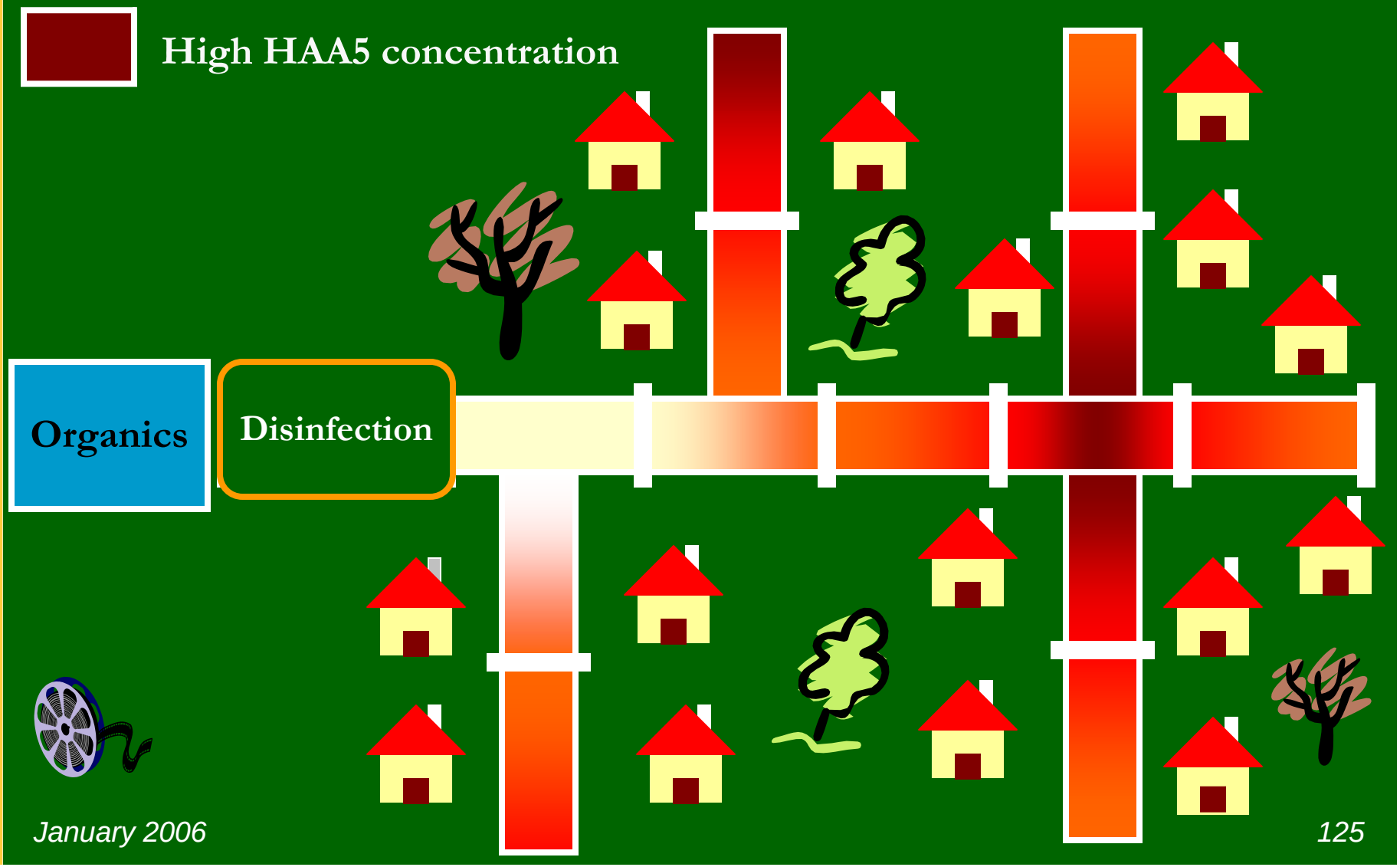
- Precursor concentration
- Disinfectant - type and dose
- Water chemistry
- Water temperature
- Residence Time
- Biodegradation of HAAs



TTHM Formation

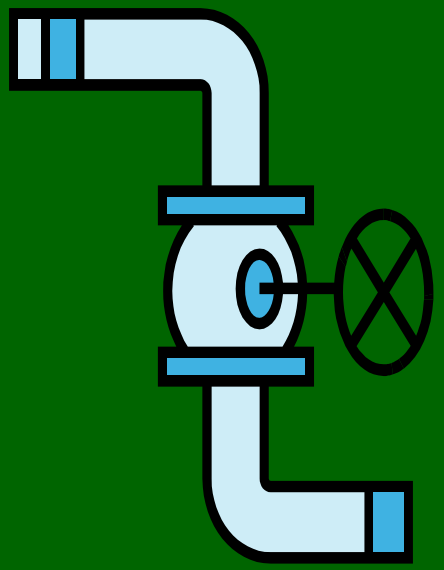


HAA5 Formation



Data Sources and Tools for Site Selection

- **Distribution system maps**
  - Pipe
    - Dead ends
    - Length and diameter
    - Age and material
  - Water use
    - Highly and lightly developed areas
    - Major users
  - Entry points and sources
  - Key components
    - Tanks, pump stations, booster chlorination



Data Sources and Tools for Site Selection

- **Water quality data**
  - Source water quality
    - Multiple sources
  - DBP data
    - Should use Stage 1 DBPR data for information
    - Cannot use Stage 1 DBPR sites for Standard Monitoring sites
  - Disinfectant residual data
    - Can be indicative of residence time, but…
      - Other factors can deplete residual
      - Booster chlorination will increase residual
  - Heterotrophic Plate Count (HPC)
    - May indicate biodegradation of HAA5

Data Sources and Tools for Site Selection

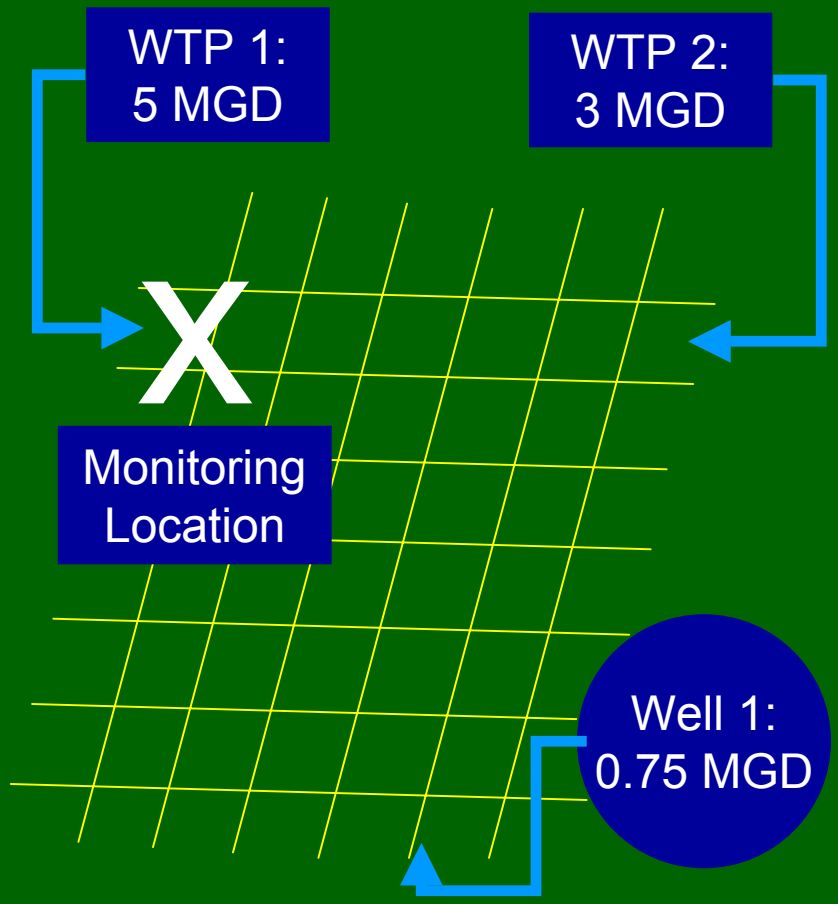
- **Distribution system operating data**
  - Understanding water flow
    - Pump run times
    - Metered flows between pressure zones
    - Billing records for major users
    - Advanced tools (hydraulic modeling or tracer studies)
  - Impact of tanks
    - Tank level records and tank configurations
  - Impact of booster chlorination

Selecting Near Entry Point Sites

- **Tools**
  - Distribution system map
- **Location**
  - After treatment
  - Before first customer
- **If more entry points than needed**
  - Use entry points with highest annual water flow
- **If fewer entry points than needed**
  - Replace with high TTHM and HAA5 sites
    - Alternate between high TTHM and high HAA5 sites, starting with TTHM

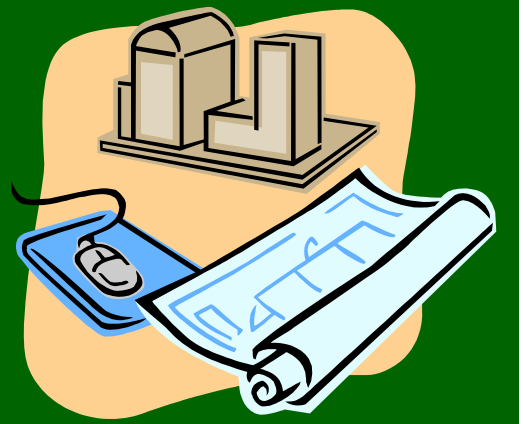
Selecting Near Entry Point Sites – Example

- System needs 1 location near entry point
- System has 2 surface water treatment plants and 1 well = 3 entry points
- System considers flows from each source
  - WTP 1 – 5 MGD
  - WTP 2 – 3 MGD
  - Well 1 – 0.75 MGD
- Locate site near entry point for WTP 1



Selecting Average Residence Time Sites (ART)

- **Determination**
  - Flow weighted analysis
  - Population weighted analysis
- **Tools**
  - Distribution system map
  - Distribution system operational data
    - Hydraulic modeling or tracer study
    - Pump run times, metered flow
  - Distribution system water quality data
    - Average Disinfectant Residual



