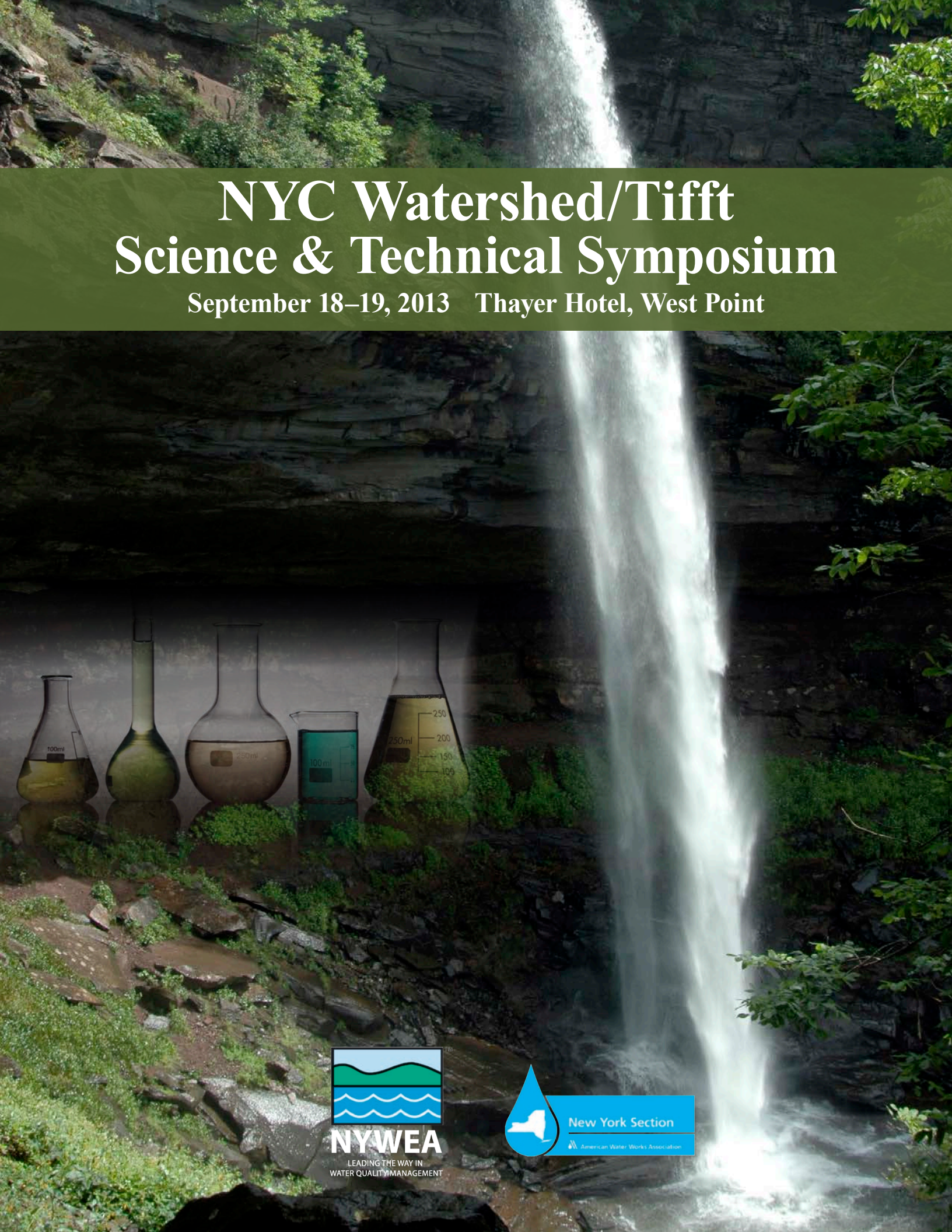


NYC Watershed/Tifft Science & Technical Symposium

September 18–19, 2013 Thayer Hotel, West Point

NYWEA
LEADING THE WAY IN WATER QUALITY MANAGEMENT

New York Section
American Water Works Association

2013 NYC Watershed/Tifft Science & Technical Symposium

September 18–19, Thayer Hotel , West Point, NY

For 2013, our annual conference is changing. We are pleased to announce a new partnership with the New York Section American Water Works Association (NYSAWWA) to make this conference bigger and better than ever. NYWEA's Watershed Science & Technical Conference is being paired with the NYSAWWA's Edwin C. Tifft Water Supply Symposium. As can be seen in the program schedule, the conference will continue to showcase scientific presentations, panel discussions, and special-topic sessions on various aspects of watershed protection.

