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**SIXTIETH ANNUAL  
SHORT COURSES  
FOR  
WATER & WASTEWATER  
OPERATORS  
May 31 – June 5, 2009**

HELD  
AT

WASHINGTON COLLEGE  
300 WASHINGTON AVE,  
CHESTERTOWN, MARYLAND

*Sponsored  
By*

*Chesapeake Section, American Water Works Association*

*Chesapeake Water Environment Association*

*Water and Waste Operators Association of  
Maryland, Delaware and the District of Columbia*

## **60<sup>th</sup> SHORT COURSE PROGRAM & SCHEDULE**

### **Sunday, May 31, 2009**

- 4:00 p.m. to 6:00 p.m.    Organization Check-in and Signup  
Registration and Room Assignments
- 6:00 p.m. to 10:00 p.m.    The Short Course will begin with an outdoor meal and  
Meet & Greet. This affair will be held at the Temporary  
Dining Facility or at an outdoor location TBD (weather  
permitting).

### **Monday, June 1 through Thursday, June 4, 2009**

- 7:00 a.m. to 8:00 a.m.    Breakfast for Non-commuters
- 8:00 a.m. to 12:00 p.m.    Training Sessions
- 12:00 p.m. to 1:00 p.m.    Lunch for all Attendees and Trainers
- 1:00 p.m. to 5:00 p.m.    Training Sessions
- 5:00 p.m. to 6:00 p.m.    Dinner for Non-commuters

### **Friday, June 5, 2009**

- 7:00 a.m. to 8:00 a.m.    Breakfast for Non-commuters
- 8:00 a.m. to 11:30 a.m.    Final Short Course Exam - All sessions  
**or**
- 9:00 a.m. to 12:00 p.m.    MD – Certification Exam for those scheduled\*

**Short Course Training Certificates will be mailed to all participants after confirmation of payment. Those who need early confirmation of credits earned should follow up with your Accounts Payable Departments**

## **Directions to Washington College**

Washington College is located in historic Chestertown, Maryland on Maryland's Eastern Shore north of Centreville on US 213. The College is on the west side of the highway and is well marked. Directional signs to the Short Course will be provided.

## **Purpose**

The Short Course for Water and Wastewater Operators offers training, information, and insights that will enable the water and wastewater systems personnel to operate their facilities in a more effective, safe, and economical manner. The courses offer new ideas and serve as a "refresher" for existing operators.

## **Questions/Problems**

If there are any questions not answered in this brochure or problems encountered prior to registration, you can contact Don Sprinkle (410) 313-4970 or Jim Timmons (410) 396-9607, Monday through Friday 6:00 a.m. until 2 p.m.

## **Washington College**

The College's only function is to provide facilities for the courses. The College should not be contacted regarding registration or arrangements. All questions should be directed to the above named individuals or Short Committee members.

## **Course Registration**

Please take your time in completely filling out the Registration/Invoice form. Advanced full-week registration is due by May 1, 2009, and is \$225.00 for members of the WWOA, CWEA-PWOD, or CSAWWA. Non-members registration fees are \$275.00, which includes membership in one of the three organizations you need to select on your form. Please note on your form which organization you wish to join. Single and multiple day registrations are noted on the registration form and subject to membership discounts.

After May 1, 2009, on-site registration prices are in effect and the costs increase to \$250.00 for existing members and \$300.00 for non-members. In order to qualify for the **member** price you must include your organization's individual membership number on the registration form. The course fees include all instruction, course materials, lunches and refreshments at the breaks Monday through Thursday and the Sunday evening dinner for early arrivals.

To register for the Short Course, please read and complete the Registration/Invoice form and mail it with a check or money order, or copy of the purchase order with students names made payable to:

WWO Short Course  
PO Box 582  
Jarrettsville, MD 21082

Those organizations paying by Purchase Order number please include the PO number on the registration form and send a copy of the registration form to your Accounts Payable Department for payment. **Please note: Your registration form is your invoice. You will not be invoiced. Payments not made within 45 days of the course (July 15, 2009) will be charged an additional processing fee of \$ 50.00. Cancellations will be assessed a fee of \$ 10.00.**

**NOTE: Certificates of attendance will not be issued until full payment has been received.**

### **On-Site Help**

If you are a single day or late registrant, an instructor, or if you have any questions/problems during the week, you can find help in the Short Courses Staff Room located in Room 110 in the William Smith Hall from 7 a.m. to 5 p.m. The phone number is (410) 810-5090, during class hours 7 a.m. to 5 p.m. or you can ask any Short Course Committee member to assist you. After hours you can try (410) 810-8308 or (410) 810-8303. Should someone need to reach you in an emergency the Public Safety Office phone number is (410) 778-7810.

### **Maryland Operator/Superintendent License Exam**

This year the Maryland Board of Water and Waste Systems Operators will hold operator certification exams for all classes at the conclusion of the Short Course on Friday, June 5, 2009, from 9 a.m. to Noon. This exam is separate from the TRE credit exam given by each session of the Short Course.

**\* You must apply separately to the Maryland Board to sit for the Maryland Certification Exam. Seating is limited so early registration is recommended. The test site may fill before the May 15<sup>th</sup> deadline.** The Board must receive the application for those wishing to take the Certification Exam at the Short Course site by May 15, 2009. Mail completed application to:

Board of Waterworks & Waste Systems Operators  
P.O. Box 2057  
Baltimore, MD 21230-1708

Any questions regarding the Certification Exam may be referred to Mr. Lee Haskins or Mr. Lawrence Robinson at 1(800) 633-6101, ext. 3167 or (410) 537-3167. **Note: The State exam will be held at 9:00 a.m. in a room to be announced during the Short Course (expected construction will dictate testing room selection). Payment for the Short Course does not include the cost of nor entitle you to take the Certification Exam!**

### **Sponsorship/Scholarships**

The Annual Water and Wastewater Operators Short Course is sponsored by the Short Course Committee, a group made up of representatives from the Water and Wastewater Operators of Maryland, Delaware, and the District of Columbia (WWOA), the Chesapeake Section, American Water Works Association (CSAWWA), and the Chesapeake Water Environment Association (CWEA). This training effort is sponsored by the professional membership organizations and the employers of the water and wastewater operating professionals. It is a volunteer organization. Should you wish to become a member please contact one of the Short Course Staff.

Scholarships may be offered through each organization to attend the Short Course. Members of each organization are eligible per the selection process of the organization.

### **Overnight Room Accommodations**

Overnight accommodations will be available at Washington College at a cost of \$35.00 per person per night. This fee includes an air conditioned room with a limited linen package. The

rooms will be available from 4:00 p.m. Sunday, May 31 and must be vacated by 8 a.m. on Friday, June 5. **A refundable \$10.00 key deposit will be collected at the time of registration.** Room and board cost includes the standard all-you-can-eat cafeteria meals (breakfast and dinner) served in the temporary dining facility. Lunch meal is included in the registration cost. Room and board for the week is \$275.00.

Meals for on-site accommodations begin with the Sunday evening Meet & Greet, May 31, and end with breakfast on Friday morning, June 5. The serving times are:

Breakfast – 7 a.m. to 8 a.m.

Lunch – Noon to 1 p.m.

Dinner – 5 p.m. to 6 p.m.

Should you prefer to stay off campus, there are several motels nearby at your cost and must be made by you with the motel. If you wish to eat on campus, you must purchase the meal plan. The cost for breakfast and dinner on campus is \$120 for the week or \$30 per day.

