



WATER SYSTEMS OPERATION SPECIALIST
(Time-Based)

APPENDIX A

D.O.T. CODE 954.382-014
O*NET CODE 51-8031.00

This training outline is the current standard for Work Processes and Related Instruction. Changes in technology, regulations, and safety/health issues may result in the need for additional On-the-Job Training or classroom learning.

WORK PROCESSES

	<u>Approximate Hours</u>
A. <u>Tools, Equipment and Workplace Safety</u>	240
1. Become familiar with tools, pipe and other materials used on the job; 2. Understand and use Personal Protective Equipment (PPE) and safety procedures; 3. Demonstrate general plant safety and security operations; 4. Plan and set up work area for safety of crew and public; 5. Ability to monitor confined spaces and traffic control zones; 6. Perform all work in conformance with the Occupational Safety and Health Administration (OSHA) guidelines for General Industry. 7. Perform all work in conformance with the Public Employees Safety and Health Act (PESH) guidelines for General Industry (where applicable).	
B. <u>Vehicles and Heavy Equipment (Excluding Operation of Heavy Equipment)</u>	400
1. Develop a working knowledge of pre-trip inspection which includes: ensuring lights and warning lights are operational, inspecting safety chains on dump truck tailgates, ensuring audible alarms are operational, making sure pins on excavators/backhoes/tailgates are securely fastened;	

2. Gain the ability to identify swing paths for excavation equipment – for both ground level and overhead (utility poles, overhead wires, oncoming vehicle or foot traffic within excavation area), understand hand signals between equipment operators and ground staff while properly setting up a work zone (signs, cones, barrels) ensuring employee, vehicle and foot traffic safety;
3. Use necessary safety procedures while working in proximity to heavy equipment, such as: excavators, backhoes, front loaders, dump trucks, service trucks, pumps, air compressors & generators;
4. Demonstrate understanding of different excavation techniques for water and wastewater such as; excavation around natural gas lines and buried electric lines, swabbing new fitting with disinfectant to prevent any contamination before excavation, and mitigating any potential health hazards such as de-watering a water main before it is excavated;
5. Understand proper equipment placement (i.e., dump trucks next to excavation), proper materials placement and assisting the heavy equipment operator with identifying other utilities (gas & electric) in an excavation;
6. Master the overhead crane operation: safety and operation in using overhead cranes for pump and motor repairs and replacements.

C. System Operations & Maintenance

1920

1. Develop a working knowledge of the operation, methods and procedures of a water treatment & distribution system;
2. Perform inspection of new water lines and services;
3. Understand customer metering and billing procedures;
4. Perform leak detection and understand water loss control;
5. Read water meters, perform testing & proper sizing;
6. Demonstrate ability to read and interpret maps and drawings of the water system, locate valves, and water mains;
7. Assist with the maintenance and repair of the treatment plant, storage tanks, and the distribution system;
8. Develop a working knowledge of preventive maintenance, troubleshooting & repair of mechanical equipment.

D. Quality Control

960

1. Learn to perform all aspects of sampling, monitoring and testing required to maintain compliance with Federal, State, and Local regulations;
2. Identify normal and out-of-range values;
3. Maintain open communication & report results to supervisors;
4. Learn emergency response procedures.

E. <u>Logistics, Reports and Supervision</u>	480
1. Complete work order forms;	
2. Order equipment and supplies as needed;	
3. Document routine maintenance;	
4. Visit other facilities to learn about new technology.	

Approximate Total Hours	4000
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Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impact on classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to <http://www.labor.state.ny.us/workerprotection/publicwork/PDFs/Article8FAQS.pdf>

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APPENDIX B

RELATED INSTRUCTION

Safety, Health, and the Workplace

Safety rules & practices

Personal Protective Equipment (PPE)

OSHA Standards & state guidelines

First Aid & CPR (minimum 6.5 hours)

Safety Data Sheets (SDS)

811 Call Before You Dig

Excavation, trenching & shoring

Confined space: identifying, entry & hazardous gases

Fire & Electrical Safety

Traffic control

Chlorine and chemical safety

Apprenticeship Program Overview

Circuit Rider training assistance

The National Rural Water Association (NRWA) University

Sexual Harassment Prevention-MUST comply with Section 201-g of the Labor Law

Professional Requirements

Responsibilities of a Water System Operations Specialist

Ethics of a public health & environmental professional

Customer service & community outreach

Professional Organizations

Operations & Maintenance

Pumps & Motors

Energy efficiency

Groundwater & Wells

Storage tanks, Valves

Automatic Meter Reading (AMR)

Advanced Metering Infrastructure (AMI)

Hydrants

Distribution systems

Hot tapping & service connections

Leak detection & repair

System Hydraulics
Disinfection
Chemical feed pump maintenance & calibration
Maintaining a residual
Shock chlorination
Chlorination & alternative disinfection methods
Treatment Techniques
Supervisory Control and Data Acquisition (SCADA)
Preventative maintenance
Cross Connection Control
Backflow Prevention

Operator Mathematics

Problem solving strategies
Calculating chemical dosage & detention time
Flow & rate problems
Horsepower calculations

Security & Emergency Response

Critical Infrastructure Sector designation
National Incident Management System
ISC-100: Introduction to the Incident Command System Certificate (FEMA)
Emergency response plans & procedures

Laws & Regulations

Safe Drinking Water Act basics
Working with regulators, state laws & regulations
Regulatory compliance
Sampling procedures, compliance plans
Sanitary surveys
National Primary Drinking Water Regulations
Secondary Drinking Water Standards
Emerging contaminants

Introduction to Utility Management

Capacity development & sustainable utility management
Source water protection
Finances, rates & billing
Water loss audits
Water University-Utility Management Certification
Understanding budgets, geographic information systems
Working with boards and elected officials

Overview of Construction Projects

Assessment of existing facilities

Working with engineers & consultants

Preliminary design & alternatives

Funding sources & requirements

Construction design process

Interpreting and understanding construction plans and specifications

Bid process & contract signing

Change order & as-builts

Inspections

Resident inspector

Substantial completion

Final inspection & certification

Operations & maintenance manuals

Ongoing grant & loan requirements

Other Related Courses as Necessary

A Minimum of 288 hours of Related Instruction is Required for Each Apprentice.