NYSAWWA brings in expertise in the areas of water treatment, supply and a host of topics of interest to professionals, operators and consumers. NYSAWWA began holding the Edwin C. Tifft, Jr. Water Supply Symposium in 1979 in response to a need for more member education following approval of the Safe Drinking Water Act. Edwin C. Tifft, Jr. was one of the three initial organizers of the symposium. He worked for O'Brien & Gere Engineers starting in 1971, and eventually served on their Board of Directors. Following a struggle with Lou Gerhrig's disease, Ted passed away in 1995. The symposium was named in recognition of his dedication to the event and the NYSAWWA Education Committee. When NYWEA asked NYSAWWA to jointly sponsor its Watershed Conference, a blending of the names of the two meetings seemed appropriate. Our horizons continue to widen in order to offer our attendees the most current scientific advances and technical innovations in water quality and management.

In addition, this year's conference continues the theme of flood recovery, community resilience, climate change and the technical challenges posed to water supply management by increasingly severe storm events.

We have learned much since the 2011 storm events of Irene and Lee. We remain in the throes of recovery from Superstorm Sandy's devastation less than one year ago. Coordinated recovery, mitigation and scientific efforts continue to bring communities back, but some will never be the same. Through it all, the highest levels of scientific and technical analysis, coupled with community planning efforts and engineering expertise, have contributed to an ever-expanding knowledge base regarding why, where and how flooding happens. The 2013 conference will showcase some of the more fascinating data and information developed along the way, and will also present current issues and answers to some of today's most challenging water technical issues.

The 2013 conference continues its long history of bringing scientists, engineers and technical experts together with watershed stakeholders and the public to share water quality science.

Who should attend? Elected officials, directors of public works, operators, buildings, planning and highway departments, land use planners, consulting engineers, regulated industries, attorneys, educators, environmental groups and interested citizens, and everyone interested in clean water. Conference attendees will find themselves in a unique forum for collaboration, providing an opportunity to enhance information and technology transfer and increase coordination among the array of entities working with watershed protection science.

Organizers

The New York Water Environment Association, Inc. (NYWEA) – Founded in 1929, by professionals in the field of water quality as a non-profit, educational organization. Association members helped lead the way toward existing state and national clean water programs. Today the Association has over 2,500 members representing diverse backgrounds and specialties, but all are concerned and involved with protecting and enhancing our precious water resources.
www.nywea.org

The Watershed Protection and Partnership Council – Created by the historic New York City Watershed Memorandum of Agreement to provide a regional forum to aid in the longterm protection of New York City's drinking water, and the economic vitality of the Upstate Watershed communities.
www.dos.state.ny.us/watershed/WPPC.htm

The New York Section of the American Water Works Association is the state's largest organization dedicated to plentiful, high-quality drinking water. We provide professional development and training, technical resources, and advocacy for the Section's more than 2,000 members – water treatment plant operators, distributors, consulting engineers, contractors, students, and government officials.
www.nysawwa.org

New York State Department of State – The Office of the Secretary of State was established in 1778, making it, other than the Offices of Governor and Lieutenant Governor, the oldest agency in the administration of New York State government.
www.dos.state.ny.us

NOTE: Continuing Education, Water Contact Hours have been applied for.

