



Sanitary Surveys and Significant Deficiencies

WARWS Fall Conference 2015





Sanitary Surveys:

Assess a water system's capability to supply safe drinking water.



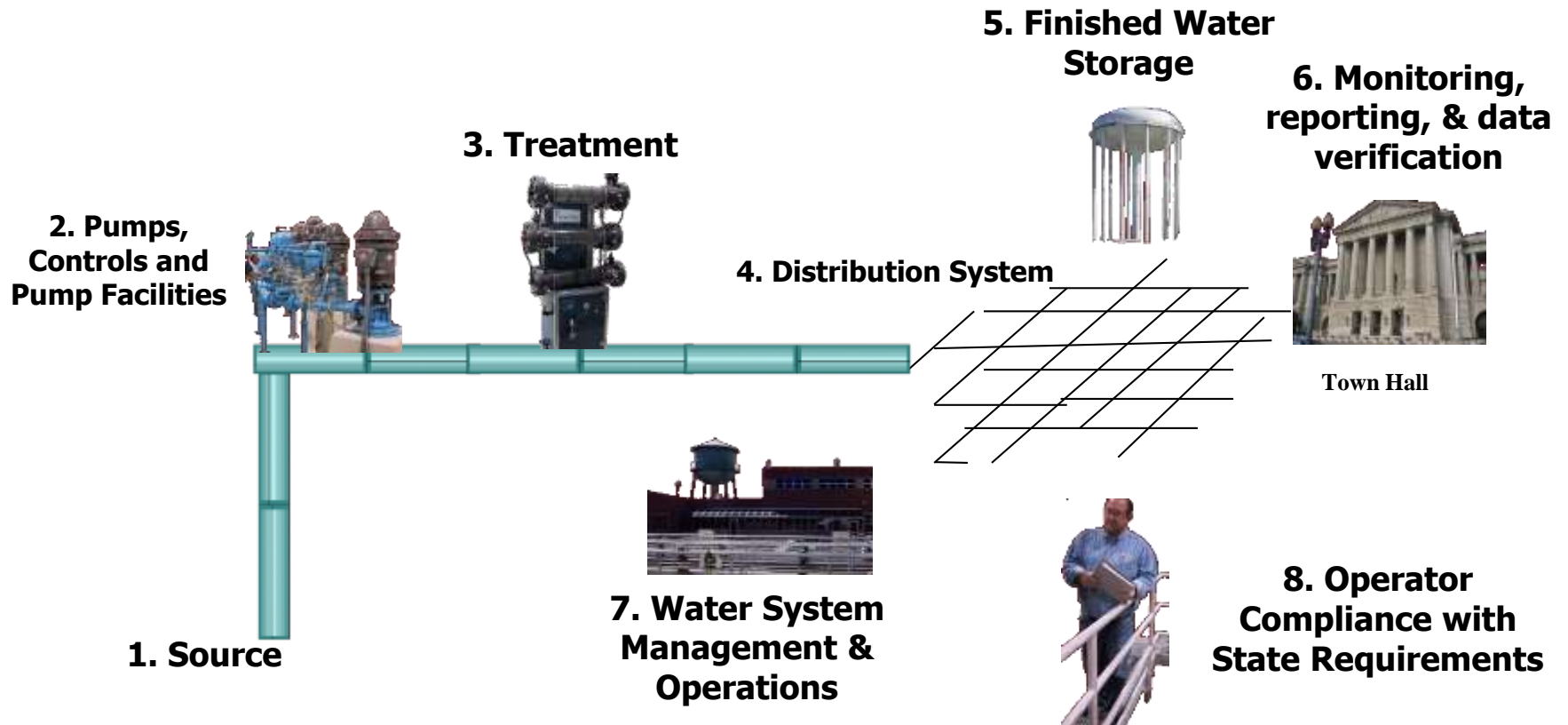
Definition of a Sanitary Survey:

On-site review of a public water system's:

- water source
- facilities
- equipment
- operation and maintenance



Sanitary survey 8 elements (1995 SS Guidance):





