



POTABLE WATER SYSTEM SANITARY SURVEY

Based Primarily on Operational Year: System Number: System Name: Field Unit: Park or Site:

SYSTEM DETAILS

Was this system operated in for potable water uses?

Number of Months Operated for Potable Water Uses in each System Classification*:

Large: Medium: Small: Micro:

Classification

Maximo Asset Number: Determined By:

Total Operational Months in : #####

Type**:

*In this report, "1st Classification" refers to largest classification, and "2nd Classification" refers to second largest classification.

**Seasonal is a system that, for 60 or more consecutive days per year, is not in operation.

Water Source

Item to Check

Answer

Action Required

WATER SOURCE:

<Select>

Carry out the following activities:

☐ Is the water source Groundwater Under the Direct Influence of surface water (GUDI), as per Section 1.5 of the PCA Standards?

☐ If so, is filtration part of the technology train used to treat the raw water?

☐ Did you have to check with a trained professional (Hydrogeologist and/or qualified Professional Engineer)?

☐ Have you reviewed the results of the full chemical characterization and regular chemical testing of raw water (Tables A, B, C and D)?

☐ Did you observe any trends of water quality indicators (such as nitrates, temperature, pH, and 'Chlorophyll a')?

Item to Check	Answer	Action Required
<input type="checkbox"/> <i>If the source of raw water is from a well, carry out the Well System Checklist (Attachment I)</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is your water intake in a shallow area?</i>	<input type="text"/>	
<i>Check the following records:</i>		
<input type="checkbox"/> <i>Did you observe any recent major changes to the source water quality?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Did you observe any changes in watershed or water recharge area (i.e., livestock operations, sewage or sanitary discharges, or heavy recreational)?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Did you observe any changes following recent heavy rains or flooding and any drought conditions?</i>	<input type="text"/>	
Sample History		
<input type="checkbox"/> <i>Sampling Technique: Did you follow the Best Management Practices for the collection and handling of drinking water samples? If not, indicate aspects that were not followed.</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is there a history of adverse microbiological water sample results?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is there any history of adverse results from the distribution system?</i>	<input type="text"/>	
<i>For the previous period of 24 consecutive months:</i>		
<input type="checkbox"/> <i>How many samples were taken?</i>		

Item to Check	Answer	Action Required
<input type="checkbox"/> <i>Where were the samples taken?</i>		
<input type="checkbox"/> <i>What are the results of all of the samples (including positive and negative results)?</i>		
Operational History		
<input type="checkbox"/> <i>Have there been any changes/problems with operation of the distribution system?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Have any mechanical difficulties or equipment failures occurred?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Have there been any operational deficiencies?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Has there been any period where testing of the system was not carried out according to requirements of the PCA Standards?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Have there been any of the following disruptions in the system recently? (Check the appropriate ones and indicate if action is required):</i>	<input type="text"/>	
<div> <input type="checkbox"/> Low pressure <input type="checkbox"/> Cross-connections <input type="checkbox"/> Recent construction <input type="checkbox"/> Inadequate flushing </div> <div> <input type="checkbox"/> Stagnant water (dead ends) <input type="checkbox"/> Age and condition pipes <input type="checkbox"/> Bio-film presence </div>		
<input type="checkbox"/> <i>What corrective actions were initiated?</i>		
<input type="checkbox"/> <i>Was the system temporarily disinfected according to correct procedures?</i>		

Item to Check	Answer	Action Required
<input type="checkbox"/> <i>Were distribution pipes flushed thoroughly in the affected area?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Were water re-samples taken as required (a minimum of three samples per initial adverse test)?</i>	<input type="text"/>	
<i>Distribution and Plumbing Lines</i>		
<input type="checkbox"/> <i>Did you monitor for leaks, corrosion and scaling in pipes, decreases in water pressure, dead-ends, and unexplained increases in water usage?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Did you find unexpected wet areas, greener vegetation, or melted snow along distribution lines (to locate potential leaks)?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Did you fix any leaks, dead-ends, or other mechanical difficulties and equipment failures?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Did you eliminate any cross-connections through the use of gaps, breakers, or other backflow prevention strategies or devices?</i>	<input type="text"/>	
<i>Treatment</i>		
Disinfection:		
<input type="checkbox"/> <i>Did you check if there was any interruption in the disinfection?</i>	<input type="text"/>	
<input type="checkbox"/> <i>If so, why?</i>		

