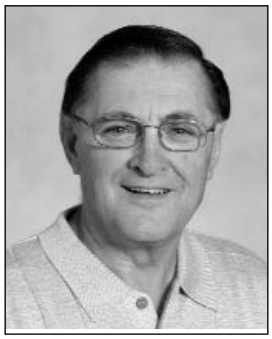
by Bert Zerr

Sanitary surveys required of more systems under new regs

The Interim Enhanced Surface Water Treatment Rule (IESWTR) and the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) both imposed more stringent treatment requirements on systems that use surface water or ground water under the direct influence of surface water. Individuals operating and managing these types of systems are well aware of the many changes including lower turbidity standards, individual filter turbidity monitoring, total organic carbon (TOC) reduction requirements, and achieving adequate chlorine contact time (CT) while complying with Disinfectants/Disinfection Byproducts limits. An additional requirement of the rules state that sanitary surveys must be conducted of these systems. And just in case operators of ground water systems thought they were off the hook, the Ground Water Rule, which is proposed to become effective in the near future, contains this requirement for groundwater systems as well.



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What is a sanitary survey?

A sanitary survey is an onsite review, or inspection, of the water source, facilities, equipment, operation and maintenance procedures, and record keeping of a public water system conducted to determine the adequacy of the system to produce safe and dependable water to customers. Operator compliance with state requirements. The sanitary survey identifies conditions that may present a potential or existing contamination risk, such as failing infrastructure or lack of certain operational procedures or maintenance practices.

The sanitary survey will include, but is not limited to, the following eight elements:

1. Source
2. Treatment
3. Distribution system
4. Finished water storage
5. Pumps, pump facilities, and controls
6. Monitoring, reporting and data verification
7. System management controls
8. Operator compliance with state requirements.

Dead birds in a water tower is a serious deficiency. Two bird skulls seen in the circles above were part of a long departed flock from a Kansas storage tank.

Who conducts the sanitary survey?

Federal regulations require the Kansas Department of Health and Environment (KDHE) conduct a sanitary survey of all public water systems, which use surface water or ground water under the direct influence of surface. And, in preparation for the Ground Water Rule, the KDHE has started using the enhanced sanitary survey for all ground water systems as well. The KDHE will conduct the surveys at community water systems every three years and at non-community systems, every five years. KDHE inspectors will address the eight elements noted above and will document any significant deficiencies observed.

What is a significant deficiency?

A significant deficiency is any defect in a system's design, operation, maintenance, or administration, as well as any failure or malfunction of any system component which the KDHE determines to cause, or have potential to cause; an unacceptable risk to health or that could affect the reliable delivery of safe drinking water. Questions that might be asked when deciding whether or not a deficiency is significant are: 1) Does the deficiency cause the potential for contaminants to be introduced to the drinking water?; 2) If left uncorrected, will the deficiency cause the potential for the introduction of contaminants at some point in the future?; 3) Does the deficiency affect treatment in an unacceptable manner?; and, 4) Does the deficiency pose risks to the safety of the public or operators?

Above: *A hole has gradually enlarged in an underground reservoir access hatch. Who knows what could have crawled in there?*

Above right: *An abundance of sand-blasting material was found at this system inside of a water tank overflow pipe.*

Following the survey, KDHE will provide a report in the form of a letter to the water system describing the results of the sanitary survey. If significant deficiencies were observed, the water system will have 45 days after receipt of the report to describe how and on

How KDHE defines a significant deficiency for a water system – with examples

The following deficiencies have the potential to meet the KDHE's definition of a significant deficiency. This list in not intended to be prescriptive. ***The inspector in the field will have the final word on whether or not a particular deficiency is significant.*** However, each of these deficiencies has the potential to be significant and referring to this list may assist the inspector in making this decision. Also, the governing body and operations staff can refer to this list to prepare for a sanitary survey.

