

# Improving Tribal Drinking Water Systems: Operation & Maintenance

## Day 1:

### **Part 1: Introduction to O & M: Total Time 2 hours, 5 minutes**

#### **Introduction (approximate run time 25 minutes)**

- A. Moderator/Presenter Introductions, Session Topics & Objectives
- B. How to interact with the platform
- C. Topic Knowledge -**Session Pre-Test**
- D. Audience Polls
  - a. Poll 1: Who is in the room?
  - b. Poll 2: What size is your system?
  - c. Poll 3: Is your system groundwater or surface water?
  - d. Poll 4: What type of disinfection/treatment do you do?

**What is involved in properly operating and maintaining a water distribution system.**  
(approximate run time 30 minutes) “Facilitated Group Discussion”.

**5-minute stretch break. Respond to the poll during the break.**

**Poll 5: What activities do you feel familiar enough to perform?**

- A. Underground water distribution system repair?
- B. Disinfection of drinking water and the water distribution system?
- C. Repairing the above ground components of a drinking water well?
- D. Repairing or replacing water distribution system valves?

**Poll 6: Have you every performed an Asset Inventory of your water system and created a Capital Improvement Plan (CIP)?**

**About asset inventories and capital improvement plans (approximate run time 60 minutes)**

- A. Asset Inventory - 5 Year Plan and CIP
- B. Capital Improvement Plan

**Topic Knowledge - Session Post Test (Approximately 10 minutes)**

**Lunch Break – 55 minutes**

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## **Part 2: Water System Components & Water Quality. Total Time 2 hours 5 minutes**

### **Introduction & Topic Knowledge (approximate run time 15 minutes)**

- A. Introductions, Session Topics & Objectives
- B. **Session Pre-test**

### **Water System components and their purpose. Maintaining them to prevent water contamination (approximate run time 75 minutes) 5-minute stretch break (at some point during this section).**

- A. Wells and Well Pumps, Water Quality-Source, Hydrological Cycle and Components of a Well
- B. Water storage tanks
- C. Water meters
- D. Pressure relief valves
- E. **Poll 7: Do you have any fire hydrants on your system?**

### **Hydrants - (30 minutes)**

- A. identification
- B. different types,
- C. flushing,
- D. flushing plans,
- E. maintenance

### **Questions and Session Post-Test (10 minutes)**

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## Day 2:

### **Part 3: Pumps, Hydro-Pneumatic Tanks, Valves and Disinfection. Total Time 2 hours, 5 Minutes**

#### **Introduction & Topic Knowledge (approximate time 10 minutes)**

- A. Introductions, Session Topics & Objectives
- B. Session Pre-test

**Poll 8. What types of pumps do you have?**

#### **What is Pump? (approximate run time 15 minutes)**

- A. Definition of pump
- B. Types of Pumps
- C. Distribution pumps
- D. Chemical metering pumps

#### **Hydro-Pneumatic Tanks- Identification and Purpose- 10 minutes**

#### **Water Distribution Valves (approximate run time 20 minutes)**

- A. Types of Valves
- B. Purpose of Valves

**5-minute break: Type in the chat box: Do you have any questions about hydro-pneumatic tanks or valves?**

**Poll 9. Do you have any safety hazards?**

#### **Submersible Pumps - Wells (approximate run time 15 minutes)**

- A. Well Submersible pump - descriptions
- B. Various pumps - selection and installation

#### **Well Inspection- Job Hazard Analysis (Approximate run time 10 minutes)**

#### **Disinfection Pumps (approximate run time 10 minutes)**

- A. Types- Diaphragm versus Progressive cavity
- B. Selection of disinfection pumps

#### **Disinfection - Review of the use of Chlorine, Sodium Hypochlorite and Calcium Hypochlorite (approximately run time 25 minutes)**

- A. Review of the basic use, mathematics and operational concerns, safety

#### **Discussion, Questions, Session Post Test (10 minutes)**

**Lunch Break: 55 Minutes**

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## **Part 4: Operations and Maintenance Manual/Emergency Response Plan/Standard Operating Procedures. Total Time 2 hours, 5 Minutes**

### **Introduction & Topic Knowledge (approximate time 10 minutes)**

- A. Introductions, Session Topics & Objectives
- B. **Session Pre-test**

### **Water System Operations and Maintenance Manual (approximate run time 60 minutes)**

- A. Comprehensive Monitoring Schedule
- B. Chain of Custody
- C. Operations and Maintenance Program
- D. Cross Connection Control Code
- E. Safety Plan
- F. Operations Plan
- G. Emergency /Disaster Response Plan
- H. Waivers
- I. Monthly Logs
- J. Sanitary Survey Reports

**Break 5 minutes: Type into the chat box any questions you have up to this point.**

### **CMMS and Standard Operating Procedures (approximate run time 20 minutes)**

- A. Why CMMS and SOPs are important.
- B. How to take common water samples (IHS appendices)
- C. Water System Safety- PPT and Discussion

### **Sample Templates (approximate run time 25 minutes)**

- A. CCCP
- B. O & M
- C. ERP

### **Questions, Discussion, Session Post-test (approximate run time 10 minutes)**