Item to Check	Answer	Action Required
<input type="checkbox"/> <i>Is there proper residual entering the distribution system?</i>	<input type="text"/>	
<input type="checkbox"/> <i>What is the range of chlorine residuals?</i>		
<input type="checkbox"/> <i>Is the contact time between the point of disinfection and the first consumer adequate?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Are the temperature and pH of the water at the point of disinfection measured and recorded?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is there adequate spill containment?</i>	<input type="text"/>	
Filtration:		
<input type="checkbox"/> <i>Is the filtration process performing as designed?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Did you establish control and assessment features to evaluate the performance of each filter?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is there parameter(s) to initiate a backwash?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is there a Standard Operating Procedure?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Can the treatment process be interrupted by power outages?</i>	<input type="text"/>	

Item to Check	Answer	Action Required
<input type="checkbox"/> <i>Is there standby available?</i>	<input type="text"/>	
<input type="checkbox"/> <i>What type of filtration system is being used and what kind of media has been installed?</i>		
<input type="checkbox"/> <i>What is the turbidity of the effluent water following the backwash?</i>		
<input type="checkbox"/> <i>What is the turbidity of the backwash?</i>		
<input type="checkbox"/> <i>Is there any visible indication of problems on the surface of the filter (i.e., particulate matter remaining on the surface, cracks, holes, depressions in the media surface)?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is the monitoring instrumentation (loss-of-head, effluent flow rate, and filter water turbidity) working for all filters?</i>	<input type="text"/>	
<i>Chemical Feed Systems:</i>		
<input type="checkbox"/> <i>Did you record the chemicals used and amount?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Did you calibrate the chemical feed system?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Did you record the chemical dosage and total quantity used?</i>	<input type="text"/>	

Item to Check	Answer	Action Required
<i>Pump and Pumping Facilities:</i>		
<input type="checkbox"/> <i>Is the building protected from flooding?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Can the equipment be accessed for maintenance?</i>	<input type="text"/>	
<input type="checkbox"/> <i>What is the number of pumps, and what are their types?</i>		
<input type="checkbox"/> <i>Did you record the number of pumps, type of pumps, actual capacity and how does it compare to the demand?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Does the equipment have excessive noise/vibration, leaking water, dirt and grime, leaking lubricants?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Are the pumping systems equipped with check valves, pressure gauges, flow meters, air/vacuum relief valve, and blow-off line?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Are there fail safe devices, failure alarm system for the motor control systems?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is the system secured and monitored?</i>	<input type="text"/>	

Attachment I - Well System Check List

Item to Check	Answer	Action Required
Well Location:		
<input type="checkbox"/> <i>Is the Well located at a site where the elevation is higher than the immediate surrounding area?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is the Well located at a site where the well is accessible for cleaning, treatment, repair, testing, inspection, and visual examination?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is the Well located inside well pits or in other locations that are prone to flooding or surface water contamination?</i>	<input type="text"/>	
<input type="checkbox"/> <i>If the Well is not a drilled well with watertight casings extending to a depth of 6 metres below ground level, is it located within 30 metres from septic systems and other pollution sources?</i>	<input type="text"/>	
<input type="checkbox"/> <i>If the Well is a drilled well with watertight casings extending to a depth of more than 6 metres below ground level, is it located at least 15 metres from septic systems and other pollution sources?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is the Well secured, and is access limited to appropriate staff?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Extended Buried Casings: Is the casing of a properly constructed well extended a minimum of 40 cm above grade?</i>	<input type="text"/>	
Inspection of Covers or Sanitary Seals for Cracks and Holes:		
<input type="checkbox"/> <i>Are the seals watertight and in good condition?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is the cover commercially manufactured, vermin-proof, and be able to prevent the entry of surface water and foreign materials?</i>	<input type="text"/>	