Selecting High TTHM Sites

- TTHM formation
  - **Advanced residence time** is primary factor
- Avoid
  - Dead ends with no users
  - Sites upstream of booster chlorination
  - Sites after the last hydrant or blowoff
- Good TTHM sites
  - Downstream of tanks
  - Dead ends, but prior to last customer and prior to last hydrant or blowoff
  - “Hydraulic dead ends” and mixing zones
  - Downstream of booster chlorination
  - Sites with difficulty maintaining residual
  - Areas with low water use
  - Areas of high historic levels

Selecting High HAA5 Sites

- HAA5 formation
  - Residence time, but also consider biodegradation
- Avoid
  - Areas with known biofilm growth
  - Areas with difficulty maintaining a residual
- Good HAA5 sites
  - Downstream of booster chlorination
  - Sites with low but detectable residual
  - Areas of high historic levels
  - Others

Methodology for Selecting Final SMP Sites

- Mapping Preliminary Sites
  - **Locate all preliminary SMP locations**
  - **Locate any other system attributes**
    - Areas of sparse development or high use users
    - Storage Facilities
    - Booster Disinfection Stations
    - Pressure Zone Boundaries
    - Areas of High Residence Time or disinfectant residual hard to maintain
  - **Locate Entry Points and Near-Entry Point Sites**
  - **Locate Areas of Average Residence Time**
  - **Locate High TTHM and HAA5 Sites**
  - **Do the sites match the expectations?**

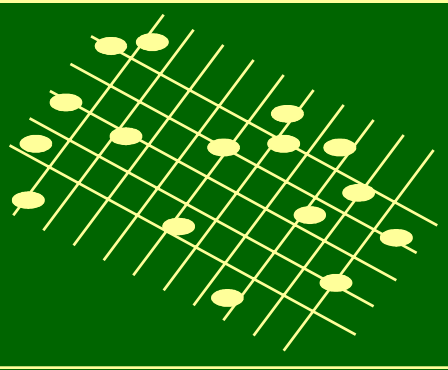
Standard Monitoring Site Selection

Data Sources and Tools

Disinfectant residual, maps, models, etc.

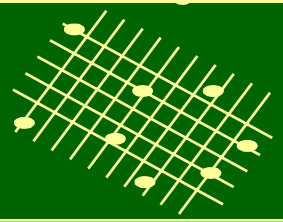
Preliminary data will present many “candidate sites” from which the system can choose “selected sites”

Select Candidate Sites



Narrow Down Selection

Select Standard Monitoring Sites



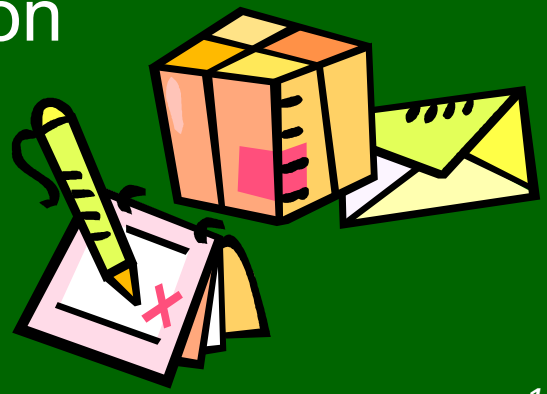
Final "Selected" Sites

- Some site selection will be obvious
  - Near entry point
- Others will require professional judgment
  - Consider geographic representation
  - Consider hydraulic representation
  - Consider areas fed by sources with higher DBPs
  - Use sites that "multi-task"
  - Consider accessibility

Submitting Standard Monitoring Plan

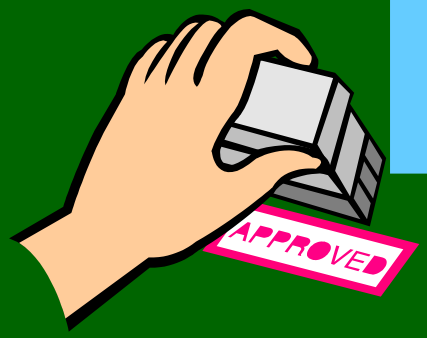
- Once the system has collected and analyzed its information, it must prepare the plan and submit it to the EPD/EPA
  - Electronically (through IDSE tool)
  - Hard-copy (mail to IPMC address)

- Must include required information



Standard Monitoring Plan
Review Process

- EPD will review the IDSE "Monitoring Plan" submitted by the system
  - Verify that it contains required elements
  - Review Standard Monitoring site selection and justification



If EPD does not take action within 12 months from the date when the Standard Monitoring Plan was due, the system can consider the plan approved.

Next Steps

- Conduct 1 year* of monitoring based on Standard Monitoring Plan
  - As approved or amended by the EPD
  - Begin monitoring as outlined in plan after plan has been approved or 12 months from submission deadline

    SEE EPD WEBSITE FOR THE MONITORING PERIODS
  - Monitor HAA5 and TTHM at every site

***1 year of monitoring = 1, 4, or 6 monitoring periods**

Next Steps (cont.)

- Prepare and submit IDSE Report
  - Purpose of the report is to identify Stage 2 DBPR Compliance Monitoring Sites
  - Deadline – depends on schedule (3 months from deadline for conducting monitoring)
  - Submit "Compliance Monitoring Plan"
- Begin Stage 2 DBPR Compliance Monitoring

Start

1

2

3

4

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Review of the Standard Monitoring Plans Form

Example of SM Plan Form

- System Information
  - Population served – 8,000
  - Sources:
    - One surface water source produces 1 MGD
    - Two wells produce 0.5 MGD each
    - One consecutive connection draws 0.1 MGD
      - Wholesale system serves 1 million people
  - Compliance dates based on Schedule 1
    - Wholesale system's schedule

I. General Information

Form 6: Standard Monitoring Plan

Page 1 of 6

I. GENERAL INFORMATION

A. PWS Information*

B. Date Submitted
September 26, 2006

PWSID: XX1234567

PWS Name: Big Sandy

PWS Address: 123 Sandy Beach Road

City: Big Sandy State: XX Zip: 12345

Population Served: 8,000

System Type:	Source Water Type:	Buying / Selling Relationships:
☒ CWS	☒ Subpart H	☒ Consecutive System
☐ NTNCWS	☐ Ground	☐ Wholesale System
		☐ Neither

C. PWS Operations

Residual Disinfectant Type: ☒ Chlorine ☐ Chloramines ☐ Other:_____

Number of Disinfected Sources: 1 Surface ___ GWUDI 2 Ground 1 Purchased

I. General Information

D. Contact Person*

Name:	Jim Smith		
Title:	Certified Operator		
Phone #:	(123) 456-7890	Fax #:	N/A
E-mail:	N/A		

II. IDSE Requirements

II. IDSE REQUIREMENTS*

A. Number of Sites:		B. Schedule	C. Standard Monitoring Frequency
Total:	4		
Near Entry Point:	0	☒ Schedule 1	☐ During peak historical month (1 monitoring period)
Avg Residence Time:	1	☐ Schedule 2	
High TTHM:	2	☐ Schedule 3	☒ Every 90 days (4 monitoring periods)
High HAA5:	1	☐ Schedule 4	☐ Every 60 days (6 monitoring periods)

III. Selecting IDSE Standard Monitoring Sites

Form 6: Standard Monitoring Plan

III. SELECTING STANDARD MONITORING SITES

A. Data Evaluated. Put a "✓" in each box corresponding to the data that you used to select each type of standard monitoring site. Check all that apply.

Data Type	Type of Site			
	Near Entry Pt.	Avg. Residence Time	High TTHM	High HAA5
System Configuration				
Pipe layout, locations of storage facilities		✓	✓	✓
Locations of sources and consecutive system entry points				
Pressure zones			✓	✓
Information on population density				
Locations of large customers				
Water Quality and Operational Data				
Disinfectant residual data		✓	✓	
Stage 1 DBP data				
Other DBP data				
Microbiological monitoring data (e.g., HPC)				
Tank level data, pump run times				
Customer billing records				
Advanced Tools				
Water distribution system model				
Tracer study				

B. Summary of Data.* Provide a summary of additional data you relied on to justify standard monitoring site selection. You are not required to submit original data. (*attach additional sheets if needed*)

IV. Justification of IDSE Monitoring Sites

Form 6. Standard Monitoring Plan

IV. JUSTIFICATION OF STANDARD MONITORING SITES*

Standard Monitoring Site ID (from map)[1]	Site Type	Justification
1	☐ Near Entry Pt ☒ Avg. Res. Time ☐ High TTHM ☐ High HAA5	This average residence time site was chosen based on its geographical location, and after looking at disinfectant residual levels throughout the distribution system. This site typically experiences residual levels that are average for the whole system.
2	☐ Near Entry Pt ☐ Avg. Res. Time ☒ High TTHM ☐ High HAA5	This high TTHM site is at the end of a dead end where we have historically had difficulty maintaining a residual. This site also gives us geographic representation as there are no Stage 1 samples in this area.
3	☐ Near Entry Pt ☐ Avg. Res. Time ☒ High TTHM ☐ High HAA5	This site was chosen because it is downgradient of our tank that is at the far end of town from the sources. We anticipate high TTHM due to advanced water age.
4	☐ Near Entry Pt ☐ Avg. Res. Time ☐ High TTHM ☒ High HAA5	We located this HAA5 site downgradient from the booster chlorination in an area with a long residence time. We are concerned that the booster chlorination increases DBP formation. Also the increase in residual will preclude any biodegredation.

IV. Justification of IDSE Monitoring Sites

IDSE Monitoring Site ID	Site Type	Justification
1	□ Near Entry Pt ☒ Ave Res. Time □ High TTHM □ High HAA5	This average residence time site was chosen based on its geographical location, and after looking at disinfectant residual levels throughout the distribution system. This site typically experiences residual levels that are average for the whole system.

IV. Justification of IDSE Monitoring Sites

IDSE Monitoring Site ID	Site Type	Justification
2	□ Near Entry Pt □ Ave Res. Time ☒ High TTHM □ High HAA5	This high TTHM site is at the end of a dead end where we have historically had difficulty maintaining a residual. This site also gives us geographic representation as there are no Stage 1 samples in this area.

IV. Justification of IDSE Monitoring Sites

IDSE Monitoring Site ID	Site Type	Justification
3	□ Near Entry Pt □ Ave Res. Time ☒ High TTHM □ High HAA5	This site was chosen because it is downgradient of our tank that is at the far end of town from the sources. We anticipate high TTHM due to advanced water age.