### **Emergencies**

If there is an **emergency** at home or work while you are staying at the College and you must be reached, the 24-hour Public Safety number is (410) 778-7810. A message will be taken and every attempt will be made to contact you.

### **Conduct of Participants**

Throughout the history of the Short Course most participants have conducted themselves in a most reasonable manner and are a credit to our profession. This is a reminder that all participants will act responsibly. Undesirable conduct will not be tolerated and will result in your removal from the site by campus security forces without refund. Notification of your employer and the cause for removal will follow.

In addition, anyone found unduly under the influence of alcohol, anyone found buying, selling, consuming, or possessing illegal narcotics and drugs will be required to leave this year's Short Course immediately and will be banned from all future Short Courses. Unduly under the influence will be in the judgment of any Short Course Committee member or University official.

### **Attendance and Training Credit Hours Earned**

**The policy of the Short Course Committee is that a student must attend at least 80% of the training (Short Course examination being included in the total time – the State examination does not count as class attendance) to receive credit for full attendance. All courses are subject to approval by the Maryland Board of Waterworks and Waste System Operators.** Also, 80% or better attendance along with a passing grade on the final examination, results in 1.5 times the full attendance credit. Attendees with less than 80% attendance or single day attendees will receive a certificate of attendance with the actual hours attended. The Short Course Committee does not submit these hours for TRE credits. Attendees have the option to submit the hours for approval.

If you are taking a State Certification exam on Friday, June 5 and you are also interested in taking the Short Course final exam, you may do so Thursday evening. Only individuals taking the State Certification exam will be eligible for this option. You must make arrangements with the course coordinator by Tuesday, June 2.

**All participants must sign their own name to the attendance sheets during the class to receive credit. NO EXCEPTIONS**

**Disclaimer**

**The Introductory Water, Introductory and Intermediate Wastewater Sessions are designed for those persons just entering the field and temporary certified operators. Attendance at this course in no way implies a guarantee that those participating in the sessions are assured of passing the State Certification exam. However, the information covered in the sessions should be helpful with some parts of the certification exam. Fully certified operators should take the more advanced sessions for re-certification credit however all sessions are submitted for TRE credits.**

**Sunday Evening Meet & Greet**

On Sunday, May 31, 2009, the Short Course will begin with an outdoor meal and Meet & Greet beginning at 6pm. This affair will be held at the Temporary Dining Facility or at an outdoor location TBD (weather permitting) until 10 pm.

**Evening Recreational Activities**

Monday	7:00 - 11 p.m.	Pizza Party, DJ (@ Casey Academic Center)
Tuesday	7:00 - 11 p.m.	Wings, Karaoke (@ Casey Academic Center)
Wednesday	6:00 – 10 p.m.	Sports & Game Day (Location TBD)
Thursday	Study Night	No Activities Scheduled

**Parking**

Please observe the parking restrictions at the College. All vehicles improperly parked on the grass or other prohibited areas will be ticketed. You are encouraged to park in Lot “A” or the Harford Lot.

## **Session Highlights**

### **Introductory Water**

The Introductory Water Course is provided for those who work at any class water treatment plant but is primarily designed for those who operate Class 1 & 2 plants with disinfection/chlorination, pH control, and fluoridation. Generally these are small surface water and groundwater plants. The curriculum involves applied mathematics; basic concepts in water production and treatment, as well as maintenance and safety aspects associated with water treatment systems. Course is Maryland Board/TRE # 4405-09-03. Course textbook will be issued at the first session.

### **Water – Classes 3 & 4**

The Water Class 3 & 4 is designed for those who operate plants with chlorination, pH control, flocculation, fluoridation, filtration, and iron removal utilizing ion exchange or contact oxidation processes (Class 3): and chlorination, pH control, fluoridation, aeration, coagulation, sedimentation, and filtration for both surface water treatment and complex iron removal (Class 4). Generally these are larger water plants. A person taking this course will have at least two or three years of operating experience and/or have completed a basic/introductory water course. Course is Maryland Board/TRE # 4406-09-03. Course textbook will be issued at the first session.

### **Advanced Water Topics**

The Advanced Water Topics curriculum is designed for water treatment plant operators. The course work is designed to investigate water treatment subjects and issues in greater detail than would be covered in introductory classes. A person taking this course should be a certified operator and have approximately four years or more experience in water treatment technology, and have completed basic introductory water courses. Course is Maryland Board/TRE # 4407-09-03. Course textbook will be issued at first class.

### **Introductory / Intermediate Wastewater**

These sessions have been combined this year. In recent years, a decline in new operator registration and a desire by attendees for more certification related information for novice operators, made it apparent that a blending of the classes is appropriate. The course is designed for the temporary certified operator with basic wastewater skills. The operator taking this course will generally have one to three years of operating experience. Information covered in this session should be helpful with some parts of the certification exams, but in no way assures one of passing. Due to a large majority of operators at this experience level taking the State certification exams, no final exam has been given for this session in previous years. This year we will offer an exam for those not taking the State Certification test. This will limit the session to 32 TRE credit hours for those taking certification, but will allow for 32 plus 1.5x (16) credit hours for those passing the short course exam (for a total of 48 credit hours). Attendees have the option to take the State certification exam to be given on Friday, June 5. Pre-registration for the State certification exam is mandatory and is the sole responsibility of each operator. This course is Maryland Board/TRE # 4408-09-03. This course will make use of instructor hand outs and note taking by the attendee.

### **Advanced Wastewater**

This session is designed for certified wastewater operators. The person taking this class will have two or more years of experience and have completed a basic or introductory wastewater course. In addition, it serves as a refresher course for the seasoned veteran operator.

**Experienced operators taking the certification exam should enroll for the Intermediate Wastewater course. Although some of these sessions are designed to review standard advanced wastewater process control, many of the sessions will discuss recent advancements in technology in an effort to expand the veteran operator's knowledge beyond his/her own facility.** The course is Maryland Board/TRE # 4409-09-03. Course textbook will be issued at first class.

### **Water Distribution Systems**

The Water Distribution Systems Courses are designed for those who operate and maintain a water distribution system. They are for both the beginner and seasoned operator, and will cover basic and advanced concepts. Course is Maryland Board/TRE # 4412-09-03. Course textbooks will be issued at first class.

### **Wastewater Collection Systems**

The Wastewater Collection Systems Courses are designed for those who operate and maintain a wastewater collection system. They are for both the beginner and seasoned operator, and will cover basic and advanced concepts. Course is Maryland Board/TRE # 4413-09-03. Course textbooks will be issued at first class.

### **Industrial Waste Treatment**

The Industrial Waste Treatment Course is designed to cover a broad range of topics in the field. Review sessions for safety and chemistry are provided. The technology discussed will apply for both direct industrial waste dischargers and indirect dischargers to Publicly Owned Treatment Works (POTWs). The sessions during the first three days concentrate on chemical/physical processes and topics of general applicability. The 3-day session is Maryland Board/TRE # 4410-09-03 for 24 hours.

The class on Thursday focuses on biological treatment processes to address training requirements for Industrial Wastewater Works and Pretreatment Plants of Class 4, Biological Lagoons, and Class 5, Activated Sludge. The biological treatment class is approved Maryland Board/TRE # 4411-09-03 for 8 hours. Course textbook will be issued at first class.

### **Superintendents**

The Superintendents Course is designed for certified water and wastewater superintendents and experienced operators who have taken basic and advanced courses. Each session for this course has been submitted separately for Maryland Board/TRE approval. This course was designed to meet the needs of a superintendent's re-certification and although some sessions have been approved for other operators' certification, it may not satisfy all of the requirements.