(...continued) Attachment I - Well System Check List

Item to Check	Answer	Action Required
<input type="checkbox"/> <i>Is the cover secured?</i>	<input type="text"/>	
<i>Contact Licensed Well Contractor to Inspect the Inside of the Well:</i>		
<input type="checkbox"/> <i>Is the casing clean, free of contamination and watertight?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Did you observe signs of surface water seepage or water running freely into the well?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Did you observe seepage through cracks or stains on the inside of the casing?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is the seal around the plumbing inlets in poor condition?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is the water seeping in from outside the well?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is there any debris floating in the well?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Did you compare your well construction to diagrams that show proper design and maintenance techniques?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Did you correct any problems you discover by retaining qualified contractors to carry out necessary repairs?</i>	<input type="text"/>	

(...continued) Attachment I - Well System Check List

Item to Check	Answer	Action Required
<i>Inspecting the Condition of Air Vents:</i>		
<input type="checkbox"/> <i>Are the air vents extended above the land surface to a height that would prevent the entry of flood water from any anticipated flooding in the area?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is the open end of the air vent shielded and screened to prevent entry of foreign materials into the well?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is the air vent kept free of obstructions and blocks at all times?</i>	<input type="text"/>	
<i>Inspecting the Area around the Well:</i>		
<input type="checkbox"/> <i>Did you take proper actions to ensure the area around the well is a) in a neat and sanitary condition and b) away from all potential contamination sources, such as animals, fuel and equipment?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Did you look for settling of the ground around the outside of the well casing?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Did you take proper actions such as mounding the earth around the outside of the well casing if there is no slope or if some of the area is settled?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is there a permanent buffer of grass or other vegetation extending at least 150cm from the well casing all directions?</i>	<input type="text"/>	
<input type="checkbox"/> <i>Is the well secure with locking caps?</i>	<input type="text"/>	

(...continued) Attachment I - Well System Check List

Item to Check	Answer	Action Required
<i>Inspecting the Area around the Water Storage Facility :</i>		
<input type="checkbox"/> <i>Is the casing of a properly constructed reservoir extended a minimum of 40 cm above grade?</i>		
<input type="checkbox"/> <i>Are the seals watertight and in good condition?</i>		
<input type="checkbox"/> <i>Is the cover commercially manufactured, vermin-proof, and able to prevent the entry of surface water and foreign materials?</i>		
<input type="checkbox"/> <i>Is the cover secured?</i>		
<input type="checkbox"/> <i>Are the air vents extended above the land surface to a height that would prevent the entry of flood water from any anticipated flooding in the area?</i>		
<input type="checkbox"/> <i>Is the open end of the air vent shielded and screened to prevent entry of foreign materials into the well?</i>		
<input type="checkbox"/> <i>Is the air vent kept free of obstructions and blocks at all times?</i>		
<i>End of Attachment I - Well System Check List</i>		

General Comments

Figure 1 displays a 3x3 grid of scatter plots illustrating the relationship between the number of children in the household (X-axis) and the number of children in the family (Y-axis). The rows represent different family types: Married, Divorced, and Widowed. The columns represent different household types: Married, Divorced, and Widowed. Each plot shows a positive correlation between the two variables, with the strength of the correlation increasing as the number of children in the household increases. The plots are labeled with the number of children in the household (1, 2, 3) and the number of children in the family (1, 2, 3).

Family Type	Household Type	Number of Children in Household	Number of Children in Family
Married	Married	1	1
		2	2
		3	3
Divorced	Divorced	1	1
		2	2
		3	3
Widowed	Widowed	1	1
		2	2
		3	3

Name of Author	Date (yyyy-mm-dd)	Signature