IV. Justification of IDSE Monitoring Sites

IDSE Monitoring Site ID	Site Type	Justification
4	□ Near Entry Pt □ Ave Res. Time □ High TTHM ☒ High HAA5	We located this HAA5 site downgradient from the booster chlorination in an area with a long residence time. We are concerned that the booster chlorination increases DBP formation. Also the increase in residual will preclude any biodegredation.

V. Peak Historical Month

Form 6. Standard Monitoring Plan

V. PEAK HISTORICAL MONTH AND STANDARD MONITORING SCHEDULE

A. **Peak Historical Month:*** August

B. **If Multiple Sources, Source Used to Determine Peak Historical Month (write "N/A" if only one source in your system):**

We used temperature data from our surface water source.

C. **Peak Historical Month Based On:* (check all that apply)**

- ☐ High TTHM
- ☒ Warmest water temperature
- ☐ High HAA5

If you used other information to select your peak historical month, explain here (*attach additional sheets if needed*):

V. Standard Monitoring Dates

D. Proposed Standard Monitoring Schedule:*

Standard Monitoring Site ID (from map) [1]	Projected Sampling Date (date or week) [2]					
	period 1	period 2	period 3	period 4	period 5	period 6
1	11/2007, wk 2	2/2008, wk 2	5/2008, wk 2	8/2008, wk 2		
2	11/2007, wk 2	2/2008, wk 2	5/2008, wk 2	8/2008, wk 2		
3	11/2007, wk 2	2/2008, wk 2	5/2008, wk 2	8/2008, wk 2		
4	11/2007, wk 2	2/2008, wk 2	5/2008, wk 2	8/2008, wk 2		

[1] Site IDs should match IDs in Section IV and on your distribution system schematic (See Section VII of this form). Attach additional copies of this sheet if you are required to select more than 8 standard monitoring locations.

[2] period = monitoring period. Complete for the number of periods from Section II.C. Can list exact date or week (e.g., week of 7/9/07)

VI. Stage 1 DBPR Monitoring Dates

Form 6. Standard Monitoring Plan

VI. PLANNED STAGE 1 DBPR COMPLIANCE MONITORING SCHEDULE*

Stage 1 DBPR Monitoring Site ID (from map) [1]	Projected Sampling Date (date or week) [2]			
	Period 1	Period 2	Period 3	Period 4
A	10/2007, wk 2	1/2008, wk 2	4/2008, wk2	7/2008, wk 2
B	10/2007, wk 2	1/2008, wk 2	4/2008, wk2	7/2008, wk 2

[1] *Site IDs should match IDs on your distribution system schematic (See Section VII of this form). Attach additional copies of this sheet if you are required to monitor at more than 8 Stage 1 DBPR sites.*

[2] *period = monitoring period. Complete for the number of periods in which you must conduct Stage 1 DBPR monitoring during IDSE monitoring. Can list exact date or week (e.g., week of 7/9/07)*

VII. Distribution System Schematic

VII. DISTRIBUTION SYSTEM SCHEMATIC*

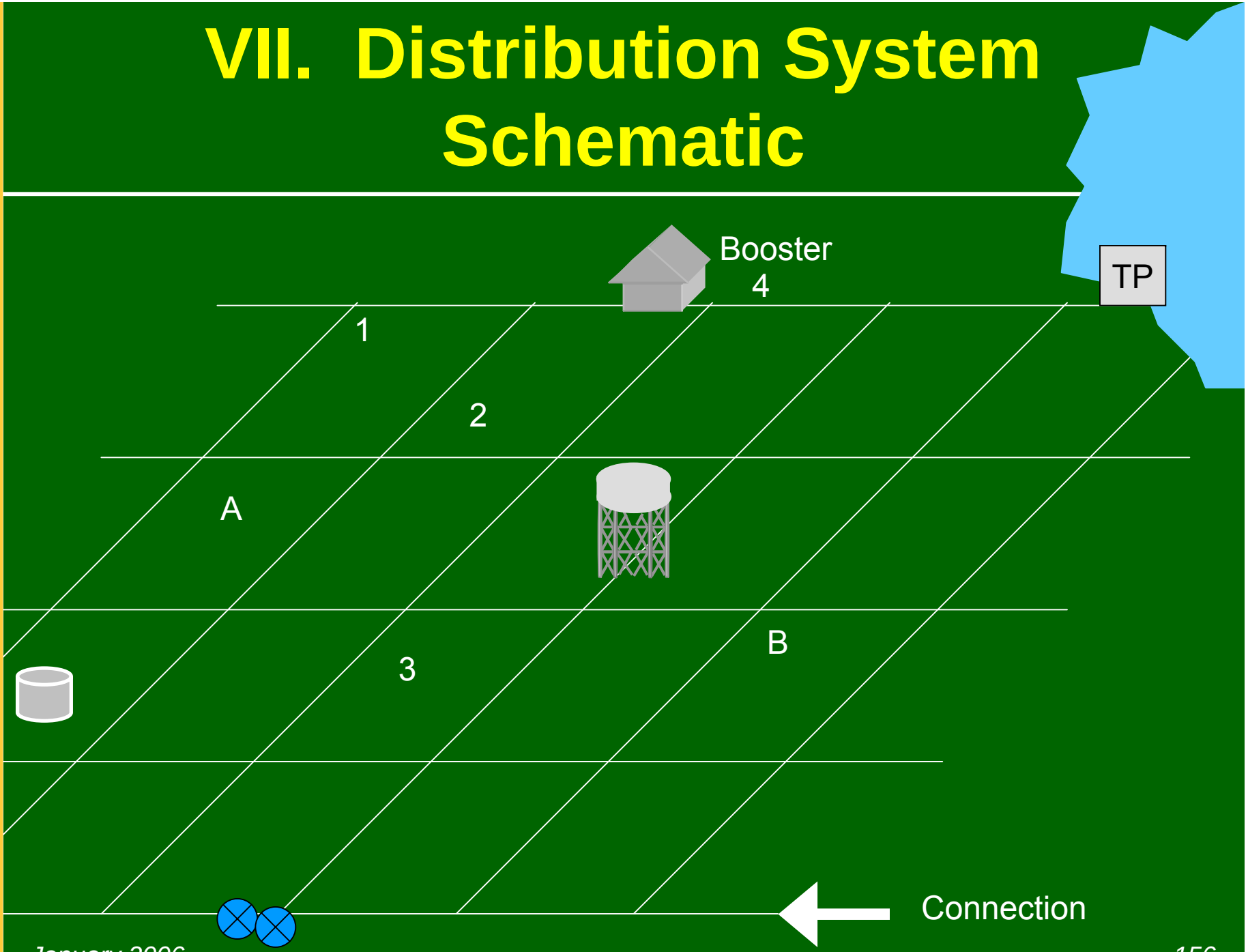
ATTACH a schematic of your distribution system.

Distribution system schematics should not contain information that poses a ***security risk*** to your system. EPA recommends that you use one of two options:

Option 1: Distribution system schematic with no landmarks or addresses indicated. Show locations of sources, entry points, storage facilities, standard monitoring locations, and Stage 1 compliance monitoring locations (required). Also include pressure zone boundaries and locations of pump stations. Provide map scale.

Option 2: City map without locations of pipes indicated. Show locations of sources, entry points, storage facilities, standard monitoring locations, and Stage 1 compliance monitoring locations (required). Also include boundaries of the distribution system, pressure zone boundaries and locations of pump stations. Provide map scale.

VII. Distribution System Schematic



VIII. Attachments

Form 6. Standard Monitoring Plan

VIII. ATTACHMENTS

- ☒ Distribution System Schematic (required)
- ☐ Additional sheets for the summary of additional data you relied on to justify your standard monitoring site selection (Section III).
- ☐ Additional copies of Page 3 for IDSE Standard Monitoring Sites (Section IV). **Required if** you are a subpart H system serving **more than 49,999 people** or a ground water system serving **more than 499,999 people**.
- ☐ Additional sheets for explaining how you used data other than TTHM, HAA5, and temperature data to select your peak historical month (Section V).
- ☐ Additional copies of Page 4 for proposed monitoring schedule (Section V). **Required if** you are a subpart H system serving **more than 49,999 people** or a ground water system serving **more than 499,999 people**.
- ☐ Additional sheets for planned Stage 1 DBPR compliance monitoring dates (Section VI).

Total Number of Pages in Your Plan 7

Next

Submitting the IDSE SM Report

IDSE *Report* for Standard Monitoring

The IDSE report for SM must include:

1) Distribution system schematic with locations and dates of all projected standard monitoring and Stage 1 DBPR monitoring samples, if changed from the previously submitted Standard Monitoring Plan.

2) ALL TTHM and HAA5 results from Stage 1 DBPR compliance monitoring

3) ALL TTHM and HAA5 results from Standard Monitoring conducted during IDSE monitoring period

4) Explanation of any deviations and modifications to original approved Standard Monitoring Plan

5) Population served

6) System Type

7) Recommended Stage 2 DBPR compliance monitoring locations and timing

IDSE *Report* for Standard Monitoring (cont.)

IDSE Report for SM:

1) Must be submitted by the required date

2) System must retain a copy for 10 years after the date of submittal (including modifications made by EPD)

3) System must make report available to regulatory agency and the public for review

Recommendations for Stage 2 TTHM and HAA5 Monitoring Sites

Recommendations for monitoring locations must be based on the calculated LRAA for both TTHM and HAA5 concentrations at each Standard Monitoring **AND** Stage 1 DBPR site.

Compare LRAAs, then select the highest TTHM LRAA and highest HAA5 LRAA as your Stage 2 DBPR sites.