Many Thanks to the Conference Sponsors

- Catskill Watershed Corporation
- New York City Department of Environmental Protection
- New York State Department of Environmental Conservation
- New York State Department of Health
- New York State Department of State
- New York Water Environment Association, Inc. Lower Hudson Chapter
- The New York State Environmental Facilities Corporation
- United States Geological Survey
- Watershed Protection and Partnership Council

2013 NYC Watershed/Tifft Science & Technical Symposium

September 18–19, 2013 – Program and Schedule

Monday, September 16, 2013

1:00 pm–6:00 pm NYSAWWA Board Meeting

Tuesday, September 17, 2013

8:00 am–5:00 pm NYSAWWA Committee Meetings

9:30 am–1:00 pm NYWEA Board Meeting

DAY 1 Wednesday, September 18, 2013

8:00 am Registration, *Stillwell Lobby*

8:30 am–10:30 am Opening General Session, *Washington Ballroom*

Panel Discussion:

NYC Watershed Flooding, Recovery and Resilience

NYCDEP Representatives and Other Stakeholders

10:30 am–11:00 am Networking Break in Exhibit Hall

MORNING SESSION I: Groundwater Modeling *(Location: Eisenhower)*

Contact Hours: 1.0 PE* Water Hours Pending

11:00 am–11:30 am

Hydrologic Effects of the Rondout–West Branch Water Tunnel on the Groundwater-Flow System in Wawarsing, New York

Frederick Stumm, Anthony Chu, U.S. Geological Survey;
Ira Stern, New York City Department of Environmental Protection, Bureau of Water Supply

This study was done in cooperation with the NYCDEP to address flooding-related issues in the town of Wawarsing. Leakage from the Rondout-West Branch Water Tunnel and above-normal precipitation were suspected of causing basement flooding. At some wells bedrock-response to tunnel leakage was from 1.5 to 12 feet, up to 7,000 feet from the tunnel. Unconsolidated aquifer wells had tunnel-leakage water-level changes as much as 2.5 feet, but other wells were smaller or nonexistent.

11:30 am–12:00 pm

Use of Water Chemistry and Geochemical Modeling to Identify Sources of Groundwater Flooding, Wawarsing, New York*

Craig Brown, Frederick Stumm, Anthony Chu, U.S. Geological Survey;
William Richardson, New York City Department of Environmental Protection, Bureau of Water Supply

Groundwater flooding in Wawarsing was studied by the USGS, in cooperation with the NYCDEP, to characterize the groundwater-flow system of the area. Water chemistry, stable isotopes, and age tracers were interpreted to distinguish between water sources. Bedrock wells had higher concentrations of $SO_4$2- and Cl- and lower concentrations of Ca, HCO_3-, and $CO_3$2- compared to wells screened in the unconsolidated aquifer. Sr concentrations and $^{87}Sr/^{86}Sr$ ratios, are different for bedrock wells and tunnel water.

MORNING SESSION II: Hydraulic Fracturing *(Location: Washington)*

Contact Hours: 1.0 PE* 0.5 Wastewater+ Water Hours Pending

11:00 am–11:30 am

Navigating Hydraulic Fracturing in New York State–Review of Local Impact Concerns*

Paul Granger, H2M Water

The Marcellus shale is found in the southern tier and western portions of the State covering approximately 18,700 square miles. Approximately 28 counties throughout the state could be subject to placed horizontal drilling and high-volume hydraulic fracturing (HVHF) or "hydrofracking" once regulations are promulgated and well permits are issued. Therefore it is critical to study issues and concerns where HVHF has been performed and evaluate all direct and indirect impacts related to local drinking water resources.

Water Contact Hours are being applied for.

11:30 am–12:00 pm

A Centralized Approach for Managing Shale Gas Wastewater and Residuals*+
Jerry Leone, Casella Waste Systems, Inc.
Capable of treating 500,000 gallons per day of suspended solids and 100,000 gallons per day of dissolved solids, the CARES water treatment, recycling, and disposal, located in Sergeant Township near Mt. Jewett, PA, has been built to provide a safe, reliable, cost-effective and regional treatment solution for water from drilling activity in Pennsylvania. The new CARES facility employs a unique water treatment technology called AltelaRain® along with the use of landfill gas for producing steam

12:00 pm–1:30 pm

Lunch in McArthur Restaurant

AFTERNOON

SESSION III: Disinfection Byproducts *(Location: Eisenhower)*

Contact Hours: 2.0 PE 0.5 Wastewater+ Water Hours Pending

1:30 pm–2:00 pm

The Effect of Temperature on the Formation of Disinfection By-products*+
Vladimir Soto Sanchez, Department of Geography and Environmental Engineering,
United States Military Academy
Chlorination and chloramination has been recognized as an effective public health measure for removal of pathogens and preventing microbial growth. Chlorine reacts with natural organic matter to form carbonaceous disinfection byproducts, and monochloramine reacts with dissolved organic nitrogen to form nitrogenous disinfection byproducts. Temperature experiments at 4, 20 and 40 degrees Celsius were conducted to evaluate the formation of carbonaceous and nitrogenous disinfection byproducts. The results showed a distinguishable increase for both disinfection byproduct species.

2:00 pm–2:30 pm

Comparing Centralized and Decentralized Treatment for Reduction of DBPs through Bench- and Pilot-Scale Studies*
Chandra Mysore, GHD Inc.
The focus of this project was to determine merits and demerits of centralized versus decentralized treatment for the reduction of DBPs. Bench-scale studies were conducted with various coagulants and polymer combinations to maximize TOC removal while full-scale studies focused on optimizing the existing GAC process. The decentralized treatment focused on conducting air stripping pilot studies in the distribution system. The results from this study provide a comparison of the performance of various treatment strategies, for complying with D/DBPR requirements.

2:30 pm–3:00 pm

Networking Break in Exhibit Hall

3:00 pm–3:30 pm

Coagulation and Microfiltration for Disinfection Byproduct Control on Low SUVA and Low Turbidity Delaware Aqueduct Water*
Andrew Weiss, Kevin Castro, GHD Inc.; James Osborne, Town of Newburgh
Use of the NYC Delaware Aqueduct as a source water; need for disinfection byproduct reduction, and filtering a previously unfiltered supply were the drivers for the Town of Newburgh to construct a new 6.0 MGD membrane microfiltration WTP. Total organic carbon averaged 1 milligram per liter in the raw water, yet formed elevated DBPs. Further motivating the project was the loss of filtration avoidance and a USEPA Consent Decree mandating filtration by July 2013.

3:30 pm– 4:00 pm

DBP Control Strategies: Source Water, Treatment, and Distribution System*
Philip Tangorra, Connie K. Schreppel, Mohawk Valley Water Authority
Mohawk Valley Water Authority has identified Granular Activated Carbon (GAC) as the most effective alternative for achieving Stage 2 compliance. MVWA implemented its first complete filter media change out in 2011 and continues with annual replacement. The Authority is committed to evaluating ways to control costs and efficiently manage disinfection by-products by examining organics management strategies, distribution system chemistry and alternative GAC techniques, including an innovative idea for in situ regeneration of spent carbon.

AFTERNOON

SESSION IV: Water Quality *(Location: Washington)*

Contact Hours: 1.0 PE Water Hours Pending

1:30 pm–2:00 pm

NYC's Waterborne Disease Risk Assessment Program – 20 Years Later: Program Implementation and Data Findings*

Anne Seeley, NYC Environmental Protection; Sharon Balter, Daniel Cimini, Lisa Alleyne, NYC Department of Health and Mental Hygiene; David Lipsky, NYCDEP

NYC's Waterborne Disease Risk Assessment Program (WDRAP) is an inter-agency program involving the NYCDEP and the NYCDOH. Initiated in 1993, WDRAP is a public health monitoring program designed to provide assurance of the microbial safety of the City's water supply. Its implementation is a requirement under NYC's FAD. This presentation will provide an overview of program components and key findings. Finally, integration of data into NYC's new spatial dashboard will be described.

2:00 pm–2:30 pm

HABs in NYS: Toxin Occurrence, Suspected Health Impacts, and Development of Response Protocols*

James Hyde, Erin DeConno, Eric Wiegert, Ellen Braun-Howland, NYS DOH; Scott Kishbaugh, NYS DEC

A CDC-funded grant was used to document harmful algae blooms (HABs) and associated illness, improve laboratory capabilities, perform outreach, and developed response protocols. Elevated microcystins were common in near-shore blooms but rare in open waters. