

OPERATOR BASICS TRAINING SERIES 2005 SURFACE AND GROUND WATER SYSTEMS COURSE: LEARNING OBJECTIVES AND OUTCOMES

SURFACE & GROUND WATER SYSTEMS

Unit 1 - The Basics

Purpose:

Provide operators with a basic knowledge of public water supply systems. Operators will understand the definition of a public water supply system and know the basic criteria by which such systems are classified. They will understand what is required of operators and/or managers of public water supply systems in order to keep their skills up-to-date and ensure that public health is protected.

Key Concepts:

- 1) Understand the purpose of public water supply systems,
- 2) Identify types of public water supply systems, and
- 3) Gain basic knowledge about operator certification and continuing education.

Unit 2 - Sources

Purpose:

Provide operators with a basic knowledge of surface water sources as they relate to aquifers and the hydrologic cycle. This unit discusses common water characteristics and contaminants, as well as how to protect water sources.

Key Concepts:

- 1) Recognize the different types of surface water sources,
- 2) Become familiar with the characteristics of water sources,
- 3) Identify contaminants to water sources, and
- 4) Understand the importance of source water protection.

Unit 3 - Treatment

Purpose:

Provide operators with a basic knowledge of conventional treatment processes as well as removal processes for inorganic and organic chemicals. Operators will gain an understanding of process monitoring and controls as related to lab instruments, jar testing, and plant automation. The types of disinfection options available to water treatment systems are also discussed in this unit.

Key Concepts:

- 1) Understand the conventional treatment processes that can be used in water treatment systems,
- 2) Become familiar with key lab instruments, jar testing, and plant automation, and
- 3) Recognize the importance disinfection plays in the treatment process of a water system.

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Unit 4 - Distribution and Storage

Purpose:

Provide operators with the basic knowledge of distribution system components and storage facilities. This includes discussions of system pressure and basic hydraulics, construction, and repair. The importance of cross-connection control is explained, as well as the proper backflow prevention assemblies to use when implementing a cross-connection control plan.

Key Concepts:

- 1) Identify the basic components of a water distribution and storage system,
- 2) Understand pressure and basic hydraulics and the roles they play in water distribution systems, and
- 3) Explain why cross-connection control and backflow prevention are important in a water distribution system.

Unit 5 - Pumps, Facilities and Controls

Purpose:

Provide operators with a basic knowledge of well construction, site considerations, well pumps, components and maintenance, and the automated control systems which can be used to operate pumps.

Key Concepts:

- 1) Explain the basic components of constructing a well,
- 2) Understand the importance of selecting proper well locations,
- 3) Identify well pumps, their components, and automated control systems, and
- 4) Establish a routine maintenance program for wells and pumps.

Unit 6 - Regulations and Monitoring

Purpose:

Provide operators with a basic knowledge of regulations for monitoring and drinking water test reporting. We will discuss the purposes behind plan specification review and approval, sanitary surveys, and public notification. Future regulations will also be discussed.

Key Concepts:

- 1) Identify monitoring and reporting specific to surface water systems,
- 2) Explain the purpose of a sanitary survey,
- 3) Understand the importance of public notification, and
- 4) Become aware of what future regulations may be in store for your system.

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Unit 7 - Operation and Management

Purpose:

Provide operators with a basic knowledge of the elements of a safety program and the importance of having and following a safety program. Unit seven also identifies possible disruption threats and the means by which to deal with those threats. It discusses the importance of records maintenance as related to planning for the future and communicating with the public, officials and relief operators. This unit is also a good source of contact information for the small water system operator.

Key Concepts:

- 1) Identify the key elements of an effective safety program,
- 2) Recognize possible disruption threats,
- 3) Understand the importance of good planning and communication skills, and
- 4) Learn which records to maintain.