



## **Water System Operations Specialist**

**New Jersey Water Association  
U.S. Highway 9  
Lanoka Harbor, NJ 08734**

### **Appendix A - 1**

**WORK PROCESS SCHEDULE**

**AND**

**RELATED TECHNICAL INSTRUCTION OUTLINE**



# Water System Operations Specialist

## Appendix A-1

**WORK PROCESS SCHEDULE**  
**OCCUPATION TITLE: Water System Operator**  
**PROGRAM TITLE: Water System Operations Specialist**  
**O\*NET-SOC CODE: 51-8031.00 RAPIDS CODE: 0507**

This schedule is attached to and a part of these Standards for the above identified occupation.

### 1. TYPE OF OCCUPATION

Time-based                       Competency-based                       Hybrid

### 2. TERM OF APPRENTICESHIP

The term of the occupation is two (2) years with an on-the-job learning (OJL) attainment of approximately 4,000 hours, supplemented by a minimum recommended 288 hours of related instruction.

### 3. RATIO OF APPRENTICES TO LICENSED OPERATOR (T and W License Class)

The apprentice to Licensed Operator ratio is three (3) Apprentices to one (1) Licensed Operator on the jobsite.

### 4. APPRENTICE WAGE SCHEDULE

Apprentices shall be paid a progressively increasing schedule of wages based as outlined in Appendix E, Employer Acceptance Agreement.

Period of Apprenticeship	Advancement Requirements
Period 1	1,000 hours of on-the-job training + completion of the identified curriculum with a passing grade + satisfactory evaluation
Period 2	1,000 hours of on-the-job training + completion of the identified curriculum with a passing grade + satisfactory evaluation
Period 3	1,000 hours of on-the-job training + completion of the identified curriculum with a passing grade + satisfactory evaluation. Obtain the NJDEP Classification 1 Water Operator License
Period 4	1,000 hours of on-the-job training + completion of the identified curriculum with a passing grade + satisfactory evaluation
Completion	Apprentice completes when all the above identified requirements are met

### 5. WORK PROCESS SCHEDULE (See below)

### 6. RELATED INSTRUCTION OUTLINE (See Below)



# Water System Operations Specialist

## WORK PROCESS SCHEDULE

**OCCUPATION TITLE: Water System Operator**  
**PROGRAM TITLE: Water System Operations Specialist**  
**O\*NET-SOC CODE : 51-8031.00**                      **RAPIDS CODE : 0507**

Apprentices shall receive on-the-job instruction and experience as is necessary to become, at a minimum, a T1 and/or W1 Licensed Water System Operator versed in the theory and practice of the occupation. The following is a condensed schedule of work experience, which every apprentice shall follow as closely as conditions will permit.

WORK PROCESSES	Approximate Hours
<b>A. Tools, Equipment and Workplace Safety</b> <ol style="list-style-type: none"> <li>1. Become familiar with tools, pipe and other materials used out on the job</li> <li>2. Understand and use personal protective equipment and safety procedures</li> <li>3. Demonstrate general plant safety and security operations</li> <li>4. Plan and set up work areas for safety of crew and public</li> <li>5. Confined spaces and traffic control zones</li> <li>6. Perform all work in conformance with OSHA regulations</li> </ol>	<b>240</b>
<b>B. Vehicles and Specialized Equipment</b> <ol style="list-style-type: none"> <li>1. Ensure that vehicles and equipment are adequately stocked &amp; serviced</li> <li>2. Become familiar working with excavation and other specialized equipment</li> </ol>	<b>400</b>
<b>C. System Operations &amp; Maintenance</b> <ol style="list-style-type: none"> <li>1. Develop a working knowledge of the operation, methods, and procedures of a water treatment &amp; distribution system</li> <li>2. Perform installation and inspection of new water lines and services</li> <li>3. Understand customer metering and billing procedures</li> <li>4. Perform leak detection and understand water loss control</li> <li>5. Reading water meters, perform testing &amp; proper sizing</li> <li>6. Demonstrate ability to read and interpret maps and drawings of the water system, to locate appurtenances such as hydrants, valves, and water mains</li> <li>7. Assist with the installation, maintenance and repair of the treatment plant, storage tanks, and the distribution system</li> <li>8. Develop a working knowledge of preventive maintenance, troubleshooting &amp; repair of mechanical equipment</li> <li>9. Develop working knowledge of SCADA system</li> </ol>	<b>1920</b>
<b>D. Quality Control</b> <ol style="list-style-type: none"> <li>1. Learn to perform all aspects of sampling, monitoring and testing required to maintain compliance with Federal State and Local regulations</li> <li>2. Identify normal/out-of-range values</li> <li>3. Maintain open communication &amp; report results to supervisors</li> <li>4. Learn emergency response procedures</li> </ol>	<b>960</b>
<b>E. Logistics, Reports and Supervision</b> <ol style="list-style-type: none"> <li>1. Complete work order forms</li> <li>2. Document routine maintenance</li> <li>3. Order equipment and supplies as needed</li> <li>4. Visit other facilities to learn about new technology</li> </ol>	<b>480</b>
<b>TOTAL HOURS</b>	<b>4000</b>



