



Sanitary Survey

Design of Small Community Water Systems
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Hosted by

Water Quality Division

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What is a Sanitary Survey?

40 CFR 141.2

- A sanitary survey is NOT an inspection!
- *Sanitary survey* means an onsite review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, operation and maintenance for producing and distributing safe drinking water.
- Required by
 1. TCR : 40 CFR 141.21(d)
PWSs collect four or fewer (\leq 4100 service population), every 5 years (NC using protected or disinfected GW every 10 years)
 2. GWR: 40 CFR 141.401 – All PWSs

Purpose of Survey

- Protect public health to identify any deficiencies in PWSs before any contamination occurs
- Comprehensive review of components of water systems to:
 1. assess the operating conditions and adequacy of the water system
 2. determine if past recommendations have been implemented effectively
- Opportunity to visit the water system, educate operators about proper monitoring and sampling procedures, and provide technical assistance

8 Components that Must be Evaluated During a Sanitary Survey 40 CFR 141.401(c)

- Source
- Treatment
- Distribution system
- Finished water storage
- Pumps, pump facilities, and controls
- Monitoring, reporting, and data verification
- System management and operation, and
- Operator compliance with State requirements

Source

- Section 5 – Consecutive Systems
- Section 6 - Source Data - Potential Pollution Sources*
- Section 7 - Source Data – Current and Abandoned Wells*
- Section 8 - Source Data – Springs*
- Section 9 - Source Data – Infiltration Galleries
- Section 10 - Source Data – Streams*
- Section 11 - Source Data – Reservoirs, Lakes and Ponds*
- Section 12 - Source Data – Backup Water Sources

Treatment

- Section 16 – Water Treatment Data
 - IFE Turbidimeters
 - POE Chlorine Residual*
 - Disinfection Profiling
 - 3-log *Giardia* Inactivation* (SWTR)
 - 4-log Virus Inactivation* (SWTR)
 - 2-log / 3-log *Cryptosporidium* Inactivation* (SWTR)

Distribution System

- Section 4 – Service Data
 - Metered Services?
- Section 17 – Distribution Data
 - Pipe Size & Material (A-C pipe?)
 - Loss of Pressure (< 20 psi)?*
- Section 18 – Cross Connection Control
 - BP Device on High Hazard Connections?*

Finished Water Storage

- Section 15 – Storage Facilities and Pressure Tanks
 - Type of Tank (elevated, ground, underground hydropneumatic)
 - Adequate roof/cover*
 - Access Hatch (shoe box lid*, gasket*, lock)
 - Inlet, Outlet
 - Vent (24 mesh screen*)
 - Overflow, Drain (24 mesh screen*, 12”–24” above splash plate)

Pumps, Pump Facilities and Controls

- Section 14 - Pump Stations
 - Subject to flooding?*
 - Capacity?
 - Redundancy?
 - Emergency Power?
 - Unprotected Cross Connection?*

Monitoring, Reporting and Data Verification

- Section 21 – Monitoring and Records
 - Sample Collection Procedures
 - Bottles Available for Sampling?
 - Use Certified Laboratories?*
 - Test Kits, Instruments Available for Monitoring?
 - Monitoring Plans Up-to-date (DBP, others?)
 - Copies of Monitoring Records Available?

System Management and Operations

- Section 20 – Management Data
 - Rules for New Hookups?
 - Water Main Extension Policy?
 - Are DEQ Specifications Followed?
 - Preventive Maintenance Schedule?
 - Emergency Response Plan?*

Operator Compliance with State Requirements

- Section 3 – Contact Names and Phone Numbers / e-mail Addresses
 - Operators' Names
 - Certification Types*
 - Expiration Dates*

Other Sections

- Section 1 – Recommendations
- Section 2 – Summary
- Section 13 – Transmission Line Data
- Section 19 – Safety Data

How Many Sanitary Surveys in Wyoming must EPA do each year?