Sanitary Surveys:

Emailed 257 Wyoming Public Water Systems

Due for a Sanitary Survey in 2015

- to: Administrative Contact,
- cc: System Owner,
- cc: Chief Operator,
- cc: Designated alternate



Email Sent to 257 Wyoming Public Water Systems

Due for a Sanitary Survey in 2015

- Attached Documents:
- Wyoming Brochure – Preparing for your Drinking Water Sanitary Survey
- 2015 Sanitary Survey Form
- Storage Tank Inspection & Cleaning Checklist
- Storage Tank Above Ground Rooftop Component Checklist



Shock and awe...





Complete defiance





What's the first step in preparing for a Sanitary Survey?



Run Forrest!





How do you REALLY prepare for a sanitary survey?

- 1) Review the previous sanitary survey report for your system
 - a) Look at the **significant deficiencies** and **recommendations**
 - b) Make sure each item has been adequately addressed



2) Start going through the current sanitary survey report form

- a) Use the sections that apply
 - i) SW source vs. GW source
 - ii) Consecutive system vs. Wholesaler
- b) Make multiple copies of sections if needed
 - i) Multiple wells or sources
 - ii) Multiple tanks
- c) Text in **red** with **@** symbol is a **potential SD**
- d) Text in **blue** with **¥** symbol is a **potential violation**
 - i) treatment section



How do you REALLY prepare for a sanitary survey? (cont.)

3) Obtain system contact information

- a) mailing address and phone number

4) Find out:

- a) Your system's population served
- b) Residential vs. non-residential
- c) Number of service connections
- d) Metered or unmetered



How do you REALLY prepare for a sanitary survey? (cont.)

5) Review your system's schematic

- a) Emailed earlier this year (Feb/Mar)
- b) Does it represent relative locations of facilities?
- c) Mark changes/corrections & hand to surveyor

6) Complete the current form while visiting each facility

- a) Raw water source (spring/well/surface intake, master meter etc.)
 - 1) Well Logs/Statement of Completion
- c) Hydropneumatic tank
- d) Gravity storage tanks
 - 1) Rooftop Component Checklist
 - 1) Records of latest inspection & cleaning (over 10 yr – SD)
- e) Treatment
 - 1) 2-pager if groundwater or consecutive system
 - 2) More extensive for surface water systems



How do you REALLY prepare for a sanitary survey? (cont.)

6) Complete the current form while visiting each facility (cont.)

f) Distribution system

- 1) properly disinfected
- 2) maintain minimum pressure
- 3) Asbestos/Cement pipe?

g) Cross Connection Control

- 1) Hazardous connections identified
- 2) Program for inspection & testing of backflow preventers

h) Safety

- 1) Chlorine safety

i) Management Data

- 1) Emergency Response Plan?
- 2) Operating under any DEQ variances?



How do you REALLY prepare for a sanitary survey? (cont.)

6) Complete the current form while visiting each facility (cont.)

j) Monitoring and Records

1) TCR Sampling

- i) Familiar with TCR sampling requirements
- ii) Familiar with follow-up sampling requirements
- iii) TCR Sampling Plan

2) Ground Water Rule Sampling

- i) Familiar with follow-up sampling requirements

3) DBP Sampling

- 1) DBP Monitoring Plan on site?

4) Lead & Copper Rule Sampling

- 1) Lead & Copper sample siting plan on file?



How do you REALLY prepare for a sanitary survey? (cont.)

7) Review the Brochure “Preparing for your Drinking Water Sanitary Survey”

8) Call WARWS

- help before survey
- help during survey
- help after survey



I want to hear your feedback

**Please stop by the EPA booth
And tell me about your
experiences with past
sanitary surveys**



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What to do When You Receive Your Sanitary Survey Report?





After You Receive Your Sanitary Survey Report:

- Read the cover letter and report
- If there are any discrepancies/issues with the report, notify Jim Gindelberger, EPA Sanitary Survey Coordinator, at 303-312-6984 or Gindelberger.jim@epa.gov
- Recommendations are solely that- recommendations





After You Receive Your Sanitary Survey Report:

- If there are any significant deficiencies noted you will be *required* to:
 - ✓ Surveys conducted in 2014 (and the previous years) required a response to the Ground Water Rule or Surface Water Rule Manager, depending upon your water system type, with a date by when you will make the improvements
 - ✓ Surveys conducted in 2015 will automatically provide a 6 month corrective action date from the date of receiving the survey report
 - ✓ Make *all* of the necessary improvements (corrective actions) by a specific date
 - ✓ Notify EPA of those improvements in order to avoid receiving a violation by filling out a correction form and providing pictures



Significant Deficiencies:

Include, but are not limited to, defects in the design, operation, or maintenance, or a failure or malfunction of the sources, treatment, storage, or distribution system that EPA determines to **be causing or have the potential for causing the introduction of contamination into the water delivered to consumers.**



Significant Deficiency Examples



Examples of Source Significant Deficiencies



**Surface water
drainage causing
erosion at
wellhead**

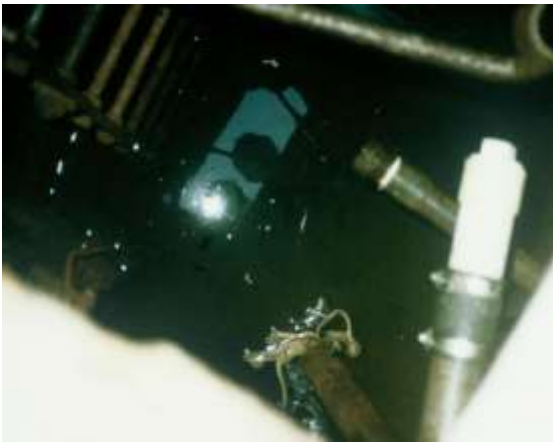
**Lack of a proper
sanitary
seal/well cap;
conduit & wires
not properly
sealed**



**Potential sources of
contamination
surrounding
wellhead**



Examples of Source Significant Deficiencies



Dead snakes and mice floating in a spring collection box

Lack of a sanitary seal and proper well cap



Lack of bolts creates the lack of a sanitary seal



Examples of Source Significant Deficiencies



Lack of a sanitary seal and well height not 18" above natural ground level



Lack of a sanitary seal and proper well cap



Examples of Source Significant Deficiencies



Cross connection with the venting/vacuum tied directly to the drain

Spring collection chamber located within a pond; lack of a proper hatch



A rock is not a sanitary seal and well cap



Examples of Source Significant Deficiencies

Frog in a manway between the inner and outer tank lids



Deteriorating concrete around the spring needs to be repaired

Dead mouse carcass on wellhead





Examples of Source Significant Deficiencies



Gaps

Gaps around pellet chlorinator allowed in irrigated water

Unknown well location
(under the driveway
somewhere...)



APPROXIMATE
LOCATION OF WELL



Examples of Source Significant Deficiencies



Conduit is not properly sealed



Duct tape doesn't fix everything



Examples of Significant Deficiencies

**Meter vault is flooded and
cause of flooding is unknown**



**Mouse droppings in well
house**



Examples of Source Significant Deficiencies



Bollards were added to address the well head being located in a driveway

Lack of a sanitary seal





Examples of Source Significant Deficiencies

Wells should be 18" above ground level or 12" above a concrete pad



This type of well cap cannot provide a sanitary seal

Wells should be 18" above ground level or 12" above a concrete pad





Gravity Storage Tank Significant Deficiencies:



**Overflow discharge does
not have #24 mesh
non-corrodible screen**



Storage Tank Significant Deficiencies:

**#24 mesh screen on air vent
not installed properly**



**Overflow not brought down
to 12 – 24” above the ground
surface**



Storage Tank Significant Deficiencies:



Overflow at ground level (not 12" – 24"); does not have discharge structure

Finished water storage tanks located below ground in a horse corral





Storage Tank Significant Deficiencies:



Frozen finished water storage tanks

Leaking finished water storage tanks





Examples of Significant Deficiencies

Storage tanks should be cleaned every 3-5 years, and is a significant deficiency if over 10 years

Lack of Storage Tank Cleaning- Example: Gideon, MO

- Untreated groundwater source
- Taste and odor complaints caused municipality to conduct a comprehensive flushing program
- Salmonella had contaminated the largest municipal tank (1993)
- Nearly 600 of the 1104 residents become ill and seven people died in a nursing home



Photos and information courtesy of James A. Goodrich, Ph.D. with EPA/ORD



Examples of Significant Deficiencies

“The Colorado Department of Public Health and Environment has released its final report on a 2008 Salmonella outbreak in Alamosa that may have sickened 1,300 people and caused one death. The state Health Department said the most likely cause was animal contamination to an in-ground water storage tank. The report also noted that Alamosa does not chlorinate its water and said that contributed to the spread of Salmonella.”



n.p. “Final Report On Alamosa Salmonella Outbreak Released Animal Waste Cited As Likely Cause.” *Failure To Chlorinate Cited As Factor.* abc 7 News Denver, 18 Nov. 2009. Web.



EPA Region 8 Sanitary Surveys and Significant Deficiencies

Examples of Significant Deficiencies

When cleaning your storage tank, make sure you fill out the following form; templates available at:
<http://www2.epa.gov/region8-waterops/reporting-forms-and-instructions-reporting-forms#s>

EPA Region 8 Drinking Water Unit Finished Water Storage Tank Inspection/ Cleaning Checklist				
Fill out one checklist per storage tank & submit labeled photos of each tank component with this form				
PWS Name: _____		PWS ID: _____		
Tank Name: _____		Tank ID: _____		
Proposed Inspection Date: _____		Actual Inspection Date: _____		
Name of Person Filling Out Form: _____		Title of Person Filling Out Form: _____		
I certify that this information is complete and accurate:			Date:	_____
Inspector Qualifications (answer to all questions must be "yes")				
Name and contact information of inspector (if water system personnel) or inspection company: _____				
<input type="checkbox"/> Yes <input type="checkbox"/> No	Has the inspector completed confined space training?			
<input type="checkbox"/> Yes <input type="checkbox"/> No	Did the inspector have a confined space entry permit?			
Overall Tank Condition				
Significant Deficiency		Required Correction	Proposed Completion Date	Actual Completion Date
<input type="checkbox"/> Yes <input type="checkbox"/> No	Does the tank appear to be structurally sound?	If no, what repairs are suggested by the tank inspector? _____	_____	_____
<input type="checkbox"/> Yes <input type="checkbox"/> No	Are there any unprotected openings in the tank (breaches, leaks, daylight coming through tank in spots, etc)	If yes, indicate type of breach and how it should be repaired. _____	_____	_____
Air Vent				
Significant Deficiency		Required Correction	Proposed Completion Date	Actual Completion Date
Above Ground Tanks (Ground Level or Elevated) <input type="checkbox"/> Check if NA				
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Downturned vent: Is the vent at least 24" or 3 pipe diameters above the roof?	If no reconfigure vent to provide proper air gap.	_____	_____
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Non-downturned vent: Is there a solid cover down to the bottom of the vent screen?	If no, indicate deficiency and proposed correction: _____	_____	_____
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Non-downturned vent: Is the screen at least 8" above the roof surface? What is the height of the start of the screening above the tank? _____	If no, indicate deficiency and proposed correction: _____	_____	_____
<input type="checkbox"/> Yes <input type="checkbox"/> No	Is the vent covered with #24 mesh corrosion resistant screening (some exceptions apply)? Mesh Size: _____	If no, indicate deficiency and proposed correction: _____	_____	_____



Examples of Management Significant Deficiencies

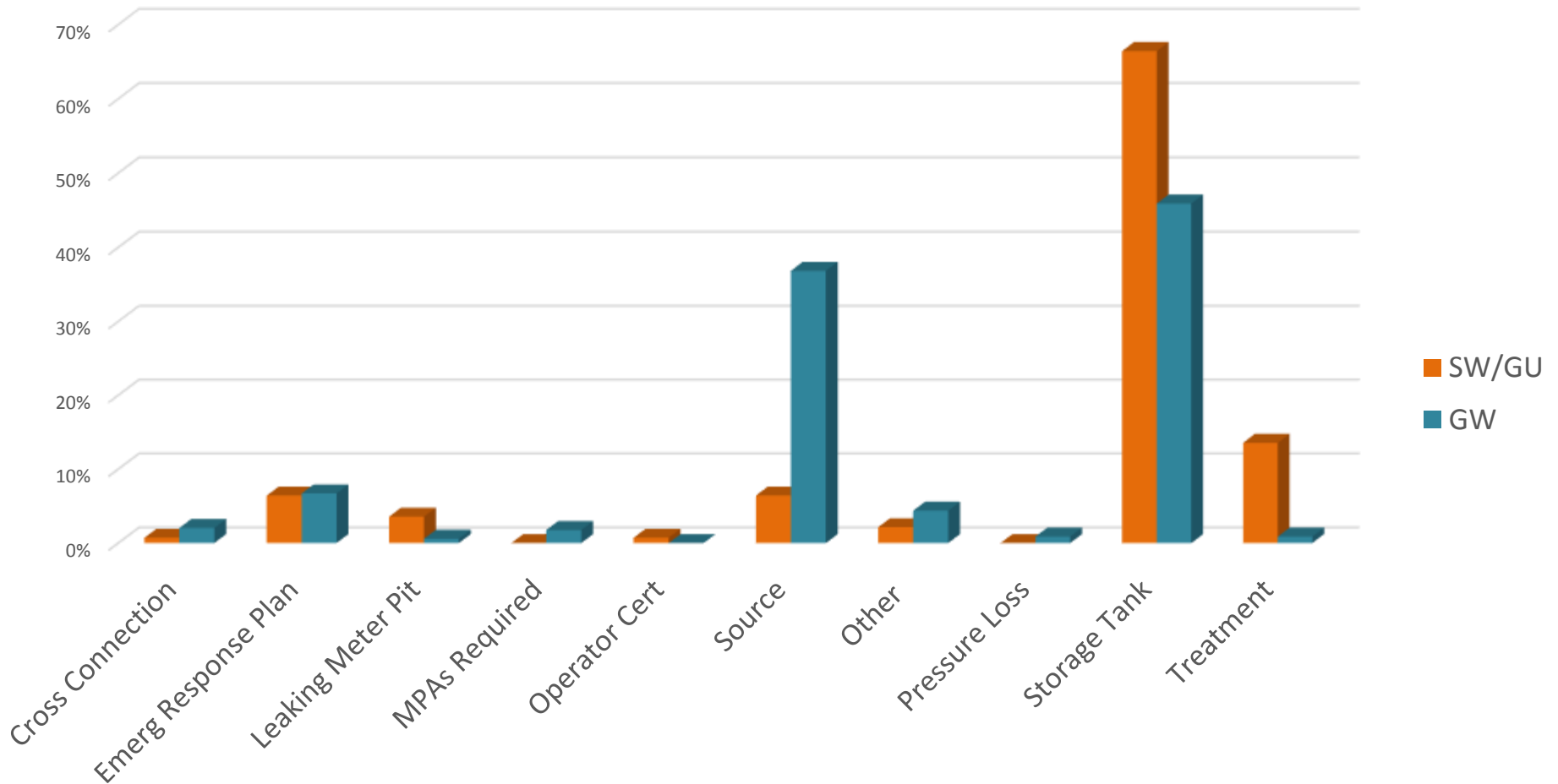
Lack of an emergency response plan (ERP)

Templates available at: <http://www2.epa.gov/region8-waterops/reporting-forms-and-instructions-reporting-forms>





Significant Deficiencies at WY PWS 2013 to date (Total = 677)





How do You Avoid Violations if You Have Significant Deficiencies?



For surveys conducted in 2014: (during initial response)



If your 2014 survey identifies significant deficiencies you MUST respond. GWR requires a response w/in 30 days of receiving the survey report; SWTR requires a response w/in 45 days.

Your response *by email* must have the following:

- a) PWS name and number;
- b) How you plan on fixing the significant deficiency;
- c) A date by when you will fix the deficiency;
- d) **Copy the respective WY DEQ Engineer on the email response if there are any deficiencies with an asterisk**
(e.g., Lack of a sanitary seal on Well #2*)

(EPA will respond notifying you if your proposal has/has not been accepted)



For surveys conducted in 2015 with significant deficiencies:

- Instituting an automatic corrective action date (date by when you must fix the deficiencies) of 6 months from the day you receive the survey report
 - You will *not* need to respond to EPA after you receive your report if you will complete all of the improvements in 6 months
 - You will need to notify us once those improvements are completed
- You must respond to EPA *only* if you need more than 6 months to correct any of the deficiencies: GWR requires a response w/in 30 days of receiving the survey report; SWTR requires a response w/in 45 days
 - EPA will respond notifying you if your proposal has been accepted for those who need more than 6 months to address their deficiencies



**Once the Deficiencies
Have Been Corrected/
Requesting an Extension**



EPA Region 8 Sanitary Surveys and Significant Deficiencies Improvements that have been made at the System/Extensions

Completing corrective actions to address significant deficiencies:

- 1) Make the improvements to address the significant deficiencies
 - ❖ A reminder email will be sent to aid you in staying in compliance
- 2) If an extension is needed you *must* request one BEFORE the corrective action deadline
- 3) You MUST notify EPA within 30 days after making the system improvements to address the significant deficiencies
 - ✓ Email is sufficient
 - ✓ Include the Correction Notice form and requisite pictures
 - ✓ Include any storage tank checklists (if applicable)
- 4) **Please also copy the WY DEQ Engineer in the email to EPA**

As long as the improvements were made properly, EPA will notify you that the significant deficiencies have been addressed



EPA Significant Deficiency Expectations that Differ from WY DEQ Standards for PWS



EPA Region 8 Sanitary Surveys and Significant Deficiencies Prior to Making Improvements

EPA Significant Deficiency Expectations that Differ from WY DEQ:

- Federal regs require the EPA to identify significant deficiencies during sanitary surveys
- Significant deficiencies are largely based on the Wyoming Department of Environmental Quality's (WY DEQ) Chapter 12 Design and Construction Standards for PWSs
- Some of the significant deficiencies are not addressed in the WY DEQ Design Standards





EPA Region 8 Sanitary Surveys and Significant Deficiencies Prior to Making Improvements

EPA Significant Deficiency Expectations that Differ from WY DEQ:

SPRINGS

Spring collection areas and collection chambers/boxes must be enclosed by a fence to prevent stock and large wildlife from entering the spring area.

A diversion channel or berm must divert surface water runoff away from a spring collection area.

Spring lids must be fitted with a solid, watertight cover with a rubber gasket where the cover overlaps the framed opening and extends down around the frame at least two inches. A spring lid must have a locking device.

Spring air vents must be screened with a #24 mesh corrosion-resistant screen (wire diameter 0.014") to prevent contamination (including contamination carried by insects, rodents, and birds) from entering the water system.



EPA Region 8 Sanitary Surveys and Significant Deficiencies Prior to Making Improvements

EPA Significant Deficiency Expectations that Differ from WY DEQ:

SPRINGS (Continued)

Spring overflow pipes must have a #24 mesh screen (wire diameter 0.014”) on the exterior discharge end to prevent contamination from entering the water system, and must freefall at least 12 inches above ground.

Spring chambers must be watertight to prevent inflow of unwanted surface water.

Hatches / manholes in a spring collection and transmission system must be fitted with a solid, watertight cover with a rubber gasket. The cover must overlap the framed opening and extend down around the frame at least two inches and must have a locking device.





EPA Region 8 Sanitary Surveys and Significant Deficiencies Prior to Making Improvements

EPA Significant Deficiency Expectations that Differ from WY DEQ:

FINISHED WATER STORAGE TANKS (Continued)

Overflow:

Tank overflows must be accessible for inspection.

Tank overflows must be fitted with a #24 mesh non-corrodible screen (wire diameter 0.014”), or properly sealed flapper or duckbill valve to prevent contamination from entering the water system. When a flapper valve is used, a screen must be placed inside the valve (EPA Region 8 recommends a #24 mesh non-corrodible screen). The flapper or duckbill valve must be prevented from freezing shut.

Drain Line:

Tank drains must be accessible for inspection.





EPA Region 8 Sanitary Surveys and Significant Deficiencies Prior to Making Improvements

EPA Significant Deficiency Expectations that Differ from WY DEQ:

FINISHED WATER STORAGE TANKS (Continued)

Air Vent for Above Ground Tanks (Ground Level or Elevated Tanks):

Tank air vents must be accessible for inspection.

Tank air vents must be fitted with a #24 mesh non-corrodible screen to prevent contamination from entering the water system. A vacuum/pressure relief valve or another mechanism may be needed to protect the tank.

For downturned vents, the vent must terminate in an inverted U construction at least 24 inches or 3 pipe diameters above the tank roof to prevent inhalation of contaminants by the tank.

For non-downturned vents, the screen must have a solid cover to prevent rain and blown debris from entering the tank. The bottom of the vent screen must be at least 8 inches above the tank roof to prevent inhalation of contaminants by the tank.



EPA Region 8 Sanitary Surveys and Significant Deficiencies Prior to Making Improvements

EPA Significant Deficiency Expectations that Differ from WY DEQ:

FINISHED WATER STORAGE TANKS (Continued)

Air Vent for Below Ground Tanks (Buried or Partially Buried Tanks):

Air vents must be accessible for inspection.

Air vents must be fitted with a #24 mesh non-corrodible screen to prevent contamination from entering the water system.

Storage Tank Hatch:

Tank hatches must be accessible for inspection.

Tank hatches must have a gasket to seal the hatch lid to the frame to prevent contamination from entering the water system.

Below Ground Tanks (buried or partially buried): The tank hatch must be elevated a minimum of 24 inches above the top of the tank surface or ground surface, whichever is higher.



EPA Region 8 Sanitary Surveys and Significant Deficiencies Prior to Making Improvements

EPA Significant Deficiency Expectations that Differ from WY DEQ:

FINISHED WATER STORAGE TANKS (Continued)

Air Vent for Below Ground Tanks (Buried or Partially Buried Tanks):

Air vents must be accessible for inspection.

Air vents must be fitted with a #24 mesh non-corrodible screen to prevent contamination from entering the water system.

Storage Tank Hatch:

Tank hatches must be accessible for inspection.

Tank hatches must have a gasket to seal the hatch lid to the frame to prevent contamination from entering the water system.

Below Ground Tanks (buried or partially buried): The tank hatch must be elevated a minimum of 24 inches above the top of the tank surface or ground surface, whichever is higher.



EPA Region 8 Sanitary Surveys and Significant Deficiencies **Prior to Making Improvements**

EPA Significant Deficiency Expectations that Differ from WY DEQ:

SURFACE WATER TREATMENT FACILITY

Please consult with both the WY DEQ District Engineer and the EPA Surface Water Treatment Rule Manager prior to designing or modifying a surface water treatment facility. The EPA SWTR Manager may be reached at 1-800-227-8917.



EPA Region 8 Sanitary Surveys and Significant Deficiencies
Prior to Making Improvements

EPA Significant Deficiency Expectations that Differ from WY DEQ:

The list of these
expectations is available at
our booth!

Sanitary Surveys

Call EPA or the Wyoming Association of Rural Water Systems (WARWS) if you need assistance with your water system/deficiencies; call WY DEQ District Engineer prior to making improvements

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Wyoming DEQ District Engineers

http://159.238.120.99/www_districts/index.htm

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**Thank
You!**