# Water System Operations Specialist

## RELATED TECHNICAL INSTRUCTION

**OCCUPATION TITLE: Water System Operator**  
**PROGRAM TITLE: Water System Operations Specialist**  
**O\*NET-SOC CODE : 51-8031.00**                      **RAPIDS CODE : 0507**

A minimum of 288 hours of related instruction are required for each apprentice. Courses may be assigned from any of the following offerings: colleges, vocational/technical schools, industry associations, on-line. NJ requires Introduction to Water/Wastewater Operations and Advanced Water Operations Courses for licensure.

### Year 1

Topic	Hours*
<b>A. Orientation</b> 1. Apprenticeship Program overview <ul style="list-style-type: none"> <li>a. NJ Water Association Standards of Apprenticeship</li> <li>b. Qualifications for Apprenticeship</li> <li>c. Policy manual</li> <li>d. Apprenticeship Training &amp; Advisory Committee (ATAC)</li> </ul> 2. Basic job duties & work environment 3. On the Job Learning (OJL) <ul style="list-style-type: none"> <li>a. Work process schedule</li> <li>b. Supervision</li> </ul> 4. Related Instruction Opportunities and Requirements 5. NRWA Apprenticeship Tracking System 6. NRWA Next Thought Learning Management System	<b>6</b>
<b>B. Professional Requirements</b> 1. NJ Certifications & licensure 2. Responsibilities of a NJ Water System Operator 3. Ethics as a public health & environmental professional 4. Customer service & community outreach 5. Professional organizations	<b>12</b>
<b>C. Health &amp; Safety</b> 1. OSHA-10, General Industry <ul style="list-style-type: none"> <li>a. Introduction to USDOL Occupational Safety &amp; Health Administration</li> <li>b. Hazardous Chemical Safety</li> <li>c. Confined Space Awareness</li> <li>d. Electrical Hazard Awareness</li> <li>e. Personal Protective Equipment (PPE)</li> <li>f. Slip, Trip and Fall Hazard Protection</li> <li>g. Fixed and Portable Ladder Safety</li> <li>h. Fire Prevention, Protection and Emergency Egress Safety</li> <li>i. Dangers of unguarded equipment</li> <li>j. Forklift Safety</li> <li>k. Lockout/Tag Out</li> </ul>	<b>27</b>