System Recordkeeping

- Must keep a copy of their Standard Monitoring plan and IDSE report as well as EPA or state modification or approval for **10 years** after date of submittal
- Make all available for review by EPD, EPA or the public
- CCR for a given calendar year must include IDSE monitoring results from the same calendar year

IDSE
System Specific Study

An alternative option for PWS with:

- Historical Data
- Hydraulic Models

System Specific Study
Existing Monitoring

- Existing Monitoring Results
  - Based on samples collected and analyzed according to the analytical requirements
  - Minimum Requirements:
    - Collected no earlier than 5 years prior to study plan submission date
    - Each location must be sampled once during month of highest TTHM/HAA5 or highest water temperature for each 12 months of data submitted
    - Must include all Stage 1 DBPR compliance monitoring results plus additional results as necessary to meet minimum number of sample requirements

IDSE: SSS Monitoring Locations & Frequency Requirement for Surface Water & GWUDI

Population	Number of Monitoring Locations	Number of TTHM Samples	Number of HAA5 Samples
< 500	3	3	3
500 – 3,300	3	9	9
3,301 – 9,999	6	36	36
10,000 – 49,999	12	72	72
50,000 – 249,999	24	144	144
250,000 – 999,999	36	216	216
1 M – 4,999,999	48	288	288
> 5 M	60	360	360

IDSE: SSS Monitoring Locations & Frequency Requirement for Ground Water

Population	Number of Monitoring Locations	Number of TTHM Samples	Number of HAA5 Samples
< 500	3	3	3
500 – 9,999	3	9	9
10,000 – 99,999	12	48	48
100,000 – 499,999	18	72	72
≥ 5 M	24	96	96

System Specific Study (SSS) Plan *Existing* Monitoring

SSS Plan must include:

1) Previously collected monitoring results

2) Certification that:

   - *The reported results include **all compliance and noncompliance** results generated during the time period reported*
   - *Samples are representative of entire distribution system*
   - *Treatment and distribution systems have not changed significantly since samples were collected*

3) Schematic of Distribution System (Locations and dates of all completed or planned SSS monitoring)

4) Population served and system type

System Specific Study (SSS) Monitoring Results

- Retain a copy of SSS Plan, including any State modifications for **10 years** following IDSE report submittal
- If any SSS data is rejected by the EPA:
  - System must conduct additional monitoring to replace rejected data,

  OR

  - Conduct Standard Monitoring

System Specific Study
Hydraulic Modeling

Minimum **Model** Requirements:

1) Skeletonization
2) Calibration
3) Simulation of Water Consumption
4) Submission Requirements

System Specific Study
Hydraulic Modeling

- Extended Period Simulation (EPS) hydraulic model
  - Simulate 24 hour variation in demand
  - Show consistently repeating 24 hour pattern of residence time
  - Must represent key distribution system components

System Specific Study
Hydraulic Modeling

- Model must represent:
  - 75% of pipe volume and 50% of pipe length
  - All pressure zones
  - All 12” diameter and larger pipes
  - All 8” and larger pipes that:
    - Connect pressure zones, influence zones from different zones, storage facilities, major demand areas, pumps, etc or are known or expected to be significant conveyors of water
  - All 6” and larger pipes that connect remote areas of distribution system to the main system
  - All Storage facilities with standard operations represented in the model
  - All active pump stations with controls represented in the model
  - All active control valves

System Specific Study
Hydraulic Modeling

Model must:

- Be calibrated or have calibration plans for the current configuration of the distribution system during the period of high TTHM formation potential
  - Evaluate all storage facilties
  - Calibration completed no later than 12 months after SSS Plan submission
- System must conduct one round of TTHM/HAA5 monitoring during that period

System Specific Study *Modeling* Plan

- SSS Plan must include:
  - Tabular or spreadsheet data demonstrating that model meets requirements
  - Description of all calibration activities:
    - Calibration curve
    - Time series graph

System Specific Study *Modeling* Plan

- During period of high DBP formation potential
  - Model output showing preliminary 24-hour ART predictions
  - Timing and number of samples planned for at least one round of monitoring (CFR 141.601)
- Schematic of distribution system
- Population served and system type

Retain SSS Plan and modeling information, include any EPA modification, for 10 years after submittal of IDSE Report

System Specific Study *Modeling* Plan

If model does not meet requirements:

* Address deficiencies and respond to EPA inquiries concerning the model

If model is rejected:

* Conduct Standard Monitoring (SM)

System Specific Study Report (*Existing Data & Modeling*)

Must include:

* All TTHM and HAA5 analytical results from Stage 1 DBPR compliance monitoring during study period
* All SSS monitoring conducted during period of SSS
* If changed from Study Plan, schematic of distribution system, population served, and system type
* Calibration information (modeling only)
* Recommended Stage 2 DBPR compliance monitoring locations and timing
* Basis and justification used to select Stage 2 DBPR compliance monitoring locations

Start

1

2

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4

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IDSE SUMMARY

Contents

- Stage 2 DBPR Summary
- IDSE – VSS Waivers
- IDSE – 40/30 Certification
- IDSE – Standard Monitoring
- Timeline

Review of Stage 2 DBPR

- Goal: Improve public health by reducing exposure to DBPs
- Requirements:
  - IDSE
    - VSS Waivers
    - 40/30 Compliance
    - Standard Monitoring
    - System Specific Study
  - Stage 2 DBPR Compliance Monitoring
    - LRAA Compliance Calculations

IDSE – VSS Waivers

- Eligible Systems:
  - Serve < 500; and
  - Have taken TTHM and HAA5 samples
- Waivers effective immediately, no application required
- EPD will determine whether a VSS should complete Standard Monitoring or a System Specific Study
- Waiver is from further IDSE requirements only
  - Continue Stage 1 DBPR compliance until Stage 2 DBPR compliance begins
  - Complete monitoring plan for Stage 2 DBPR

IDSE – 40/30 Certification

- Eligible Systems:
  - 8 consecutive quarters within specified eligibility period:
    - Taken all required Stage 1 DBPR TTHM and HAA5 samples
    - No individual sample exceeded 0.040 mg/L for TTHM and 0.030 mg/L for HAA5
    - No TTHM or HAA5 monitoring violations
- Submit 40/30 Certification
- EPD will determine whether a system should complete Standard Monitoring or a System Specific Study
- Waiver is from further IDSE requirements only
  - Continue Stage 1 DBPR compliance until Stage 2 DBPR compliance begins
  - Complete a monitoring plan for Stage 2 DBPR

40/30 Timeline

Sch.	Population	Eligibility Period Beginning No Earlier Than*:	Submit 40/30 Certification By:
1	≥100,000	January 2004	Oct. 1, 2006
2	50,000-99,999		Apr. 1, 2007
3	10,000-49,999	January 2005	Oct. 1, 2007
4	<10,000		Apr. 1, 2008

*System is required to base the 40/30 Certification on 8 consecutive calendar quarters of Subpart L compliance monitoring results

Schedule for systems in a combined distribution system is based on that of the largest system in the combined distribution system

IDSE – Standard Monitoring

- Most systems that need to complete an IDSE will use this option
- Select locations for Standard Monitoring
- Prepare and submit Standard Monitoring Plan
- Conduct Standard Monitoring
  - 1 year of monitoring for TTHM and HAA5
- Select Stage 2 DBPR monitoring locations
- Prepare and submit IDSE Report
  - Based on the data collected, prepare a report and submit it to EPD/EPA

Standard Monitoring Schedule

Sch.	Systems Serving	Submit Plan by:	Complete Monitoring by:	Submit IDSE Report by:
1	≥ 100,000	10/1/2006	9/30/2008	1/1/2009
2	50,000 –99,999	4/1/2007	3/31/2009	7/1/2009
3	10,000 –49,999	10/1/2007	9/30/2009	1/1/2010
4	< 10,000	4/1/2008	3/31/2010	7/1/2010

Schedule for systems in a combined distribution system is based on that of largest system in the combined distribution system

Stage 2 DBPR

Compliance Monitoring Location Recommendations

Based on Standard Monitoring (SM), or

System Specific Studies (SSS)

Stage 2 DBPR - Compliance Monitoring Location Recommendations

- Recommend locations based on IDSE monitoring **and** Stage 1 DBPR monitoring results
- Number of locations based on table found in following slides

Stage 2 DBPR Monitoring Location Recommendations for Surface Water Systems & GWUDI Systems

Population	Monitoring Periods & Frequency	Total Dual Sample Set per Monitoring Period	High TTHM Locations	High HAA5 Locations	Existing Stage 1 DBPR Compliance Locations
< 500	Annual	2*	1	1	-
500 – 3,300	Quarterly	2*	1	1	-
3,301 – 9,999		2	1	1	-
10,000 – 49,999		4	2	1	1
50,000 – 249,999		8	3	3	2
250,000 – 999,999		12	5	4	3
1 M – 4,999,999		16	6	6	4
> 5 M		20	8	7	5

Stage 2 DBPR Monitoring Location Recommendations for Ground Water Systems

Population	Monitoring Periods & Frequency	Total Dual Sample Set per Monitoring Period	High TTHM Locations	High HAA5 Locations	Existing Stage 1 DBPR Compliance Locations
< 500	Annual	2*	1	1	-
500 – 9,999		2*	1	1	-
10,000 – 99,999	Quarterly	4	2	1	1
100,000 – 499,999		6	3	2	1
≥ 500,000		8	3	3	2

Stage 2 DBPR - Compliance Monitoring Location Recommendations

You must recommend Stage 2 DBPR compliance monitoring locations based on **Standard Monitoring** results, **System Specific Study** results, and **Stage 1 DBPR Compliance Monitoring** results.

You must follow the protocol in the next slide.

* If more than 8 locations required, repeat the protocol
* If do not have enough Stage 1 locations, repeat the protocol
* Repeat the protocol, until required number of locations identified

Stage 2 DBPR - Compliance Monitoring Location Recommendations (cont.)

- **"Protocol" for recommending locations**:
  - Calculate LRAA for all sites (TTHM & HAA5)
  - Choose locations as described below and repeat series as required if more than 8 locations are required;

1. The highest TTHM LRAA not previously selected for Stage 2 DBPR monitoring

2. The highest HAA5 LRAA not previously selected for Stage 2 DBPR monitoring

(3). An existing Stage 1 DBPR ART (average residence time) location with the highest HAA5 LRAA not previously selected (MRT) for GW systems]

4. The highest TTHM LRAA not previously selected as Stage 2 BBPR monitoring

5. The highest TTHM LRAA not previously selected as Stage 2 BBPR monitoring

6. The highest HAA5 LRAA not previously selected as Stage 2 BBPR monitoring

(7). An existing Stage 1 DBPR ART (average residence time) location with the highest TTHM LRAA not previously selected (MRT) for GW systems]

8. The highest HAA5 LRAA not previously selected for Stage 2 DBPR monitoring

Stage 2 DBPR - Compliance Monitoring Location Recommendations (cont.)