### **Treatment Facility Maintenance**

This course is designed for an operator or flexible worker at any water, wastewater or biosolids facility to understand the why and when of equipment maintenance. With the industry shift toward combining operational and maintenance duties, operators are now expected to perform general maintenance on the equipment they are operating. The student will be exposed to equipment maintenance basics and safety training as well. This course is Maryland Board/TRE # 4414-09-03.

### **Delaware Operator License Holders**

Certified Delaware Operators can submit MDE approved courses for credit with Delaware.

## Session Listings

### Introductory Water

Course Coordinator's – Scott Harmon and Larry Richardson

#### MONDAY

8:00 – 8:30 a.m.      **Overview** – Instructors, Scott Harmon and, Larry Richardson, Anne Arundel County DPW

An overview of the Introductory Water program will be presented and course objectives discussed. Textbooks will be distributed and the TRE requirements will be outlined. This course will cover the materials, which will be helpful to students new to the water industry as well as those who will be taking the Class 1 or 2 State Certification Exam for Water Treatment.

8:30 – 11:50 a.m.      **Centrifugal Pumps** – Instructor, Tiffany Bain. – Geiger Pumps

This session is designed to provide water professionals with a solid technical overview of hydraulics as well as a review of pump types, applications, advantages and disadvantages. Commonly used pumps for water treatment will be discussed. Issues surrounding mechanical seals and packing will also be covered.

12:00 – 1:00 p.m.      **LUNCH**

1:00 – 5:00 p.m.      **Water Treatment Processes** – Instructor, Eddie Cope – Anne Arundel County DPW

This session will cover various water treatment processes including coagulation, sedimentation, disinfection, fluoridation, iron and manganese removal, softening, taste and odor control, and corrosion control. Water sources, chemicals used in water treatment and plant operations will also be discussed.

5:00 – 6:00 p.m.      **DINNER**

#### TUESDAY

8:00 – 11:50 a.m.      **Basic Instrumentation** – Instructor, Gary Anderson – Sherwood Logan and Associates, Inc.

This course is offered as a basic overview of the concepts and techniques for four of the most often encountered measurements found in water treatment plants; temperature, pressure, level, and flow. The class will learn the theory behind each measurement and become familiar with the diversity of instrumentation available.

12:00 – 1:00 p.m.

**LUNCH**

1:00 – 5:00 p.m.

**Confined Space** – Instructor, Pete Steps – Anne Arundel County DPW

Instruction will be given on OSHA regulations and equipment needed for entering confined spaces.

5:00 – 6:00 p.m.

**DINNER**

### **WEDNESDAY**

8:00 – 11:50 a.m.

**Applied Mathematics** – Instructor, Larry Richardson – Anne Arundel County DPW

Instruction will focus on basic mathematics and applications to the water works industry.

12:00 – 1:00 p.m.

**LUNCH**

1:00 – 5:00 p.m.

**Chlorine Use and Safe Handling** – Instructor, Terry Bradley – Anne Arundel County DPW

Session will cover the safe handling of chlorine to include inspection of equipment, personal safety, health precautions, and emergency procedures. Also included will be an overview of the use and the application of chlorine and other water treatment chemicals.

5:00 - 6:00 p.m.

**DINNER**

### **THURSDAY**

8:00 – 11:50 a.m.

**Distribution Systems** – Instructor, Billy Dove - WSSC

The class will discuss water distribution systems. Among the topics discussed will be various types of water storage, hydraulic concepts of pressure and force, pressure reducing valves, booster pumps, and the importance of tank turnover, chlorination, and disinfection byproducts.

12:00 – 1:00 p.m.

**LUNCH**

1:00 – 5:00 p.m.

**Lockout/Tagout Procedures** – Instructor, Terry Bradley – CET, Anne Arundel County DPW

Instruction will focus on lockout/tagout and other plant safety features.

**Or**

1:00 – 5:00 p.m.

**State Water Examination Review** – Instructors, Eddie Cope - Anne Arundel County DPW & Jay Price - WSSC

This session is designed to review topics that may help those taking any of the State Water exams.

**Note: This is a fast paced review that is open only to those registered for the June 5, 2009 State exam.**

5:00 – 6:00 p.m.      **DINNER**

### **FRIDAY**

8:00 – 11:30 a.m.      **Final Short Course Exam**

### **WATER CLASSES 3 & 4**

Course Coordinator – Jay Price

### **MONDAY**

8:00 – 8:30 a.m.      **Overview** - Course Coordinator, Jay Price, WSSC  
An overview of the Water 3 & 4 program will be presented and course objectives discussed.

8:30 a.m. – Noon      **Chlorine Use & Safe Handling** – Instructor, Terence Bradley - Anne Arundel County DPW

This session will cover the use and safe handling of chlorine. Included in this discussion will be waterborne diseases, water-chlorine chemistry, disinfection methods, and operational factors that affect the disinfection process. Also included will be inspection of equipment, personal safety, health precautions, and emergency procedures.

Noon – 1:00 p.m.      **LUNCH**

1:00 – 5:00 p.m.      **Water Treatment Processes** – Instructor, Eddie Cope - Anne Arundel County DPW

This session will cover various water treatment processes including coagulation, sedimentation, disinfection, fluoridation, iron and manganese removal, softening, taste and odor control, and corrosion control. Water sources, chemicals used in water treatment and plant operations will also be discussed.

5:00 – 6:00 p.m.      **DINNER**

### **TUESDAY**

8:00 – 10:00 a.m.      **Ultraviolet Light Disinfection Treatment Process** – Instructor, Mike Harrington - C. M. Harrington Co. and USA Blue Book

This session is designed to introduce Operational and Maintenance personnel to the concept of using ultraviolet light to disinfect water. Attendees will be informed why UV is gaining popularity in water treatment. The entire UV disinfection process will be discussed, including how to determine the amount of light needed to meet disinfection requirements, measurement of UV, the process of selecting the appropriate equipment, and the disinfection validation process. Various components of an UV process will be identified, as well as operation and maintenance of the UV process.

10:00 – Noon

**Applied Mathematics** – Instructor, Jay Price - WSSC

This session will focus on basic mathematics and applications fundamental to the water treatment. Upon completion of this course, personnel should be able to perform calculations needed to verify various plant processes. Examples include chemical dosing, detention time, pressure, backwash flow rates, and flow velocity.

Noon – 1:00 p.m.

**LUNCH**

1:00 – 5:00 p.m.

**Chemical Feed Pumps** – Brian Cummings – WSSC

The class will focus on the most common types of chemical metering pumps and feed systems equipment and will include: installation, calibration, maintenance, and troubleshooting of Chemical Metering Pumps and Feed Systems.

5:00 – 6:00 p.m.

**DINNER**

### **WEDNESDAY**

8:00 – 10:00 a.m.

**Applied Mathematics (continued)** – Instructor, Jay Price - WSSC

This session will focus on basic mathematics and applications fundamental to the water treatment. Upon completion of this course, personnel should be able to perform calculations needed to verify various plant processes. Examples include chemical dosing, detention time, pressure, backwash flow rates, and flow velocity.

10:00 - Noon

**Filtration Processes** - Instructor, Patty Gamby - Army Corp of Engineers, Washington Aqueduct

This session will give the participant an introduction to operation and maintenance of various types of filters, including granular media and gravity filtration. In addition, design and operation of gravity and pressure filters will be discussed.