<p><b>4. MICROBIOLOGY</b></p> <ul style="list-style-type: none"> <li>a. Cell Structure</li> <li>b. Cell Metabolism-Reproduction</li> <li>c. Microorganisms-Bacteria, Algae</li> <li>d. Nitrogen and other Cycles</li> <li>e. Environmental Factors Affecting Microorganisms</li> <li>f. Classification               <ul style="list-style-type: none"> <li>i. Aerobic</li> <li>ii. Anaerobic</li> <li>iii. Facultative</li> </ul> </li> <li>g. Pathogens</li> <li>h. Typical Microorganisms Related to Water and Wastewater</li> </ul> <p><b>5. MISCELLANEOUS</b></p> <ul style="list-style-type: none"> <li>a. Terminology</li> <li>b. Laboratory Equipment Familiarization</li> <li>c. Basic Laboratory Testing               <ul style="list-style-type: none"> <li>i. pH and temperature</li> <li>ii. Chlorine Residual</li> <li>iii. Settleable Solids</li> </ul> </li> </ul> <p><b>E. INTRODUCTION TO WATER &amp; WASTEWATER OPERATIONS – Part II</b></p> <p><b><u>Water Operations</u></b> NJDEP Licensing Requirement        Text: <i>Water Treatment Plant Operation, Volume 1</i>        Text: <i>Water Distribution System Operation &amp; Maintenance, Volume 1</i></p> <p><b>1. ADMINISTRATIVE</b></p> <ul style="list-style-type: none"> <li>a. Rules and Regulations</li> <li>b. Reporting to Regulatory Agencies</li> <li>c. Budgeting</li> <li>d. Record Keeping</li> <li>e. Safety - OSHA</li> </ul> <p><b>2. WATER SOURCES AND CHARACTERISTICS</b></p> <ul style="list-style-type: none"> <li>a. Hydrological Cycle</li> <li>b. Surface Water Supply</li> <li>c. Ground Water Supply and Others</li> </ul> <p><b>3. WELLS</b></p> <ul style="list-style-type: none"> <li>a. Types and Construction</li> <li>b. Operation and Treatment</li> <li>c. Monitoring and Record Keeping</li> </ul> <p><b>4. WATER TREATMENT</b></p> <ul style="list-style-type: none"> <li>a. Sedimentation and Precipitation               <ul style="list-style-type: none"> <li>i. Operation and Records</li> </ul> </li> </ul>	<p>11</p> <p>6</p> <p><b>45</b></p> <p>6</p> <p>3</p> <p>3</p> <p>12</p>
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<ul style="list-style-type: none"> <li>ii. Operation Parameters and Problems</li> <li>iii. Applied Math</li> </ul> <p>b. Filtration</p> <ul style="list-style-type: none"> <li>i. Gravity and Pressure Filters</li> <li>ii. Construction</li> <li>iii. Operation Parameters and Problems</li> <li>iv. Applied Math</li> </ul> <p>c. Aeration and Air Stripping</p> <p>d. Reverse Osmosis</p> <p>e. Water Softening</p> <p>f. Iron Removal</p> <p>g. Distillation</p>	
<p>5. DISINFECTION</p> <ul style="list-style-type: none"> <li>a. Types-Chlorination, Ultra-Violet Light, others</li> <li>b. Method of Application</li> <li>c. Operation</li> </ul>	3
<p>6. WATER ANALYSIS AND INTERPRETATION: (3 Hours)</p> <ul style="list-style-type: none"> <li>a. Drinking Water Standards</li> <li>b. Process Evaluation</li> </ul>	3
<p>7. DISTRIBUTION SYSTEM</p> <ul style="list-style-type: none"> <li>a. Types of Pumps and Pipe</li> <li>b. Main Installation and Repair</li> <li>c. Water Meters and Valves</li> <li>d. Hydrant Installation and Repairs</li> <li>e. Physical and Cross-Connections</li> </ul>	9
<p>8. SAFETY</p>	3
<p>9. FIELD TRIP</p>	3



<p><b>E. INTRODUCTION TO WATER &amp; WASTEWATER OPERATIONS – Part II</b></p> <p><b><u>Wastewater Operations</u></b> NJDEP Licensing Requirement</p> <p><i>Text: Operation of Wastewater Treatment Plant Operation, Volume 1</i></p> <p><i>Text: Operation &amp; Maintenance Wastewater Collection Systems, Volume 1</i></p>	<b>45</b>
<p><b>1. ADMINISTRATIVE</b></p> <ul style="list-style-type: none"> <li>a. Rules and Regulations</li> <li>b. Reporting to Regulatory Agencies</li> <li>c. Budgeting</li> <li>d. Record Keeping</li> <li>e. Safety - OSHA</li> </ul>	4
<p><b>2. WASTEWATER SOURCES AND CHARACTERISTICS</b></p> <ul style="list-style-type: none"> <li>a. Domestic</li> <li>b. Industrial</li> <li>c. Parameter Ranges</li> <li>d. Flows</li> </ul>	2
<p><b>3. TREATMENT METHODS</b></p> <ul style="list-style-type: none"> <li>a. Preliminary <ul style="list-style-type: none"> <li>i. Screening</li> <li>ii. Grit Removal</li> <li>iii. Comminution, Grinders, etc.</li> <li>iv. Pre-Chlorination and Pre-aeration</li> </ul> </li> <li>b. Primary <ul style="list-style-type: none"> <li>i. Septic Tanks</li> <li>ii. Imhoff Tanks</li> <li>iii. Clarifiers</li> <li>iv. Chemical Precipitation</li> </ul> </li> <li>c. Secondary <ul style="list-style-type: none"> <li>i. Trickling Filters and RCB's</li> <li>ii. Activated Sludge Systems <ul style="list-style-type: none"> <li>A. Conventional, Step-aeration, Extended, etc.</li> <li>B. Secondary Clarification</li> </ul> </li> </ul> </li> <li>d. Sludge Handling <ul style="list-style-type: none"> <li>i. Sludge Thickening <ul style="list-style-type: none"> <li>A. Gravity</li> <li>B. Flotation</li> <li>C. Gravity Belt</li> </ul> </li> <li>ii. Sludge Digestion <ul style="list-style-type: none"> <li>A. Aerobic</li> <li>B. Anaerobic</li> </ul> </li> <li>iii. Sludge Dewatering <ul style="list-style-type: none"> <li>A. Mechanical Methods</li> <li>B. Drying Beds</li> </ul> </li> </ul> </li> </ul>	22