- Systems may recommend alternative locations:
- Examples:
  - Better distribution system representation
  - Maintain existing location for ease of access or historical data purposes
- Must be approved by EPD

Start

1

2

3

4

5

6

7

IDSE Tool

http://www.epa.gov/safewater/disinfection/stage2/compliance.html

Content

- General Information
- Features
- System Requirements
- IDSE Tool Homepage / Login
- IDSE Wizard
- IDSE Plan / Report Entry
- Submitting Plan / Report to EPA

Purpose of the IDSE Tool

- Will help systems determine which IDSE option is best for them
- Will guide systems through templates, using the IDSE guidance manual excerpts to explain requirements
- Will generate an electronic file for the system to submit and keep on file

General Information

- The IDSE Tool is comprised of two modules:
  - The Wizard
  - The Plan/Report Entry

General Information

- **The Wizard**
  - Walks the systems through a series of questions that will help the system determine:
    - If the system has any IDSE requirements
    - What schedule the system must comply with
    - The best IDSE compliance option for the system
    - The specific requirements for the systems determined schedule and IDSE compliance option

General Information

- **The Plan/Report Entry**
  - Provides systems with IDSE requirements with an on-line method for filling out an IDSE plan and/or report
  - This portion of IDSE Tool requires user ID and password for access provided through CDX

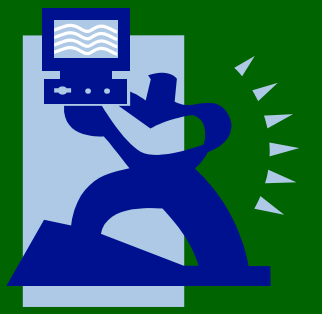
Features of the IDSE Tool

- Systems will be able to save as they work and come back later
- System have the choice to submit electronically or print and submit via mail
- A CD-ROM version will be available for systems without internet access

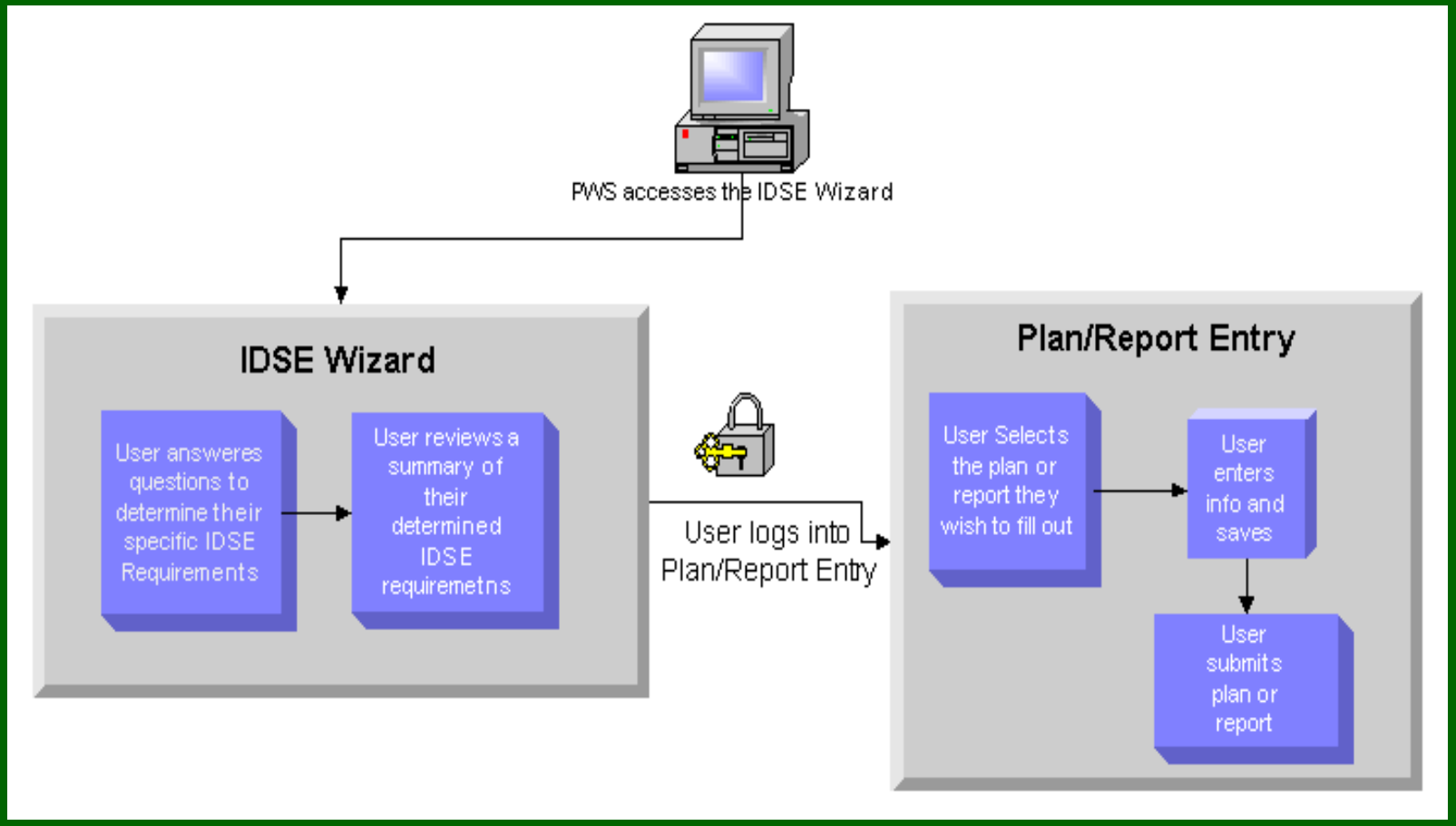
Paper version will be included in IDSE guidance manual for those with no computer access

System Requirements

- 486 MHz Processor, Pentium recommended
- Microsoft Windows 95, 98, 2000, XP, or NT
- For Internet Access:
  - Web Browser: Microsoft IE version 6+ with 128-bit encryption
  - High-speed recommended
  - Authorware Plug-in (users are prompted to install upon first use of the IDSE Wizard)
- Screen Resolution 1024 x 768 suggested
- Print using icon in top right corner