Noon – 1:00 p.m.

**LUNCH**

1:00 – 3:00 p.m.      **Coagulation, Flocculation & Sedimentation** – Instructor, Scott Harmon  
- Anne Arundel County DPW

Session will cover the first three steps of the water treatment process; including rapid mixing, types of flocculation, and sedimentation will be discussed.

3:00 – 5:00 p.m.      **Hazardous Material Right-to-Know** – Instructor, Michael Lewis -  
WSSC

This session will provide the participant with safety and health information in regards to typical chemicals used in the treatment of water/wastewater, and the proper use of a MSDS.

5:00 – 6:00 p.m.      **DINNER**

### **THURSDAY**

8:00 – Noon      **Distribution Systems** – Instructor, Billy Dove – WSSC

The class will discuss water distribution systems. Among the topics discussed will be various types of water storage, hydraulic concepts of pressure and force, pressure reducing valves, booster pumps, and the importance of tank turnover, chlorination, and disinfection byproducts.

Noon – 1:00 p.m.      **LUNCH**

1:00 – 5:00 p.m.      **Water 3&4 State Examination Review** – Instructors, Eddie Cope - Anne  
Arundel County DPW & Jay Price - WSSC

This session is designed to review topics that may help those taking the Water 3 or 4 State examinations.

**Note: This is a fast paced review that is open only to those registered for the June 5, 2009 State exam.**

### **OR**

1:00 – 4:00 p.m.      **Basic Electricity** – Instructor, Tom Rock - WSSC

This session will provide basic electrical knowledge using analogies to water. Also covered will be basic electrical terms, Ohm's Law, measuring electricity, series/parallel circuits, and electrical safety.

4:00 – 5:00 p.m.      **Water 3&4 Short Course Examination Review** – Instructor, Jay Price –  
WSSC

This session will provide a review of the week's material in preparation for Friday's Water 3&4 Short Course exam.

5:00 – 6:00 p.m. **DINNER**

## **FRIDAY**

8:00 – 11:00 a.m. **Final Short Course Exam**

### **Advanced Water Topics**

Course Coordinator - Eddie Cope

## **MONDAY**

8:00 - 8:50 a.m. **Overview** - Instructor, Eddie Cope - Anne Arundel County

An overview of the Advanced Water program will be presented and course objectives discussed. Textbooks will be distributed and TRE requirements will be discussed.

9:00 - 11:50 a.m. **Water Lab Techniques** – Instructor, Mike Harrington - C.M. Harrington Co & USA Blue Book

Standard lab practices including standards and calibrations. Advanced instrumentation for water quality with regard to precision and accuracy.

12:00 - 1:00 p.m. **LUNCH**

1:00 - 5:00 p.m. **Preparing for and responding to a terrorism incident from a Public Works perspective** – Instructor, Pete Steps - Anne Arundel County

What is terrorism? What is a PTE? What is a CBRNE incident? This course answers these questions and others. Topics discussed in this session will pertain to weapons of mass destruction, how to perform a vulnerability assessment of your facility and more.

5:00 - 6:00 p.m. **DINNER**

## **TUESDAY**

8:00 - 9:50 a.m. **Ultraviolet Disinfection Treatment Process** – Instructor, Mike Harrington - Harrington Co & USA Bluebook

This class is designed to introduce Operational and Maintenance personnel to the concept of using ultraviolet light to disinfect water. Attendees will be informed to why UV is gaining popularity in water treatment. The entire UV disinfection process will be discussed, including how to

determine the amount of light needed to meet disinfection requirements, how UV light is measured, the process of selecting the appropriate equipment, and the disinfection validation process. Various components of an UV process will be identified, as well as operation and maintenance of the UV process.

10:00 - 11:50 a.m.     **Chloramination Disinfection Treatment Process** – Instructor, Mike Harrington - Harrington Co & USA Bluebook

This session will begin with a discussion of the chemistry of chloramines, its use for primary disinfection, advantages and disadvantages. This background discussion will be followed by a description of physical facilities required for chloramine treatment, controls and operational requirements. Finally, the class will provide discussion of important points to be aware for the successful use of chloramines.

12:00 - 1:00 p.m.     **LUNCH**

1:00 - 5:00 p.m.     **Advanced Filtration Processes: Theory and Practices** – Instructor, Thomas Getting and John Geibel - F.B. Leopold Co., Patrick Foley - Sherwood Logan and Assoc.

With increased emphasis being placed on optimum filter performance by recent legislation, this session will cover all aspects of advanced filtration processes including granular media and gravity filtration. Included in this four hour session will be new design and rehabilitation of existing filters, media selection and design for particle removal, types of filter layouts, instrumentation and control, filter maintenance for optimum performance, and troubleshooting when operations require. Comparisons will be made of different methods of backwashing and students will be able to observe cross sections of pilot filters during backwashing. Different types of underdrains and filter media will be available for hands on demonstration.

5:00 - 6:00 p.m.     **DINNER**

## **WEDNESDAY**

8:00 - 11:50 a.m.     **Pumps** – Instructor, Tiffany Bain – Geiger Pumps

This course is designed to provide water professionals with a solid technical overview of hydraulics as well as a review of pump types, applications, advantages and disadvantages. Commonly used pumps for water treatment will be discussed. Issues surrounding mechanical seals and packing will also be covered

12:00-1:00 p.m.     **LUNCH**

1:00 - 5:00 p.m.     **Membrane Filtration and Reverse Osmosis Treatment Technologies** - Instructor, Ben Movahed - Watek Engineering

The theory and application behind operation and maintenance of Membrane Filtration and Reverse Osmosis Treatment systems. Problems associated with Membrane and Reverse Osmosis units will be discussed along with lab demonstrations which will be conducted.

6:00 p.m.

**DINNER**

### **THURSDAY**

8:00 - 11:50 a.m.

**The Evolution of a Project: Water Treatment Plant Expansion, from Planning to Final Acceptance**– Instructor, Susanne Lockhart – Anne Arundel County

Operators sometimes aren't involved in the project development process until they have to operate a new facility. That is typically too late to get the product that you want - and that is where operations staff make field modifications to suit their needs. This class will discuss the planning and document creation that leads to a desired construction. Language for special provisions, reading specifications, how to read project plans and the understanding of "or equal" will be highlighted. Other components that will be presented are training (how much and by whom), warranties, operation and maintenance manuals, acceptance/performance, project and construction management by engineers. .

12:00 – 1:00 p.m.

**LUNCH**

1:00 - 5:00 p.m.

**Instrumentation and Controls for the Operator** – Instructor, Guy Woodard – Proactive Operations

This class introduces the fundamentals of measuring, displaying and controlling important plant operating parameters such as levels, pressures, flows and dosages. Class discussions will center on automatic systems that actuate and adjust valve positions, motor speeds and chemical feeder output.

5:00 - 6:00 p.m.

**DINNER**

### **FRIDAY**

8:00-11:30 a.m.