<ul style="list-style-type: none"> <li>iv. Sludge Disposal               <ul style="list-style-type: none"> <li>A. Incineration</li> <li>B. Composting</li> <li>C. Land Application</li> </ul> </li> <li>e. Advanced Treatment (3 Hours)               <ul style="list-style-type: none"> <li>i. Ammonia Removal</li> <li>ii. Phosphorus Removal</li> <li>iii. Stabilization Lagoons</li> </ul> </li> </ul>	
<p>4. DISINFECTION</p> <ul style="list-style-type: none"> <li>a. Types – Chlorination, Ultra-Violet Light, etc.</li> <li>b. Method of Application</li> <li>c. Dechlorination</li> <li>d. Operation</li> </ul>	2
<p>5. WASTEWATER ANALYSIS AND INTERPRETATION</p> <ul style="list-style-type: none"> <li>a. Process Control</li> <li>b. Laboratory Testing               <ul style="list-style-type: none"> <li>i. BOD</li> <li>ii. Solids – Total, Suspended, Dissolved</li> <li>iii. Sludge Analysis</li> <li>iv. Others</li> </ul> </li> </ul>	3
<p>6. COLLECTION SYSTEM</p> <ul style="list-style-type: none"> <li>a. Gravity Systems               <ul style="list-style-type: none"> <li>i. Types and Size of Pipes</li> <li>ii. Slope and Velocity Requirements</li> <li>iii. Manhole                   <ul style="list-style-type: none"> <li>A. Standard</li> <li>B. Drop</li> </ul> </li> <li>iv. House Connection</li> <li>v. Maintenance</li> </ul> </li> <li>b. Pumping Station and Force Main               <ul style="list-style-type: none"> <li>i. Sizing of Force Main</li> <li>ii. Pumps and Controls</li> <li>iii. Standby Power (Generator)</li> <li>iv. Odor Control</li> <li>v. Screenings and Grease Control</li> <li>vi. Maintenance</li> </ul> </li> <li>c. Pretreatment               <ul style="list-style-type: none"> <li>i. Local and State Regulations</li> <li>ii. Treatment Impact</li> </ul> </li> </ul>	6
<p>7. SAFETY</p>	3
<p>8. FIELD TRIP</p>	3
<p><b>Total Year 1 Related Technical Training</b></p>	<b>237*</b>
<p><b>* Hours are approximate, and topics may change based on NJDEP requirements or industry needs.</b></p>	

## Year 2

Topic	Hours*
<b>A. ADVANCED WATER OPERATIONS COURSE - PART I (OPTIONAL)</b> NJDEP Requirement for Higher License Categories Text: <i>Water Treatment Plant Operation Volume I, II</i> Text: <i>Water Distribution System Operation &amp; Maintenance</i> Text: <i>Utility Management</i>	<b>45</b>
1. SOURCES OF WATER <ul style="list-style-type: none"> <li>a. Water cycle</li> <li>b. Water sources               <ul style="list-style-type: none"> <li>i. Surface</li> <li>ii. Ground</li> <li>iii. Other</li> </ul> </li> <li>c. Developing Water Supply               <ul style="list-style-type: none"> <li>i. Ground vs. Surface</li> <li>ii. Economics</li> <li>iii. Design Criteria</li> <li>iv. Regulations</li> </ul> </li> <li>d. Ground Water / Wells               <ul style="list-style-type: none"> <li>i. Locating Source</li> <li>ii. Test wells</li> <li>iii. Development/Testing</li> <li>iv. Safe Yield/Quality</li> <li>v. Production well design</li> </ul> </li> </ul>	3
2. CHARACTERISTICS OF WATER SOURCES	3
3. SDWA STANDARDS <ul style="list-style-type: none"> <li>a. Primary</li> <li>b. Secondary</li> <li>c. Monitoring/Reporting Requirements               <ul style="list-style-type: none"> <li>i. Sampling</li> <li>ii. Reporting</li> </ul> </li> <li>d. Compliance               <ul style="list-style-type: none"> <li>i. Variances</li> <li>ii. Exemptions</li> <li>iii. Public Notification</li> <li>iv. Regulation Changes new/proposed</li> </ul> </li> </ul>	5
4. POTABLE WATER SAMPLING AND ANALYSIS <ul style="list-style-type: none"> <li>a. Sampling Requirements/Procedures               <ul style="list-style-type: none"> <li>i. Physical</li> <li>ii. Chemical</li> <li>iii. Microbiological</li> <li>v. Organics, Inorganics</li> </ul> </li> </ul>	8

<ul style="list-style-type: none"> <li>vi. Radiological</li> <li>b. Sample Collection, Preservation               <ul style="list-style-type: none"> <li>i. Types of Samples</li> <li>ii. Volumes, Containers</li> <li>iii. Sample Point Selection</li> <li>iv. Chain of Custody</li> </ul> </li> <li>c. Analysis/Basic Methods (For each group in list above)</li> <li>d. Laboratory Procedures               <ul style="list-style-type: none"> <li>i. Accuracy</li> <li>ii Quality Control</li> <li>iii. Records</li> <li>iv. Reporting</li> </ul> </li> <li>e. Monitoring for Compliance/SDWA Quality Control</li> <li>f. Monitoring Laboratory hands-on sessions to become familiar with the basic testing procedures.</li> <li>g. Laboratory Equipment</li> <li>h. Labware</li> <li>i. Instruments</li> </ul> <p><b>5. WATER TREATMENT</b></p> <ul style="list-style-type: none"> <li>a. Corrosion Control</li> <li>b. Taste and Odor</li> <li>c. Stabilization</li> </ul> <p><b>6. DISINFECTION</b></p> <ul style="list-style-type: none"> <li>a. Chlorination               <ul style="list-style-type: none"> <li>i. Theory/purpose</li> <li>ii. Application</li> <li>iii. Break point method</li> <li>iv. Problems</li> </ul> </li> <li>b. Other Chemicals/Compounds               <ul style="list-style-type: none"> <li>i. Ozone</li> <li>ii. Chlorine Dioxide</li> </ul> </li> <li>c. Application               <ul style="list-style-type: none"> <li>i. Pre-treatment</li> <li>ii. Post-feed</li> <li>iii. Alternatives</li> <li>iv. THM reduction</li> </ul> </li> <li>d. Mathematics               <ul style="list-style-type: none"> <li>i Demand</li> <li>ii. Free</li> <li>iii. Combined</li> </ul> </li> </ul> <p>Field Trips and Plant Tours will be scheduled during Part I.</p>	<p>20</p> <p>6</p>
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<b>B. ADVANCED WATER OPERATIONS COURSE - PART II (OPTIONAL)</b>	<b>45</b>
1. SURFACE WATER TREATMENT	25
<ul style="list-style-type: none"> <li>a. Intakes               <ul style="list-style-type: none"> <li>i. Intake Structures</li> <li>ii. Screens</li> <li>iii. Microstraining</li> <li>iv. Flow Measurement</li> </ul> </li> <li>b. Aeration               <ul style="list-style-type: none"> <li>i. Purpose</li> <li>ii. Types of aerators</li> <li>iii. Operation &amp; Problems</li> <li>iv. Testing &amp; Control</li> </ul> </li> <li>c. Coagulation-Flocculation               <ul style="list-style-type: none"> <li>i. Purpose</li> <li>ii. Chemical addition</li> <li>iii. Mixing</li> <li>iv. Operation &amp; Problems</li> <li>v. Testing &amp; Control</li> <li>vi. Chemical Handling</li> <li>vii. Calculations</li> </ul> </li> <li>d. Sedimentation               <ul style="list-style-type: none"> <li>i. Purpose</li> <li>ii. Types of Settling Basins</li> <li>iii. Operation &amp; Problems</li> <li>iv. Testing &amp; Control</li> <li>v. Solids-Contact Clarifiers</li> <li>vi. Calculations</li> </ul> </li> <li>e. Filtration               <ul style="list-style-type: none"> <li>i. Purpose</li> <li>ii. Filter Construction</li> <li>iii. Filter Media</li> <li>iv. Pressure Filters</li> <li>v. Diatomaceous Earth Filters</li> <li>vi. Operation &amp; Problems</li> <li>vii. Testing &amp; Control</li> <li>viii. Filter Rate                   <ul style="list-style-type: none"> <li>ix. Loss of Head</li> <li>x. Back Wash Procedure</li> <li>xi. Startup</li> <li>xii. Shutdown</li> </ul> </li> <li>xiii. Operation Problems</li> <li>xiv. Residuals Handling</li> <li>xv. Calculations</li> </ul> </li> </ul>	

