



Operator Licensure Preparation Course

November 16 - 19, 2026

Western Virginia Water Authority

1502 Brownlee Ave, SE
Roanoke, VA 24014



OVERVIEW

This intensive four-day wastewater operations training program is designed to strengthen the technical, analytical, and problem-solving skills required of today's treatment plant operators. The course provides a full review of liquid treatment, solids handling, and mechanical systems, combined with a daily applied mathematics component that reinforces essential operator calculations.

Each instructional day includes a minimum of 50 knowledge based multiple choice questions modeled after licensure examinations, in addition to dedicated math problem solving sessions. All mathematical applications use formulas taken directly from the ABC Formula and Conversion Table and are applied to realistic operational scenarios.

CONTINUING EDUCATION

A total of 28 hours of CPEs for Operators over the 4-day course.

COST

\$500

Includes a lite breakfast and lunch each day.

MATERIALS

WEF Operator Fundamentals Manuals
Volumes 1, 2, and 3

Pennsylvania DEP Operator Training Books

REGISTER HERE

<https://www.vwea.org/event/licensure2>



PARTICIPANTS WILL DEVELOP A STRONG UNDERSTANDING OF:



Wastewater liquid processes including conveyance, primary and secondary treatment, and disinfection



Solids handling operations such as thickening, stabilization, digestion, and dewatering



Pump and motor fundamentals, including operation, troubleshooting, and energy efficiency



Mathematical applications to support process control, load calculations, and performance optimization



Call:
804 332 5286



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OPERATOR COURSE OVERVIEW:



Day 1: Liquid Handling

- Flow variation, conveyance, and hydraulic loading
- Preliminary and primary treatment operations
- BNR (Nitrogen and Phosphorus) and Secondary Settling
- Pounds formula and unit conversions
- Volume, detention time, and surface overflow rate math



Day 2: Solids Handling

- Solids thickening: gravity, DAF, rotary drum, and belt filter processes
- Digestion and stabilization: anaerobic and aerobic systems
- Volatile solids reduction and digester loading
- Dewatering efficiency and polymer feed rate math
- Biological and chemical process interactions



Day 3: Laboratory

- Laboratory testing: BOD, CBOD, TSS/VSS, alkalinity, chlorine residual, DO (Winkler)
- Imhoff cone and settleometer testing
- Process control indicators and removal efficiency
- Percent solids, yield, and process ratio math
- Data interpretation for compliance and optimization



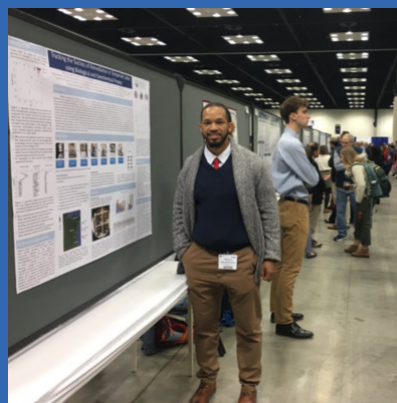
Day 4: Pumps & Motors

- Pump and motor fundamentals and troubleshooting
- Centrifugal and positive displacement pump operation
- Hydraulic head, flow rate, and efficiency math

MEET THE INSTRUCTOR:

Marcos Davila-Banrey,
ENV-SP, PMP, MBA

Water Hammer Training Solutions



Dr. Marcos Davila-Banrey is an environmental science professional specializing in applied wastewater and stormwater systems within a large public utility. His work includes process optimization, runoff monitoring, stormwater management, and wastewater epidemiology to support regulatory compliance and infrastructure performance.

Beginning his career in plant operations, Marcos brings practical field experience to technical environmental projects. He teaches wastewater and environmental topics across Virginia, the United States, and Canada, and currently serves as an instructor in HRSD's Apprenticeship Program. He holds a Doctor of Public Health, an MBA, and a BS in Biology with a minor in Chemistry, and is completing an MS in Civil Engineering.



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