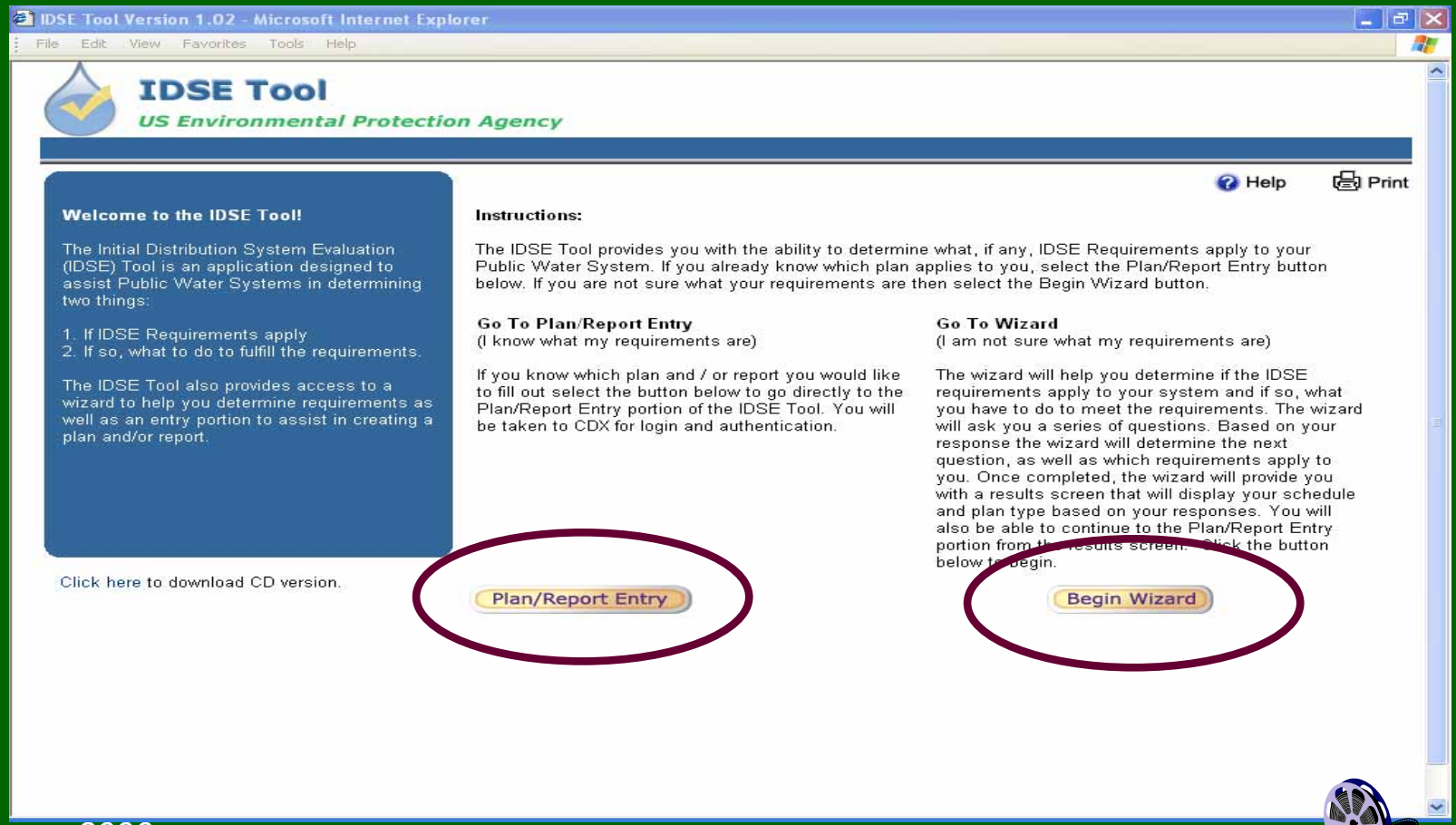


IDSE Tool – Conceptual Flow



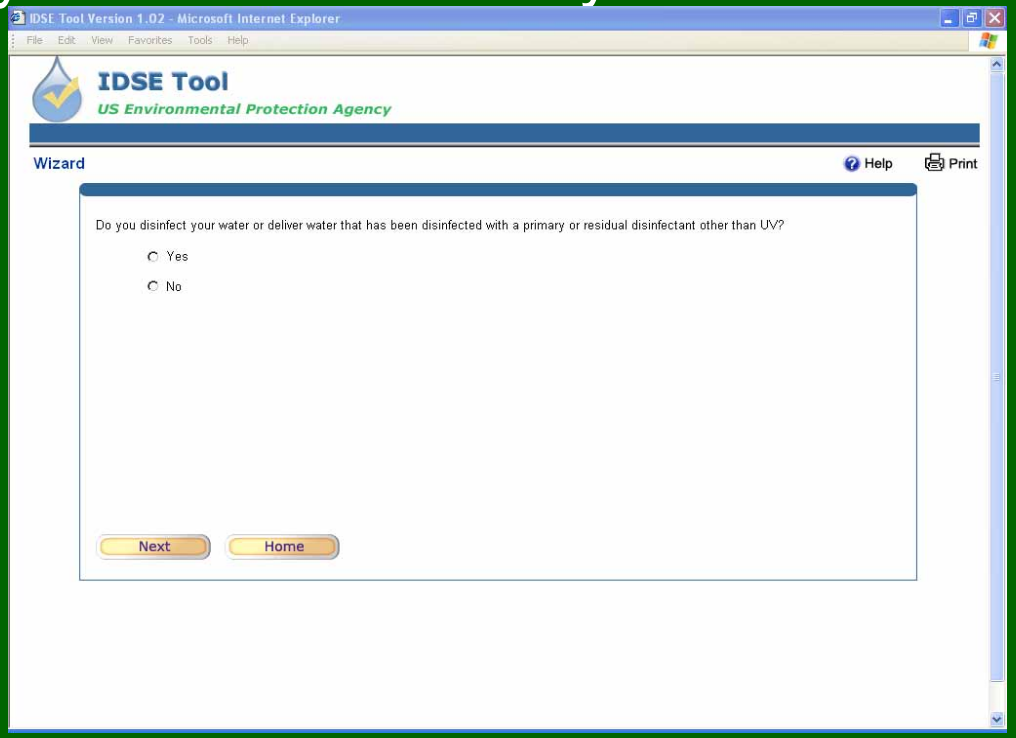
IDSE Tool Homepage

- To access to IDSE Tool go to: www.epa.gov/safewater/disinfection/stage2



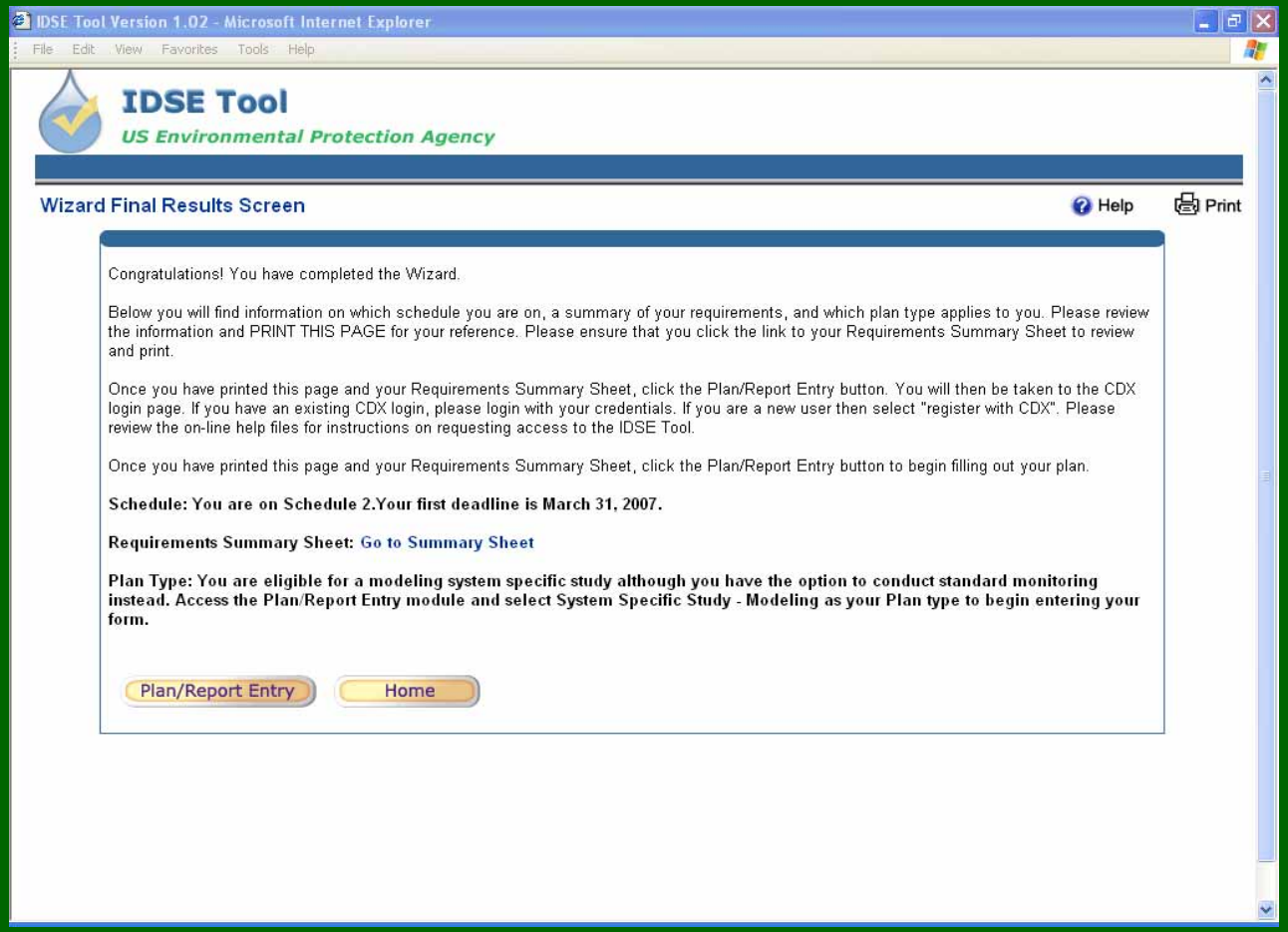
IDSE Wizard

- A series of questions will be asked
  - Most of the questions can be answered with a Yes or No
- Based on responses systems will told if they have IDSE requirements
- Additional questions will be asked for those that must comply with IDSE requirements



Wizard Final Results Screen

- This screen shows the systems determined Plan and Schedule based on their responses



Login through CDX to IDSE Plan / Report Entry

- Enter username and password into the LT2 Data Collection System Login page
- If prompted, click the “IDSE Plan/Report Entry" link.

Login Through CDX

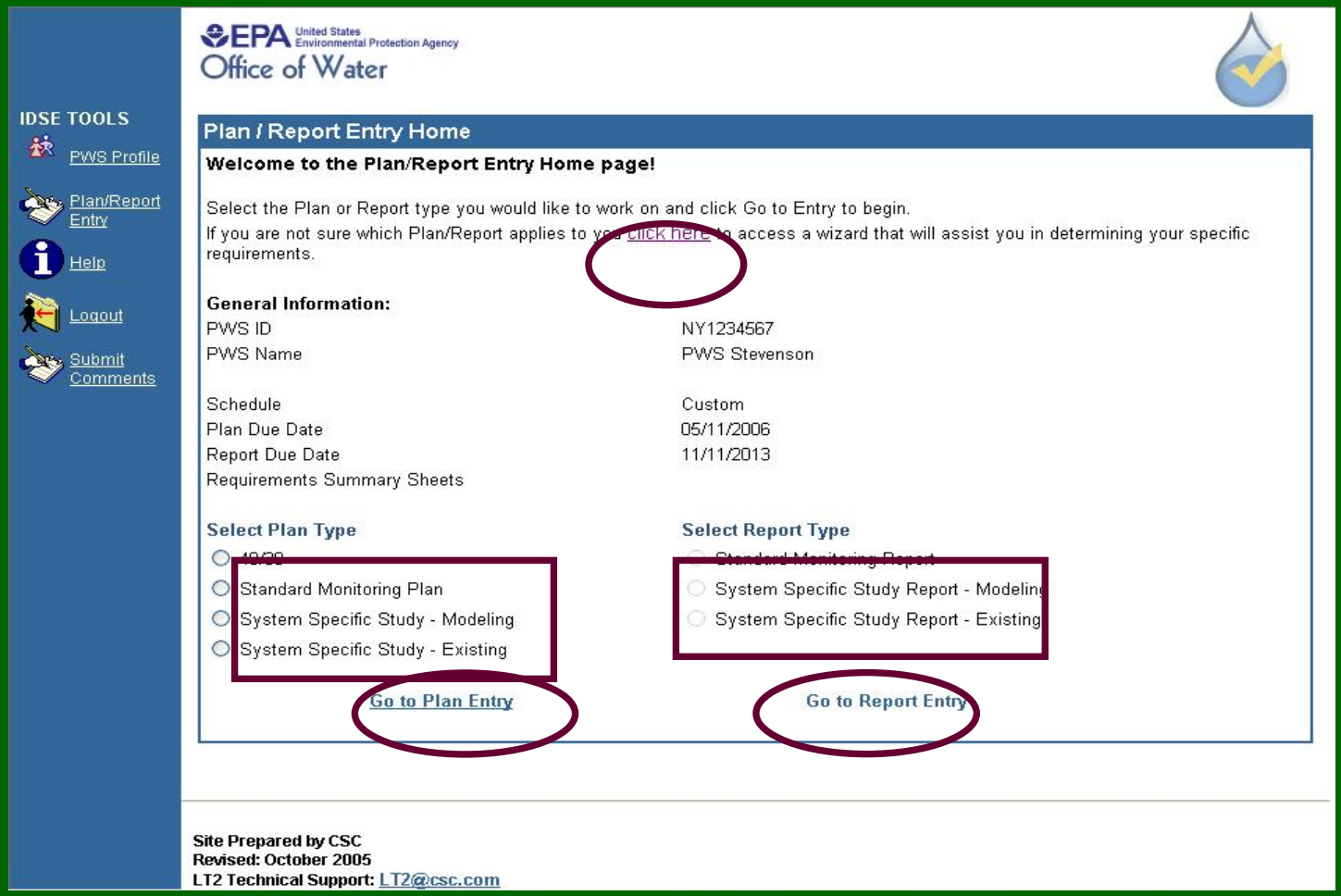
- Logging in through the CDX allows:
  - Data fields to be pre-populated with the systems information
  - Systems Schedule information

The system should contact their EPA or state contact immediately if they believe the schedule information is incorrect.