<ul style="list-style-type: none"> <li>f. Softening               <ul style="list-style-type: none"> <li>i. Purpose</li> <li>ii. Hardness</li> <li>iii. pH</li> <li>iv. Alkalinity</li> <li>v. Lime-Soda Ash Softening</li> <li>vi. Removals-Chemical Reactions</li> <li>vii. Re-carbonation</li> <li>viii. Testing &amp; Control</li> <li>ix. Ion Exchange Softening</li> <li>x. Process &amp; Operation</li> <li>xi. Backwash</li> <li>xii. Regeneration</li> <li>xiii. Testing &amp; Control</li> <li>xiv. Calculations</li> </ul> </li> <li>g. pH Adjustment-Corrosion Control               <ul style="list-style-type: none"> <li>i. Purpose</li> <li>ii. Requirements</li> <li>iii. Langelier Index</li> <li>iv. Chlorine Residual</li> <li>v. Testing &amp; Control</li> <li>vi. Distribution Problems</li> </ul> </li> <li>h. Carbon Adsorption               <ul style="list-style-type: none"> <li>i. Purpose</li> <li>ii. THM Control</li> <li>iii. Taste &amp; Odor</li> </ul> </li>   <li>2. Distribution System               <ul style="list-style-type: none"> <li>a. Construction Standards                   <ul style="list-style-type: none"> <li>i. System Design</li> <li>ii. Main Sizing</li> <li>iii. Valve &amp; Hydrant Spacing</li> <li>iv. Materials Selection</li> <li>v. Valve Selection</li> <li>vi. Fittings</li> <li>vii. Pipe Laying-Trenching</li> <li>viii. Pressure-Leakage Testing</li> <li>ix. Disinfection</li> <li>x. Calculations</li> </ul> </li> <li>b. Pipe Tapping                   <ul style="list-style-type: none"> <li>i. Service Taps</li> <li>ii. Large Main Taps</li> <li>iii. Tap Procedures</li> <li>iv. Equipment Handling</li> </ul> </li> <li>c. Valves                   <ul style="list-style-type: none"> <li>i. Purpose of valves</li> <li>ii. Selection of valves</li> </ul> </li> </ul> </li> </ul>	<p style="margin: 0;">20</p>
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<ul style="list-style-type: none"> <li>iii. Check valves</li> <li>iv. Altitude valves</li> <li>v. Surge Relief valves</li> <li>vi. Pressure Reducing Valves</li> <li>vii. Electric-Hydraulic valves</li> <li>d. Fire Hydrants               <ul style="list-style-type: none"> <li>i. Purpose</li> <li>ii. Types</li> <li>iii. Location</li> <li>iv. Installation</li> <li>v. Maintenance &amp; Inspection</li> </ul> </li> <li>e. Safety               <ul style="list-style-type: none"> <li>i. Traffic Control</li> <li>ii. Trench Safety</li> <li>iii. Equipment Safety</li> <li>iv. Plant Safety</li> <li>v. Confined Space Entry</li> </ul> </li> <li>f. Storage Tanks               <ul style="list-style-type: none"> <li>i. Purpose</li> <li>ii. Types of Tanks</li> <li>iii. Construction Materials</li> <li>iv. Requirements-Sizing</li> <li>v. Inspection</li> <li>vi. Painting</li> <li>g. Maintenance</li> <li>vii. Cathodic Protection</li> </ul> </li> <li>g. Cross Connection Control               <ul style="list-style-type: none"> <li>i. Regulations-Requirements</li> <li>ii. Definitions</li> <li>iii. Backflow</li> <li>iv. Approved