**Final Short Course Examination**

## Water Distribution

Coordinator – Joe Crandall

### MONDAY

- 8:00 – 8:50 a.m.      **Orientation** – Instructor, Joe Crandall – Anne Arundel County DPW  
An overview of the course will be presented. Textbooks will be distributed and TRE requirements will be discussed.
- 9:00 – 11:50a.m.      **Construction Safety** – Instructor, Pete Steps - Anne Arundel County DPW Training Division  
  
This course will emphasize construction safety. Topics will include confined space entry, trenching safety and Right to Know.
- 12:00 – 1:00 p.m.      **LUNCH**
- 1:00 – 5:00 p.m.      **Water Treatment Processes** – Instructor, Eddie Cope – Anne Arundel County DPW  
  
This session will cover various water treatment processes including coagulation, sedimentation, disinfection, fluoridation, iron and manganese removal, softening, taste and odor control, and corrosion control. Water sources, chemicals used in water treatment and plant operations will also be discussed.
- 5:00 – 6:00 p.m.      **DINNER**

### TUESDAY

- 8:00 – 11:50 a.m.      **Distribution Math** - Instructor, Larry Richardson – Anne Arundel County DPW  
  
The purpose of this course is to refresh and/or improve your math skills in the area of distribution math as it relates to water calculations. You will learn how to compare ratios and proportions, solve for the unknown, and explore linear measurements, area measurements and volume measurements.
- 12:00 – 1:00 p.m.      **LUNCH**
- 1:00 – 5:00p.m.      **Pumps** – Instructor, Pete Steps - Anne Arundel County DPW Training Division  
  
Topics include hydraulics of pumps as applied to the water works industry; pump operation, and routine maintenance.
- 5:00 – 6:00 p.m.      **DINNER**

## WEDNESDAY

8:00 – 11:50 a.m.      **Distribution Systems** – Instructor, Billy Dove - WSSC

The Class will discuss water distribution systems. Among the topics discussed will be various types of water storage, hydraulic concepts of pressure and force, pressure reducing valves, booster pumps, and the importance of tank turnover, chlorination, and disinfection byproducts.

12:00 – 1:00 p.m.      **LUNCH**

1:00 – 5:00p.m.      **Distribution Math (cont.)** - Instructor, Larry Richardson - Anne Arundel County DPW

The purpose of this course is to refresh and/or improve your math skills in the area of distribution math as it relates to water calculations. You will learn how to compare ratios and proportions, solve for the unknown, and explore linear measurements, area measurements and volume measurements.

5:00 - 6:00 p.m.      **DINNER**

## THURSDAY

8:00 – 11:50 a.m.      **Valves and Hydrants** – Instructors, Mark Snyder and Mike Schakowsky – Mueller Co

The course will cover the safe operation and maintenance of fire hydrants and valves. Instruction will include a detailed description of parts and repairs to include the disassembly and assembly of valves and fire hydrants.

12:00 – 1:00 p.m.      **LUNCH**

1:00 – 3:00 p.m.      **Valves and Hydrants** – (continued)

3:00 – 5:00 p.m.      **Session Review & Test Taking Techniques** – Instructors, Joe Crandall - Anne Arundel County DPW and Don Sprinkle- Howard County

This session will be a review of the week's material in preparation for short course and/or the State test, along with some techniques on how to take a test.

5:00 – 6:00 p.m.      **DINNER**

## FRIDAY

8:00 – 11:30 a.m.      **Final Short Course Exam**

## Wastewater Collection

Coordinators – Tom Newquist Sr. and Wayne Reed

### MONDAY

- 8:00 – 8:50 a.m.      **Overview** – Instructor, Tom Newquist Sr. – City of Annapolis, Wayne Reed - DCWASA  
An overview of the wastewater collection program will be presented and course objective discussed, and TRE requirements will be discussed.
- 8:50 - 9:30 a.m.      **Collections System Basic Hydraulics** – Instructor, Carlos Espinosa - CWEA Collections Committee
- 9:30 – 10:30 a.m.      **CCTV**-Instructor, Ted DeBoda - CWEA Collections Committee
- 10:30- 11:50a.m.      **Pipe and Manhole Rehabilitation** – Instructors, Marilyn Baron & Ted DeBoda - CWEA Collections Committee
- 12:00 – 1:00 p.m.      **LUNCH**
- 1:00 – 1:50 p.m.      **Flow Monitoring**- Instructor, Kraig Moody - CWEA Collections Committee  
  
Elements of open channel flow measurements (area and velocity, flumes, weirs) and flows through force mains (magnetic meters, pumps running timers) will be presented as a basis to establish baseline infiltration and peak wet weather flows.
- 2:00 - 2:50 p.m.      **SSO Rule** – Instructor, Glen Diaz – CWEA Collections Committee  
  
The current regulatory environment with regards to Sanitary Sewer Overflows, SSOs, at a state and federal level will be covered. The prohibition against unauthorized discharges, Capacity, Management, Operation and Maintenance, CMOM, and what operators can do to minimize the impacts and potential regulatory exposure regarding SSOs will be discussed. The reporting requirements for the 24 hour verbal and 5 day written reports will be included.
- 3:00 – 3:50 p.m.      **SSS/Private Property I/I** – Instructors, Jeff Cantwell & Paul Sayan - CWEA Collections Committee
- 4:00 – 4:50 p.m.      **Preventative Maintenance** –John Fletcher & Dick Eubank - CWEA Collections Committee
- 5:00 – 6:00 p.m.      **DINNER**

## TUESDAY

8:00 – 11:50 a.m. **Disinfection & Chemical Feed Applications** – Instructor, Paula Martin, Water Treatment Plant Superintendent (ret.)

Effective chemical application is essential to the treatment of water and wastewater. This course will start with an open discussion of chemical feed applications in both the water and wastewater treatment fields.

12:00 – 1:00 p.m. **LUNCH**

1:00 – 5:00 p.m. **Math Application** – Instructor, Paula Martin, Water Treatment Plant Superintendent, ret.

A workshop focusing on calculating chemical feed dosages will follow. The workshop includes calculating the capacity of tanks, flow rates, and chemical dosages for disinfection, de-chlorination, odor control, coagulation, and corrosion control. Students will progress at their own pace through multiple and progressively more difficult quizzes.

5:00 – 6:00 p.m. **DINNER**

## WEDNESDAY

8:00 – 11:50 a.m. **Centrifugal Pumps and Components** – Instructor, Steve Elder

Topics presented in this session include hydraulics of pumps as applied to the waterworks industry, pump operation and routine maintenance.

12:00 – 1:00 p.m. **LUNCH**

1:00 – 5:00 p.m. **Centrifugal Pumps and Components (continued)** – Instructor, Steve Elder

5:00 – 6:00 p.m. **DINNER**

## THURSDAY

8:00 – 11:50 a.m. **Basic Chlorine and Chlorine Cylinder Program** – Instructor, Susan McCauley - Maryland Environmental Services

OSHA permit required confined space; lock out tag out, basic chlorine, chlorine cylinder program, excavation and trench in safety.

12:00 – 1:00 p.m. **LUNCH**

1:00 – 3:00 p.m. **OSHA Permit Required Confined Space; Lock out Tag out and Excavation and Trench in Safety** – Instructor, Susan McCauley - Maryland Environmental Services

3:00 - 4:50 p.m.      **Exam Review** - Instructor, Don Sprinkle

5:00 – 6:00 p.m.      **DINNER**

## **FRIDAY**

8:00 – 11:30 a.m.      **Final Short Course Exam**

## **Industrial Waste Treatment - Physical**

Coordinators: Ed Williams and Dennis Mounsey

## **MONDAY**

8:00 – 8:50 a.m.      **Course Objectives & Orientation** – Instructor, Ed Williams – Harford County DPW, Dennis Mounsey - Consultant

This session will provide an introduction to the course with an explanation of its objectives and attendance requirements. Textbooks will be distributed during this session. Each session covered in this course will be discussed along with resources available for review of course materials, and the examination format.