- About 200 surveys/year
- Tracking Significant Deficiencies
- Responsibility of EPA Region 8
- Sanitary surveys are performed by:
 - √ Contractors
 - √ EPA, Region 8
 - √ WY DEQ/County Sanitarian
 - √ WARWS, other entities
 - √ Joint sanitary surveys

Common Problems Found in Past Sanitary Surveys

- No Certified Operator
- No available O&M manual/ERP
- Problems with vents and overflows of storage tanks
- Storage tank not cleaned in the last 5 years
- Problems with wellhead
- Security
- No record of well with SEO
- No onsite monitoring plan for Stage 1 D/DBPs
- Failure to get permits from WY DEQ

Vents and Overflows



Vents and Overflows (cont.)



Storage Tank Roof/Cover



Problems With Wellhead



Problems With Wellhead (cont.)



Problems With Wellhead (cont.)



Problems With Wellhead (cont.)



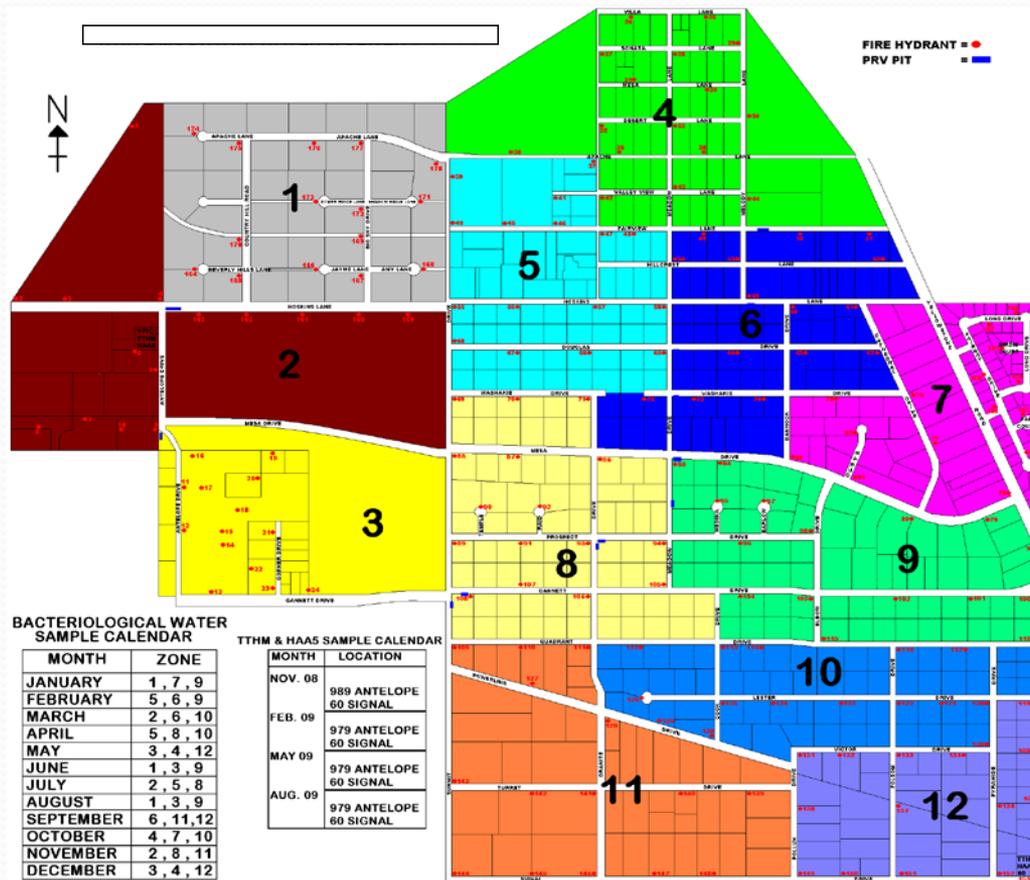
Security



Security (continued)



Onsite monitoring plan for Stage 1 D/DBPs (TCR example)



Recommendations vs. Significant Deficiencies

- Recommendation
 - Just that
- Significant Deficiency
 - You have to correct these!
- Since 2006 we have identified significant deficiencies under the IESWTR during sanitary surveys
- Starting in 2010 we will identify SDs under the GWR during sanitary surveys (GWR 12/2009)

Significant Deficiency

40 CFR 141.723(b)

- A significant deficiency includes a defect in design, operation, or maintenance
or a failure or malfunction of the sources, treatment, storage, or distribution system that EPA determines to be causing, or has the potential for causing the introduction of contamination into the water delivered to consumers.
- EPA will make determinations on what is a significant deficiency!

Common Significant Deficiencies Identified during Sanitary Surveys in Wyoming

- Source

- Raw water monitoring indicates an immediate sanitary risk
- Activities or pollution sources in the immediate source water area
- Well source specific
 - Sanitary seal and casing not overlapping, watertight or adequately sealed.
 - No #24 mesh screen on existing well vent
 - Wellhead not protected from flooding
 - Well improperly constructed

Significant Deficiencies (Cont.)

- Spring source specific
 - Hatch/entry not overlapping, watertight or adequately secured
 - No #24 mesh screened overflow
 - Spring improperly constructed
- Treatment
 - Disinfection not maintained (as required)
 - Unprotected cross-connections
 - Inadequate treatment process (as required)

Significant Deficiencies (Cont.)

- Treatment (Cont.)
 - Physical bypass of required treatment
 - Inadequate filtration design or operation
 - Inadequate disinfection/inactivation design or operation, includes CT (as required)
- Distribution System
 - Loss of pressure (< 20 psi)
 - Unprotected cross-connections
 - High leakage rates that pose unacceptable risks of back siphonage

Significant Deficiencies (Cont.)

- Finished Water Storage
 - Hatch/entry not overlapping, watertight or adequately secured
 - Lack of proper #24 mesh screen on overflow pipes, drains, and/or vents (in high risk locations)
 - Overflow pipes and overflows to a sanitary or storm sewer
 - Storage tank in need of repair
- Pumps, Pump Facilities and Controls
 - Pump facility not protected from flooding
 - Unprotected cross-connection(s) present

Significant Deficiencies (Cont.)

- Monitoring, Reporting and Data Verification
 - System does not use a certified lab for required monitoring
- System Management and Operation
 - Lack of an emergency response plan
- Operator Compliance with Requirements
 - No certified or qualified operator (or certification at the required level has expired)
- Other significant deficiencies can be determined on a case-by-case basis

Significant Deficiency Identified During a Sanitary Survey

IESWTR

GWR

Is the PWS subject to IESWTR or GWR?

PWS must respond in writing to SDs no later than 45 days after receipt of the sanitary survey report

PWS must consult with state (EPA) within 30 days of receiving notice of the SD, unless state orders a specific corrective action plan

Correct SD according to a schedule approved by state (EPA)

OR

If no schedule, then according to the schedule reported in previous step

Within 120 days of receiving written notification from the State (EPA), PWS must have:

Completed the corrective action

OR

Be in compliance with a state-approved corrective action plan

What Can an Operator do to Prepare for a Sanitary Survey?

- Read the previous sanitary survey – make sure recommendations have been addressed
- Have all monitoring records available on site
- Be available during the entire sanitary survey
- Make sure that your O&M manual and ERP are current and available
- Have your monitoring plan for Stage 1 DBPs onsite
- Make sure you have all maintenance records available onsite
- Have operator certification records available
- You might as well ask some questions!

Region 8 Sanitary Survey Program

- We take this responsibility very seriously
- Our only visit to the actual location of the water system
- Our only face-to-face contact with some operators
- You never know what you will find!