Devices</li> <li>v. Installation</li> <li>vi. Testing and Inspection</li> <li>vii. Public Health Significance</li> </ul> </li> <li>h. Pumps and Motors               <ul style="list-style-type: none"> <li>i. Types of Pumps</li> <li>ii. Application</li> <li>iii. Sizing Pumps and Motors</li> <li>iv. Controls</li> <li>v. Maintenance of Pumps</li> <li>vi. Maintenance of Motors</li> <li>vii. Stand-by Power</li> <li>viii. Booster Station Requirements</li> <li>ix. Electrical Maintenance</li> <li>x. Safety</li> </ul> </li> <li>i. Instrumentation and Controls               <ul style="list-style-type: none"> <li>i. Booster Stations</li> <li>ii. Tanks</li> <li>iii. System</li> </ul> </li> </ul>	
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<ul style="list-style-type: none"> <li>iv. Plant</li> <li>v. Use of Records</li> <li>vi. Maintenance of Equipment</li> <li>j. Meters               <ul style="list-style-type: none"> <li>i. Purpose</li> <li>ii. Sizing Meters and Services</li> <li>iii. Types of Meters</li> <li>iv. Installation e. Maintenance</li> <li>v. Testing</li> <li>vi. Complaints</li> <li>vii. Records</li> </ul> </li> <li>k. Records               <ul style="list-style-type: none"> <li>i. NJDEP Requirements</li> <li>ii. Operating Requirements</li> <li>iii. System Maps</li> <li>iv. Valve and Curb Stop Locations</li> <li>v. Hydrant maintenance</li> <li>vi. Maintenance of Mains</li> <li>vii. Plant Maintenance</li> <li>viii. Pump and Motor Maintenance</li> <li>ix. Operation and Maintenance Manuals</li> </ul> </li> <li>l. Public Relations               <ul style="list-style-type: none"> <li>i. Complaints of Quality</li> <li>ii. High Bills</li> <li>iii. Pressure</li> <li>iv. Requests for Test Results</li> <li>v. Newspaper Reporters</li> <li>vi. Public Speaking</li> </ul> </li> </ul> <p>Field Trips and Plant Tours will be scheduled during Part II.</p>	
<p><b>C. MISCELLANEOUS RELATED TRAINING</b></p> <p>1. Courses offered by NJWA, AWWA-NJ, NJDEP Approved Providers, Colleges/Vocational Schools and on-line providers.</p>	27
<p><b>D. EMERGENCY RESPONSE &amp; SECURITY</b></p> <p>1. Security</p> <ul style="list-style-type: none"> <li>a. Critical Infrastructure Sectors/National Infrastructure Protection Plan</li> <li>b. Physical Security Considerations (Deter, Delay, Detect)</li> <li>c. Cybersecurity Plans &amp; Polices</li> </ul> <p>2. Emergency Response</p> <ul style="list-style-type: none"> <li>a. Vulnerability Assessments (J100)</li> <li>b. Emergency Response Plans</li> <li>c. Emergency Response Protocols &amp; Procedures               <ul style="list-style-type: none"> <li>• Detection/Investigation</li> <li>• Information Gathering/Sharing</li> </ul> </li> <li>e. Response Coordination</li> <li>f. Resource Needs</li> </ul>	24



## Water System Operations Specialist

<b>Total Year 2 Related Technical Training</b>	<b>51</b>
<b>Total Program Related Technical Training</b>	<b>288*</b>
<b>* Hours are approximate, and topics may change based on NJDEP requirements or industry needs.</b>	