Source:

- Location of intake or wells near pollution source (e.g. septic system, feedlots located near the source).
- Well construction inadequate or in deteriorated condition (e.g. wells properly sealed, well vents installed and screened, air release valves screened).
- Spring collection facilities inadequate or in deteriorated condition

Treatment:

- Lack of filter maintenance (e.g. evidence that the pressure filter has not been evaluated on a routine basis to clean the media, check for media loss, and condition of the underdrain system).
- Filter does not have adequate depth of media (e.g. less than 24 inches)
- No standard operating procedure for taking a filter out of service for backwashing, for performing the backwash, or returning the filter to service
- No process control plan for coagulant addition
- Inadequate application of treatment chemicals
- Chemical feed rates not adjusted for varying raw water quality conditions or changes in flow rate
- Inadequate disinfection CT
- Unsafe chemical storage

Distribution System:

- Total Coliform Rule (TCR) sampling plan not representative of the distribution system
- Negative pressures at any time (minimum of 20 psi required)
- System not flushed periodically
- No disinfectant residual or inadequate monitoring of disinfectant residual, when required (a minimum of one chlorine residual test per day is required)
- Inadequate cross-connection controls, either at the treatment facility or in the distribution system (or failure to have a cross-connection control program)
- Unacceptable system leakage which could result in entrance of contaminants (review records of water loss)
- System plans unavailable or outdated (see article in July 2006 Lifeline)
- Valve locations unknown
- Valves not exercised regularly or known to be inoperable

Finished Water Storage:

- Inadequate internal cleaning and maintenance of storage tank (see article in July 2006 Lifeline)
- Improper venting of tank
- Lack of proper screening of overflow pipe and drain
- Inadequate roofing (e.g. holes in the storage tank, improper hatch construction)

Pumps, Pump Facilities and Controls:

- Ponding of water in pump housing
- Inadequate pump capacity
- Lack of redundant mechanical components
- Electrical hazards

Monitoring/Reporting/Data Verification:

- Failure to properly monitor water quality
- Failure of system operator to address customer complaints regarding water quality or quantity
- TCR sampling plan not available or not being followed
- Chronic TCR coliform detections with inadequate remediation

Water System Management/Operation:

- Lack of properly trained or licensed staff as required by the state
- Lack of emergency response plan
- Failure to meet water supply demands or interruptions to service (inadequate pump capacity, unreliable water source, lack of auxiliary power)
- Inadequate follow-up to deficiencies noted in previous sanitary surveys
- Spare parts inventory inadequate
- Lack of accessible contact list with phone numbers for emergency repairs or troubleshooting
- Evidence of poor or infrequent communication between operator and system managers

Operator Compliance with State Requirements:

- Operator does not have the correct level of certification as required by regulation

Pre-inspection checklists for KDHE sanitary surveys – for both ground and surface water

Items for well water supply systems

- Current Bacteriological Sampling Site Plan
- Chlorine residual logs for the past three years
- Drought Contingency Plan
- Water Rationing Ordinances
- Water Conservation Plan
- Previous years water usage report as filed with the Division of Water Resources
- Cross-connection control ordinances/regulations and testing reports
- Map of the distribution system
- Written water line disinfection procedures
- Updated emergency water supply plan
- Stage 1 Disinfectants/Disinfection Byproducts Monitoring Plan and quarterly reports
- Copies of past consumer confidence reports (previous three years)

Additional items for surface water supply system:

- Average, maximum, and minimum daily production in previous year
- Copies of any and all public notices within the last five years
- Individual filter effluent (IFE) and combined filter effluent (CFE) turbidity results
- Turbidity meter calibration records
- List of all certified and non-certified water operators
- Percentage of water from all sources (groundwater, surface water, GWUDI)
- Number, name, construction material, and storage capacity of water storage tanks
- List of finished water quality tests performed
- Define number of units and dimensions in the clarifier, sedimentation, and flocculator basins
- Average filtration rates and backwash rates
- Plant schematic

what schedule the system will address the deficiencies. Failure to address significant deficiencies identified in sanitary surveys that are within the control of the public water system and its governing body shall constitute a violation of Kansas Administration Regulations.

The KDHE determined early on that a paperless inspection and reporting system would be more beneficial, primarily because it would be easier to transfer information to the Environmental Protection Agency (EPA) database. As a result, the KDHE inspectors are currently using an electronic Tablet PC when conducting surveys. It should be noted that all deficiencies noted on the inspection form will be reported to the EPA. See the sidebar on page 104 for more information.

KDHE Environmental Specialist Zachary Phillips of the KDHE District Office in Wichita gives some insight into his procedure in preparing for a sanitary survey. "I will obviously perform a file review of the public water supply system first, then contact the system, get addresses and then send the pre-inspection checklist; it significantly reduces the amount of time searching for documents during the inspection. System people should pretty much have all records out for review once I show up," Phillips explained. The checklist items for well water and ground water supply systems are noted in Zachary Phillip's list in the sidebar above.