IDSE Plan/Report Entry Module

- Provides an online entry form
  - Can be used as a work space for filling out the plan or report.
  - Systems can work on individual sections of the plan or report at one time, save the information, and come back later to finish
  - Each plan and/or report differs in the information being requested
- For specific information regarding the information that must be entered on the plan or report please reference the IDSE Guidance Manual

Plan / Report Entry Home

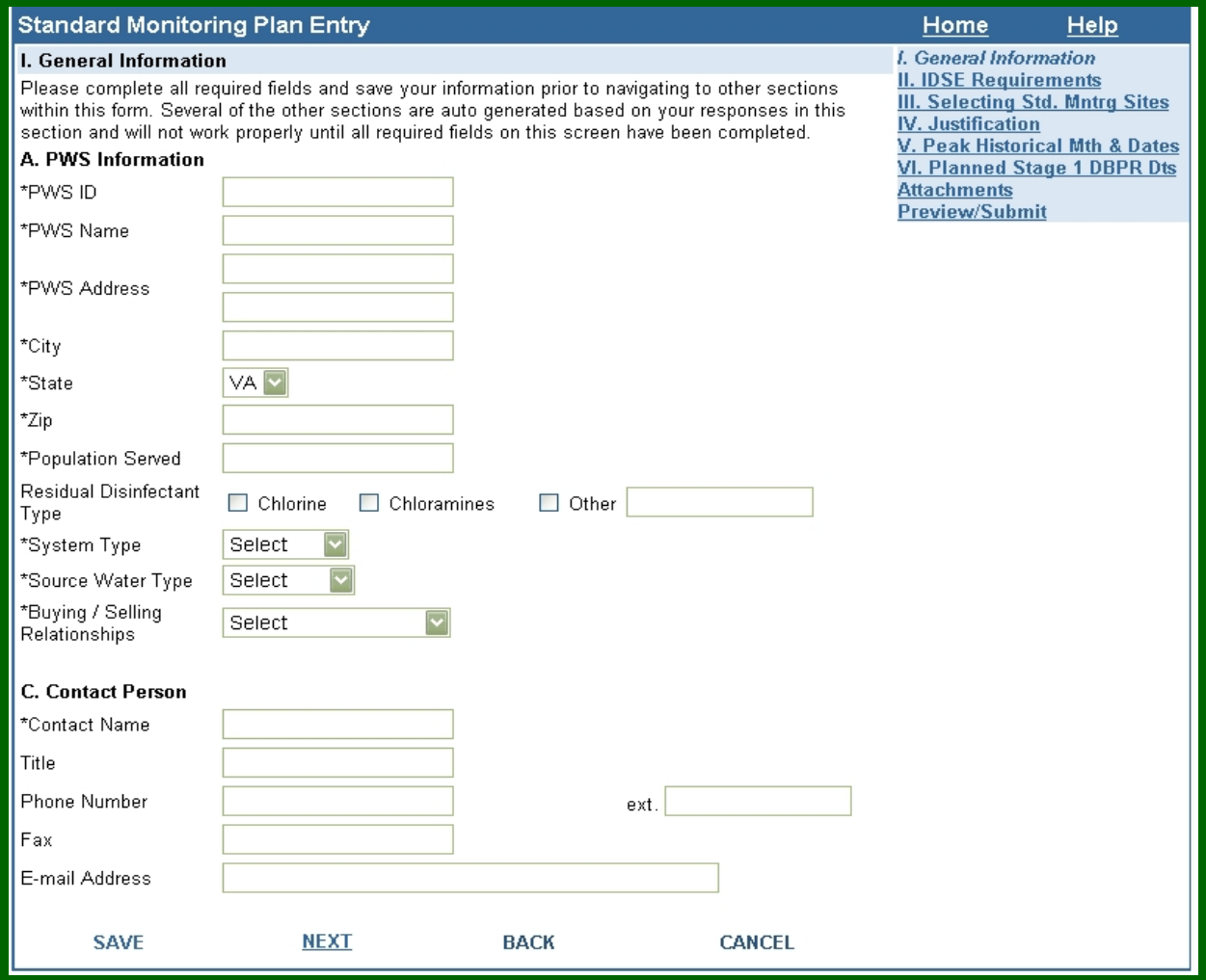


40/30 Certification

- Generate the certification form
  - If logged in through CDX, certification can be electronically signed and submitted
  - If not logged in through CDX, certification must be printed and mailed into the IPMC

Plan / Report Entry

IDSE Tool

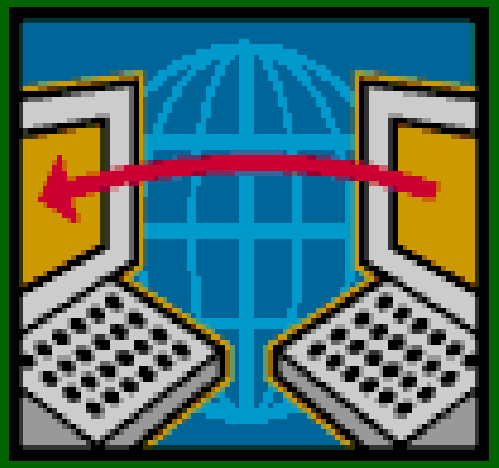


Submitting Schematics

- Submit an electronic copy
  - Adobe PDF file (*.pdf)
  - Microsoft Word (*.doc)
  - WordPerfect (*.wpd)
  - Image file (*.gif, *.bmp, *.jpg, *.jpeg)
- Mail a hard copy to the IPMC
- Remember, schematics should not contain information that poses a security risk to your system

Submitting Plan / Report to EPA

- Once plan and/or report information is filled out and completed
  - User clicks submit and the system submits the users completed plan to EPA
  - Users are provided with a confirmation screen and number for their submission



Submitting Plan / Report to EPA

- Systems can submit plan once
- If system needs to make a change
  - Contact EPA or state to allow write access for revised plan
- All version save in DCTS

Stage 2 DBPR

Stage 2 DBPR Requirements

- General Requirements
- Monitoring Plans
- Schedule
- Routine, Increased and Reduced Monitoring
- Compliance Calculations
- Operation Evaluation Levels

General Requirements

Stage 2 DBPR Compliance Monitoring Requirements:

- Establishes monitoring and other requirements for achieving compliance with MCLs based on LRAAs for TTHM and HAA5, and for achieving compliance with MRDLs for chlorine and chloramine for certain consecutive systems.

- Applicability: CWSs and NTNCWSs that use or deliver water that has been treated with a primary or residual disinfectant other than UV light

Stage 2 DBPR SCHEDULE

(*Schedule for systems in a combined distribution system is based on that of the largest system in the combined distribution system)*

If you are:	Comply with Stage 2 DBPR Monitoring by:
≥ 100,000	April 1, 2012
50,000 – 99,999	October 1, 2012
10,000 – 49,999	October 1, 2013
< 10,000	July 1, 2013 (if no Crypto monitoring required) July 1, 2014 (if Crypto monitoring required)

Stage 2 DBPR *Routine* Monitoring

- Monitor at the locations and months recommended in your IDSE Report or Stage 2 DBPR Monitoring Plan
- Monitor at no fewer than the number of locations listed in the tables on subsequent slides

Stage 2 DBPR Monitoring

(*for Surface or GWUDI Systems OR systems that purchase Surface or GWUDI water)*

Population	Monitoring Frequency	Distribution System Monitoring Location Total Dual Sample Set per Monitoring Period
< 500	Annual	2
500 – 3,300	Quarterly (every 90 days)	2
3,301 – 9,999		2
10,000 – 49,999		4
50,000 – 249,999		8
250,000 – 999,999		12
1 M – 4,999,999		16
> 5 M		20

Stage 2 DBPR Monitoring

(*for Groundwater OR systems that purchase Groundwater)*

Population	Monitoring Frequency	Distribution System Monitoring Location Total Dual Sample Set per Monitoring Period
< 500	Annual	2*
500 – 9,999		2*
10,000 – 99,999	Quarterly (every 90 days)	4
100,000 – 499,999		6
≥ 500,000		8

Monitoring Frequency & Locations

- Undisinfected systems that begin using a disinfectant other than UV AFTER IDSE requirement dates:
  - Contact EPD to identify compliance monitoring locations for Stage 2 DBPR
  - Develop and implement a "Monitoring Plan" that includes these monitoring locations

Compliance Determinations

- Systems monitoring QUARTERLY:
  - Make compliance calculations at the end of the 4th calendar quarter following applicable compliance date

    (OR earlier if the LRAA calculated based on fewer than 4 quarters of data would cause the MCL to be exceeded regardless of the monitoring results of subsequent quarters)
  - Make compliance calculations at the end of each subsequent quarter
  - If you fail to complete 4 consecutive quarters of monitoring, calculate compliance based on the average of available data from the most recent 4 quarters
  - If you take more than one sample per quarter at a location, you must average all samples taken at that location to determine quarterly average to be used to calculate LRAA

Compliance Determinations

- Systems monitoring less frequently than QUARTERLY:
  - Make compliance calculations beginning with the first compliance sample taken after the applicable compliance date
  - If sample ≤ MCL, system is in compliance
  - If sample > MCL, then the system must begin increased monitoring (Quarterly monitoring)

    IT IS NOT AN IMMEDIATE VIOLATION

- Failure to monitor is a monitoring violation for the entire period covered by the LRAA

Analytical Methods

- Use an approved method for TTHM and HAA5 for analyzing samples taken under Stage 2 DBPR
- Analyses must be conducted by laboratories that have received certification from EPA or the State

Stage 2 DBPR
Compliance Monitoring Plan

- Develop a "Monitoring Plan" to be kept on file for EPD and public review
- In Monitoring Plan, include:
  - Monitoring Locations and dates
  - Compliance calculation procedures
  - Monitoring Plans for any other systems in CDS if EPD has modified monitoring requirements
- Complete it no later than date you must conduct your initial Stage 2 Compliance monitoring
- Revise as needed to reflect changes in treatment, distribution system operations, layout, or other factors that could affect TTHM and HAA5 formation in consultation with EPD

Stage 2 DBPR
Compliance Monitoring Plan

- No IDSE report required for
  - 40/30 Certification
  - VSS waiver, OR
  - NTNCWS serving < 10,000
- Systems that did not have to submit IDSE report must identify Stage 2 DBPR monitoring sites and provide rationale used for identifying high TTHM and HAA5 locations.
- Monitoring requirements may change due to switch from plant-based to population-based monitoring or may need to identify separate high HAA5 location.

Stage 2 DBPR
Compliance Monitoring Plan

- General Requirements
  - Subpart H systems serving > 3,300 persons must submit a copy of their "Monitoring Plan" to EPD prior to date you conduct your initial monitoring (unless the IDSE report you submitted contains all required monitoring plan information)
- EPD will require all CWS and NTNCWS to submit a copy of their "Monitoring Plan", regardless of size
- State may require modifications

Reduced Monitoring under Stage 2 DBPR

- May reduce monitoring if:
  - Any time the LRAA is ≤ 0.040 mg/L for TTHM and ≤ 0.030 mg/L for HAA5 at **ALL** monitoring locations
  - Source water RAA TOC level, before any treatment, is ≤ 4.0 mg/L at each treatment plant treating surface water or GWUDI

    (Source water TOC is monitored every 30 days)

Reduced Monitoring under Stage 2 DBPR (cont.)

- **To remain on reduced monitoring**:
  - TTHM LRAA ≤ 0.040 mg/L and HAA5 LRAA ≤ 0. 030 mg/L (Quarterly)
  - TTHM sample ≤ 0.060 mg/L and HAA5 sample ≤ 0.045 mg/L (Annual)
  - Source water RAA TOC level, before any treatment, is ≤ 4.0 mg/L at each treatment plant treating surface water or GWUDI
    (TOC must be monitored every 90 days)
- **You must resume routine monitoring if**:
  - LRAA based on quarterly monitoring at any monitoring location exceeds either 0.040 mg/L for TTHM or 0.030 mg/L for HAA5
  - if annual (or less frequent) sample at any location exceeds either 0.060 mg/L for TTHM **or** 0.045 mg/L for HAA5
  - Source water RAA TOC level, before any treatment, is > 4.0 mg/L at any treatment plant treating surface water or GWUDI
- EPD retains the authority to return a system to routine monitoring at its discretion

Stage 2 DBPR Reduced Monitoring for Surface Water Systems and GWUDI Systems

Population	Monitoring Frequency	Distribution System Monitoring Location Total Dual Sample Set per Monitoring Period
< 500		Monitoring may not be reduced
500 – 3,300	Annual	1 TTHM and 1 HAA5 sample (highest TTHM and highest HAA5 single measurements)
3,301 – 9,999	Annual	2 Dual sample sets (highest TTHM and highest HAA5 single measurements)
10,000 – 49,999	Quarterly	2 Dual sample sets (highest TTHM and highest HAA5 LRAAs)
50,000 – 249,999	Quarterly	4 dual sample sets (2 highest TTHM and 2 highest HAA5)
250,000 – 999,999	Quarterly	6 dual sample sets (3 highest TTHM and 3 highest HAA5)
1 M – 4,999,999	Quarterly	8 dual sample sets (4 highest TTHM and 4 highest HAA5)
> 5 M	Quarterly	10 dual sample sets (5 highest TTHM and 5 highest HAA5)

Stage 2 DBPR Reduced Monitoring for Ground Water Systems

Population	Monitoring Frequency	Distribution System Monitoring Location Total Dual Sample Set per Monitoring Period
< 500	Every Third Year	**1 TTHM and 1 HAA5 Sample** (highest TTHM and highest HAA5 single measurements)
500 – 9,999	Annual	**1 TTHM and 1 HAA5 Sample** (highest TTHM and highest HAA5 single measurements)
10,000 – 99,999	Annual	**2 Dual sample sets** (highest TTHM and highest HAA5 single measurements)
100,000 – 499,999	Quarterly	**2 Dual sample sets** (highest TTHM and highest HAA5 LRAAs)
≥ 500,000	Quarterly	**4 dual sample sets** (2 highest TTHM and 2 highest HAA5)

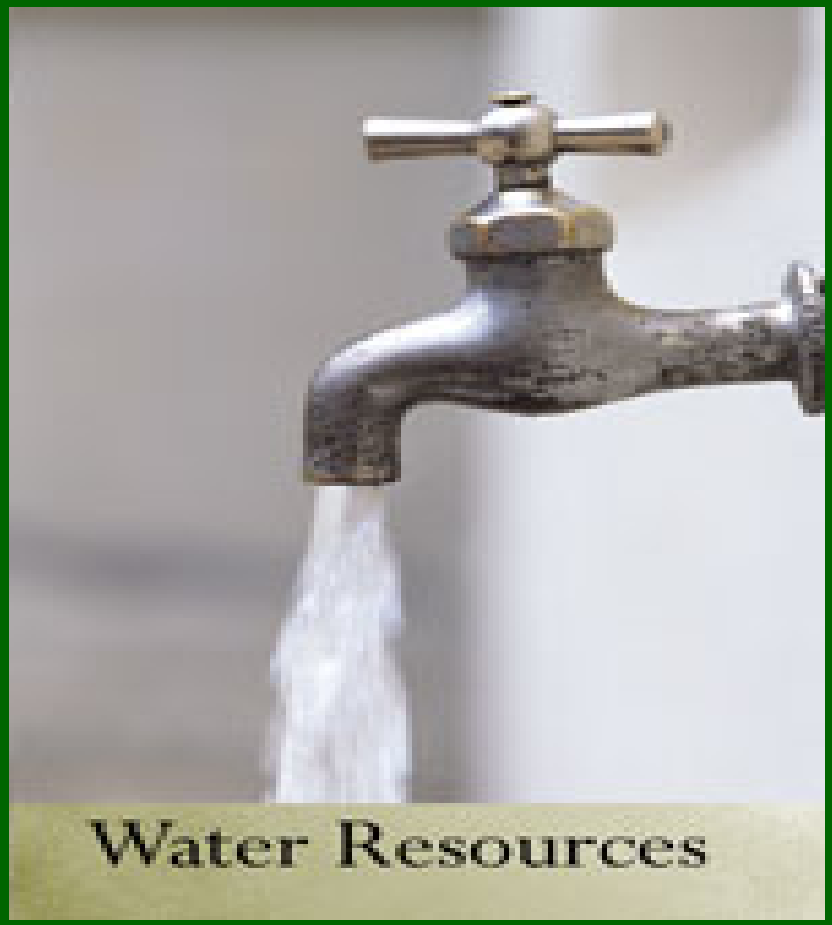
Requirements for Consecutive Systems

A Consecutive System that does not add a disinfectant but delivers water that has been treated with a primary or residual disinfectant other than UV must comply with analytical and monitoring requirements for chlorine and chloramines and the compliance requirements beginning **April 1, 2009**.

Conditions Requiring Increased Monitoring

- Systems with routine annual (or less) sampling must increase monitoring to dual sample set per quarter, if:
  - TTHM sample is > 0.080 mg/L, **OR**
  - HAA5 sample is > 0.060 mg/L, at any location
- System is in violation of MCL, if:
  - TTHM or HAA5 LRAA exceeds MCL after 4 consecutive quarters of monitoring
  - System is in monitoring violation for each quarter that a monitoring result would be used in calculating an LRAA if you fail to monitor
- System may return to routine monitoring once it has conducted increased monitoring for at least 4 consecutive quarters **and** LRAA for every monitoring location is ≤ 0.060 mg/L for TTHM **and** ≤ 0.045 mg/L for HAA5

Operational Evaluation Level



Operational Evaluation Level

You have exceeded the Operational Evaluation Level at any location, during any quarter, where:

$$(Q_1 + Q_2 + 2Q_3) / 4 > MCL$$

The sum of two previous quarter's TTHM or HAA5 results plus twice the current quarter's TTHM or HAA5 result, divided by 4 exceeds 0.080mg/L for TTHM or 0.060 mg/L for HAA5.

Operational Evaluations

If you exceed Operational Evaluation Level, you must:

* Conduct an "Operational Evaluation"
* Submit a written "Report" of the evaluation within 90 days

"Operational Evaluation" must include the examination of:

1. System treatment
2. Distribution operational practices
3. Storage Tank operations
4. Excess storage capacity
5. Distribution system flushing
6. Changes in sources or source water quality
7. Treatment changes or problems that may contribute to TTHM and HAA5 formation
8. What steps could be considered to minimize future exceedances

Operational Evaluations

- The systems must notify EPD of an Operational Evaluation Level Exceedance 10 days after the end of the quarter
- System must submit the evaluation report to EPD no later than 90 days after learning of the exceedance
- EPD may reduce the scope of the evaluation if the system can identify the cause of the operational level exceedance. However this does not change the established deadlines

Requirements for Remaining on Reduced Monitoring Based on Stage 1 DBPR Monitoring Results

- You may remain on reduced monitoring after the identified Stage 2 Compliance Monitoring date, only if:
  - You are a NTNCWS, **OR**
  - You qualified for 40/30 Certification, **OR**
  - Have received a VSS waiver, **AND**
  - Meet the reduced monitoring criteria for Stage 2 DBPR, **AND**
  - Stage 2 DBPR monitoring locations are the same as Stage 1 DBPR sites
- If your monitoring locations under Stage 2 differ from the locations under Stage 1, you may not remain on reduced monitoring after the identified Stage 2 Compliance Monitoring date.

Requirements for Remaining on Increased Monitoring Based on Stage 1 DBPR Monitoring Results

- Systems that were on Stage 1 DBPR increased monitoring must remain on increased monitoring until they qualify for a return to routine monitoring
- Must sample at frequency and locations required by increased monitoring under Stage 2 DBPR

Reporting and Recordkeeping Requirements

- Report for each monitoring location (within 10 days of the end of any quarter in which monitoring is required):
  - Number of samples taken last quarter
  - Date and Results of each sample
  - LRAA at each monitoring location
  - Any MCL violation at any monitoring location
  - Any Operational Evaluation levels that exceeded during the quarter, and, if so, location and date, and calculated TTHM and HAA5 levels
  - If you are a SW or GWUDI system seeking to qualify or remain on reduced TTHM/HAA5 monitoring, report source water TOC for each plant

The End

GOOD LUCK!!!

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