9:00 – 9:50 a.m.      **Overview of Municipal/Industrial Pretreatment, Local Limit Development, Monitoring Requirements and Compliance Enforcement** – Instructor, Ed Williams - Harford County DPW

This session will provide a brief overview of the regulations governing treatment and how pretreatment is implemented in the State of Maryland. Discussions will include general and specific prohibitions, standards, and consequence of being classified as an SIU and reporting requirements.

10:00 – 11:50 a.m.      **Overview of the Operator Certification Program Requirements** – Instructors, Lee Haskins, Lawrence Robinson – Maryland Department of the Environment (MDE)

This session will provide an overview of the operator certification requirements for waste treatment and pretreatment facilities with special emphasis on recent updates. Course participants will be provided an opportunity to participate in a question and answer session.

12:00 – 1:00 p.m.      **LUNCH**

1:00 – 1:50 p.m.      **Overview of Municipal/Industrial Pretreatment, Local Limit Development, Monitoring Requirements and Compliance Enforcement** (continued)

2:00 – 3:50 p.m. **Prevention & Response to Violations** – Instructor, Ed Williams – Harford DPW

This class will discuss the most common causes of violations, investigative methods to develop a plausible response and plan of corrective measures as well as preventive methods. Proper Planning Prevents Poor Performance.

4:00 – 5:00 p.m. **Review of Days Topics** – Instructor, Ed Williams– Harford County DPW

5:00 – 6:00 p.m. **DINNER**

## **TUESDAY**

8:00 – 9:50 a.m. **Filtration Processes** – Instructor, Joel Caudill – Harford County DPW

This session covers the history, design, maintenance and operation of filters to include multi – media filters. Math will be focused on in this session as it pertains to Process Filtration calculations.

10:00 – 11:50 am **Chemical Feed** – Instructor, Joel Caudill – Harford County DPW

This session covers use of chemicals in the treatment of wastewater. Topics will include the chemicals used, application points and calculating chemical feed rates.

12:00 – 1:00 p.m. **LUNCH**

1:00 – 2:50 p.m. **Pumps** – Instructor, Chris Brown – Geiger Pumps Inc.

Topic will cover the role of pumps in wastewater, routine maintenance and trouble shooting.

3:00 – 5:00 p.m. **Disinfection** – Instructor, Earl Ludy – Somerset County Sanitary

This course will identify and discuss different types of disinfection, including advantages and disadvantages of each method.

5:00 – 6:00 p.m. **DINNER**

## **WEDNESDAY**

8:00 – 11:50 a.m. **Metals Precipitation** – Instructor, Dennis Mounsey – Consultant

This course is designed to provide operations-oriented personnel with metals treatment responsibility, the opportunity to interact with similar personnel and to receive training in the theories, methods and practices of treating metals via precipitation in wastewater. The class will cover: 1) Sources of metals, (Contamination by metals of streams & sludges). 2)

Chemical Concepts (pH theory & practice), (Coagulation & precipitation).  
3) Treatment Facilities, (Pollution prevention/waste minimization),  
(Typical chemical processes, instrumentation & Process control &  
operation). 4) Interactive activities, (description of student facilities).

12:00 – 1:00 p.m.

**LUNCH**

1:00 – 2:50 p.m.

**Safety – MSDS and LOTO** – Instructor, Don Thompson and James Hynes – Harford County DPW

MSDS, Right to Know Law OSHA (29 CFR 1910.1200) and MOSH (COMR 09.12.33.04) will be discussed. LOTO – having a successful Lock-Out/ Tag-Out program.

3:00 – 3:50 p.m.

**Course Review** – Instructor, Ed Williams – Harford Co DPW

4:00 – 5:00 p.m.

**Final Exam** – Physical/Chemical Treatment

5:00 - 6:00 p.m.

**DINNER**

## **THURSDAY**

8:00 – 8:50 a.m.

**Principles of Biological Treatment** – Instructor, Dennis Mounsey – Consultant

This section will cover the wastewater characterization, an introduction to biological treatment systems, and basic microbiology.

9:00 – 9:50 a.m.

**Anaerobic Treatment Processes** – Instructor, Dennis Mounsey – Consultant

The principles of anaerobic treatment will be reviewed. This session will include a discussion of the different types of anaerobic systems, selection criteria, and the advantages and disadvantages of each type. Basic calculations specific to these systems will be covered. An overview of equipment and layouts associated with anaerobic systems will be presented along with a discussion of system O&M issues.

10:00 – 10:50 a.m.

**Aerobic Treatment I** – Instructor, Dennis Mounsey – Consultant

The principles of aerobic treatment will be reviewed. This session will include a discussion of the activated sludge theory, and reactor configurations; complete mix, plug flow and batch. Basic calculations specific to these systems will be covered.

11:00 – 11:50 a.m.

**Fixed Film Systems** – Instructor, Ed Williams - Harford County DPW

The application of fixed film systems for treatment will be reviewed. This session will include a discussion of the different types of fixed film

treatment systems, selection criteria, and the advantages and disadvantages of each type. An overview of equipment and layouts associated with fixed film systems will be presented along with a discussion of system O&M issues.

- 12:00 – 1:00 p.m.      **LUNCH**
- 1:00 – 1:50 p.m.      **Fixed Film Systems** – (continued)
- 2:00 – 2:50 p.m.      **Sludge Handling & Disposal** – Instructor, Instructor, Dennis Mounsey – Consultant
- Topics included in this session will be sludge thickening stabilization, dewatering, storage and disposal. Chemicals used as aids in these processes will be discussed.
- 3:00 – 3:50 p.m.      **Course Review** – Instructor, Ed Williams – Harford Co DPW
- 4:00 – 5:00 p.m.      **Final Exam** – Biological Treatment
- 5:00 – 6:00 p.m.      **DINNER**

### **Introductory/Intermediate Wastewater**

Coordinator – Marshall Phillips and Jim Hynes

### **MONDAY**

- 8:00 – 8:50 a.m.      **Orientation** – Instructor, Marshall Phillips – City of Baltimore, Instructor, Jim Hynes – Harford County DPW
- During this period, textbooks will be distributed, the TRE requirements discussed and an overview of the curriculum outlined.
- 9:00 – 11:50 a.m.      **Wastewater Treatment Overview** – Instructor, Randy Bradford – City of Ocean City, MD
- Basics of Wastewater treatment will be presented.

### **OR**

- 9:00 – 11:50 a.m.      **Advanced Treatment** – Instructor, William Shreve – Maryland Environmental Service
- Methods of nutrient removal, sand filtration, and other advanced treatment processes will be discussed.
- 12:00 – 1:00 p.m.      **LUNCH**

1:00 – 5:00 p.m.      **Activated Sludge Process Control** – Instructor, Lenny Gold – Gold & Associates

This session will teach specific techniques for monitoring and controlling activated sludge processes. Trend charting, microscope examination of biomass, and other process control techniques will be taught. Case study analysis of activated sludge process problems will be undertaken on a time-available basis.

5:00 – 6:00 p.m.      **DINNER**

## **TUESDAY**

8:00 – 11:50 a.m.      **Intermediate Math** - Instructor, Don Sprinkle – Howard County

Computation of typical wastewater problems will be emphasized. Detention times, flow rates, dosage rates, loading rates, and other typical wastewater formulas will be covered.

12:00 – 1:00 p.m.      **LUNCH**

1:00 – 2:50 p.m.      **Disinfection** – Instructor, Earl Ludy – Somerset County Sanitary Distribution

This course will identify and discuss different types of disinfection, including advantages and disadvantages of each method.

3:00 – 5:00 p.m.      **Safety** – Instructor, Ellwood Klump – City of Baltimore

Proper use of safety equipment, working in confined spaces, lockout programs, chlorine handling and chemical safety will be covered.

5:00 – 6:00 p.m.      **DINNER**

## **WEDNESDAY**

8:00 – 11:50 a.m.      **Pumps** – Instructor, John Weis – MM Engineering

Topics to be covered include pumps and their role in wastewater, as well as routine maintenance and trouble shooting.

12:00 – 1:00 p.m.      **LUNCH**

1:00 – 5:00 p.m.      **Solids Handling** – Instructor, Randy Bradford – City of Ocean City, MD

This course provides an introduction to various methods of conditioning, dewatering and disposal of sludge. Advantages and disadvantages will be discussed.

5:00 - 6:00 p.m. **DINNER**

## **THURSDAY**

8:00 – 11:50 a.m. **Sludge Thickening & Digestion** – Instructor, Bill Farrell – MEI/RTS/Prostart

Aerobic and anaerobic digestion will be discussed, including advantages and disadvantages of each. Process monitoring and troubleshooting will be emphasized.

12:00 – 1:00 p.m. **LUNCH**

1:00 –5:00 p.m. **Wastewater Lab** – Instructor, Dale Baker – Garrett County

Lecture, demonstration and hands-on training on pH, temperature, DO using meters and Winkler method, chlorine using amperometric titration, and DPD-FS end spectrophotometer.

5:00 –6:00 p.m. **DINNER**

## **FRIDAY**

9:00 – 12:00 a.m. **State Certification Examination**

## **Advanced Wastewater**

Coordinators – Bill Graves and Conrad Shows

## **MONDAY**

8:00- 8:50 a.m. **Overview** – Instructors, Bill Graves - Harford County, Instructor, Conrad Shows

An overview of the Advanced Wastewater program will be presented and course objectives discussed. Course logistics and TRE requirements will be discussed.

9:00 - 11:50 a.m. **Wastewater Plant Start-Up** – Instructor, Bill Farrell – Pro Start

This course will discuss what operators need to know to start-up/re-start wastewater treatment plants. Monitoring equipment, supplemental chemicals, plant seeding, loading calculations, and process control options will be discussed. Case studies will be provided.

12:00 - 1:00 p.m. **LUNCH**

1:00 - 5:00 p.m. **Disinfection Systems for Water/Wastewater Operations:**

The pros and cons of chlorine (gas, powder, liquid) compared and contrasted against alternatives like Chloramines, Chlorine Dioxide, Ozone, UV, Mixed Oxidants, Ultra-filtration and other disinfectants and how they may help in meeting requirements for the Disinfection By-products, and up coming Groundwater Rules. An Interactive program combining superb computer generated visuals, discussion, and demonstrations.

5:00 - 6:00 p.m. **DINNER**

## **TUESDAY**

8:00 - 11:50 a.m. **Power Conservation**

Opportunity for energy efficient and optimization of power demand while not compromising the plant process.

12:00 - 1:00 p.m. **LUNCH**

1:00 - 5:00 p.m. **Sludge Thickening and Dewatering** – Instructor, Sam Amad, P.E., DEE - WSSC

### Introduction (30 min):

- General Plant Layout
- Solids Train
- Why Thicken and Dewater Solids?

### Sludge Types (30 min):

- Primary Sludge
- Secondary/BNR Sludge

### Sludge Thickening (45 min):

- Gravity Thickening
- Dissolved Air Flootation
- Gravity Belt Thickening

### Sludge Dewatering (45 min):

- Centrifuge Dewatering
- Belt Filter Press

### Efficiency of Thickening and Dewatering (1.5 hour)

- Importance of Efficiency
- Effects of Recycled Flow
- Frequency of Monitoring
- Sample Collection
- Calculations

5:00 - 6:00 p.m. **DINNER**

## WEDNESDAY

8:00 – 11:50 a.m.      **An In-Depth Look at ENR** – Instructor, Marty Johnson - Anne Arundel County

This 2-day course is designed to give the operator highly-detailed training on the biology and chemistry behind Enhanced Nutrient Removal. Operation and control of various treatment plant processes will be discussed. Training will also include diagnosing the plant performance and optimization through monitoring, testing, equipment changes, and chemical addition. Interpretation of data and operational problems/remedies will be presented.

12:00 - 1:00 p.m.      **LUNCH**

1:00 - 5:00 p.m.      **An In-Depth Look at ENR (continued)** – Instructor, Marty Johnson - Anne Arundel County

5:00 - 6:00 p.m.      **DINNER**

## THURSDAY

8:00 - 11:50 a.m.      **An In-Depth Look at ENR (continued)** – Instructor, Marty Johnson - Anne Arundel County

12:00 - 1:00 p.m.      **LUNCH**

1:00 - 3:50 p.m.      **An In-Depth Look at ENR (continued)** – Instructor, Marty Johnson - Anne Arundel County

4:00 - 5:00 p.m.      **Course Review**

5:00 - 6:00 p.m.      **DINNER**

## FRIDAY

8:00 – 11:30 a.m.      **Final Short Course Examination**

### Treatment Facility Maintenance

Coordinator – J.C. Langley

## MONDAY

8:00 - 8:30 a.m.      **Course Overview** – Instructor, J.C. Langley - WSSC

An overview of the maintenance programs in the workplace is presented and course objectives and TRE requirements will be discussed.

8:30 - 11:50 a.m.      **Electrical Maintenance** – Instructor, Larry Cecil – WSSC

This course will provide a basic knowledge of electrical maintenance from understanding electrical terms, using electrical measuring instruments, and troubleshooting electrical circuits. Students will also receive hands-on training in wiring a single pole and three-way switch.

12:00 - 1:00 p.m.      **LUNCH**

1:00 - 3:00 p.m.      **Confined Space Entry/Rescue Retrieval** – Instructor, Michael Lewis - WSSC

Instruction will be given on OSHA regulations and equipment needed for entering confined spaces along with procedures for safe entry and rescue from confined spaces.

3:00 - 5:00 p.m.      **Personal Protective Equipment** – Instructor, Michael Lewis - WSSC

This course will discuss the types of equipment most commonly used to protect the head, torso, arms, hands, and feet. Additional topics include requirements, hazard assessment, selection, and employee training.

5:00 - 6:00 p.m.      **DINNER**

## **TUESDAY**

8:00 - 11:50 a.m.      **Electrical Maintenance (continued)** – Instructor, Larry Cecil – WSSC

12:00 - 1:00 p.m.      **LUNCH**

1:00 – 5:00 p.m.      **Chemical Feed Pumps** – Brian Cummings – WSSC

The class will focus on the most common types of chemical metering pumps and feed systems equipment and will include: installation, calibration, maintenance, and troubleshooting of Chemical Metering Pumps and Feed Systems.

5:00 - 6:00p.m.      **DINNER**

## **WEDNESDAY**

8:30 - 11:50 a.m.      **Pump Maintenance** – Instructor, Steve Justice - Geiger Pumps

An overview of mechanical maintenance on motors and pumps in the workplace is provided. Packing pumps, motor replacements and other topics will be discussed thoroughly.

12:00 - 1:00 p.m.      **LUNCH**

1:00 - 5:00 p.m.      **Electrical Prints and Diagrams**– Instructor, Larry Cecil – WSSC

This course will introduce and explain the electrical symbols and legends used in electrical prints and drawings. Students will develop the skills necessary to read, draw, and understand electrical floor plans, lighting layouts, schematics, wiring diagrams, ladder diagrams, and single line diagrams.

5:00 - 6:00 p.m.      **DINNER**

### **THURSDAY**

8:00 - 11:50 p.m.      **Basic Instrumentation** – Instructor, Gary Anderson – Sherwood Logan and Associates, Inc.

This course is offered as a basic overview of the concepts and techniques for four of the most often encountered measurements found in water treatment plants; temperature, pressure, level, and flow. The class will learn the theory behind each measurement and become familiar with the diversity of instrumentation available.

12:00 - 1:00 p.m.      **LUNCH**

1:00 – 5:00 p.m.      **Trades Maintenance** – Instructors, James Daniel, Walter VanAlstine, Barry Arter - WSSC

This course will review the maintenance role of a multi-skilled Trades shop within the water and wastewater industry. Typical machining, welding, and carpentry projects will be reviewed along with demonstrations of advanced trades capabilities and equipment.

5:00 - 6:00 p.m.      **DINNER**

### **FRIDAY**

8:00 – 11:30 a.m.      **Final Short Course Exam**

### **Superintendents**

Coordinator – Winfield McKell

### **MONDAY**

8:00 – 11:50 a.m.      **Pumping Equipment Selection, Considerations for Water and Wastewater Treatment Operations** - Instructor, Chris Brown – Geiger Pump, Inc.  
MD Board TRE # 4415-09-03

Fundamental hydraulic principals will be reviewed, as well as key design elements, selection criteria and application requirements for various centrifugal and positive displacement pumps.

1. Hydraulic Fundamentals
2. Application of Centrifugal Pumps
3. Application of Positive Displacement Pumps
4. Pumping applications in the Wastewater Treatment Plant flow-sheet
5. Pumping applications in the Water Treatment Plant flow-sheet

12:00 – 1:00 p.m.

**LUNCH**

**Aeration and Mixing – Selecting the Right Technology for your Application** - Instructor, Robert A. Kershner (President) - Kershner Environmental Technologies  
MD Board TRE # 4416-09-03

1:00 PM – 3:00 PM

**Aeration Technologies**

- Mechanical High Speed Aerators
- Mechanical Low Speed Aerators
- Mechanical Aspirating Aerators
- Jet Aeration
- Coarse Bubble Aeration
- Fine Bubble Aeration
- Blowers and Compressors

3:00 PM – 4:30 PM

**Mixing Technologies**

- Bridge Mounted Mixers
- Submersible Mixers
- Jet Mixers
- Static Mixers

4:30 PM – 5:00 PM

**Discussion:**

- Mechanical Layout Considerations
- Energy Efficiency
- Operator Maintenance Requirements

5:00 – 6:00 p.m.

**DINNER**

**TUESDAY**

8:00 – 11:50 a.m.

**Preparing for and responding to a terrorism incident from a Public Works perspective** – Instructor, Pete Steps - Anne Arundel County DPW  
MD Board TRE # 4417-09-03

What is terrorism? What is a PTE? What is a CBRNE incident? This course answers these questions and others. Topics discussed in this session will pertain to weapons of mass destruction, how to perform a vulnerability assessment of your facility and more.

12:00 - 1:00 p.m. **LUNCH**

1:00 – 5:00 p.m. **Managing Multiple Generations in the Workforce** -Instructor, Bob Wimmer, PE - Process Specialist Black & Veatch  
MD BOARD TRE # 4418-09-03

**This course the will cover the following topics:**

Definition and Description of the Generations currently in the workforce  
Characteristics of the Generations  
Approaches to Motivating Employees in Each Generation  
Techniques for Collaboration between Generations  
Reward Systems for Each Generation

**Summary:**

"Today's plant superintendents and managers have staff members that are part of 5 distinct generations. Each generation has a different approach to work, various motivations for choosing a career and different opinions of awards.

5:00 - 6:00 p.m. **DINNER**

**WEDNESDAY**

8:00 – 11:50 a.m. **Evaluating Options for Biosolids Management** – Instructor, Mohammad Abu-Orf, Ph.D. - AECOM Water  
MD BOARD TRE #

**This course the will cover the following topics:**

Objectives of Biosolids Management and Objectives  
Overview of Federal Regulation Governing Disposal and Reuse of Biosolids  
Biosolids reuse and considering markets  
Thickening Processes  
Stabilization processes  
Dewatering Processes  
Energy recovery opportunities from Biosolids  
Innovative Biosolids Processing and Technologies

12:00 - 1:00 p.m. **LUNCH**

1:00 – 5:00 p.m. **Introduction to Industrial Control Systems Security** - Instructor, Tony McConnell – WSSC  
MD Board TRE# 4419-09-03

**What is an Industrial Control System?**

•YOU ARE NOT AS ISOLATED AS YOU PROBABLY BELIEVE!

**Case Studies:**

- Water Treatment Plant hit with e-mail virus.
- Components of ICS Security

- Benefits
- Document Networks & protocols
- Establish policies for regular backups
  - TEST THE BACKUPS!
  - SECURE THE BACKUPS

### **Summary**

- Good Security is an investment
- Does not have to be invasive
- Improves awareness and documentation
- Lack of security
  - Don't know why things fail
  - Don't know who did what
  - ICS is an autopilot to nowhere

5:00 - 6:00 p.m. **DINNER**

## **THURSDAY**

8:00 – 11:50 a.m. **Management's Role in Safety** - Instructor, Michael Lewis -WSSC  
MD Board TRE # 4420-09-03

This course presents an analysis of the primary constituents of effective safety programs for water and wastewater facilities. Participants will analyze examples of different types of programs: identify effective elements of each example and finally, piece these elements together into an effective, comprehensive and enforceable program.

8:00 – 8:50 a.m. **Class Overview**

9:00 - 9:50 a.m. **Categorizing Safety Issues within an Organization**

10:00 – 10:50 a.m. **Supervisor Responsibilities**

11:00 – 11:50 a.m. **Key Elements for Management**

12:00 – 1:00 p.m. **LUNCH**

1:00 – 1:50 p.m. **Specific Safety Program Considerations**

2:00 – 2:50 p.m. **Compliance with Regulatory Standards**

3:00 – 3:50 p.m. **General Workplace Standards**

4:00 – 5:00 p.m. **Keys to a Successful Program**

5:00 – 6:00 p.m. **DINNER**

## **2009 Water & Wastewater Operators Short Course Committee Members**

### **Chairperson**

Noelle Anuskiewicz (CWEA) Anne Arundel County

### **Chairperson-Elect**

Marshall Phillips (WWOA), Baltimore City

### **Treasurer**

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Jay Price (CSAWWA), Washington Suburban Sanitary Commission  
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### **Wastewater Committee**

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### **Water Distribution & Collection Systems Committee**

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### **Industrial Waste Committee**

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### **Facility Maintenance**

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### **Superintendents**

Winfield McKell (WWOA), Washington Suburban Sanitary Commission

### **Administrative Coordinators**

Erskine Hopkins (WWOA), DC WASA (Retired)  
Dennis Mounsey (WWOA) WSSC (Retired)

### **Short Course Instructors**

We offer our thanks to each instructor who is giving of their time and effort without monetary compensation to convey this beneficial information to the respective students. Also, thanks to the companies who have allowed the instructors time to participate in the Short Course. You will find the names of the instructors with the classes they are teaching.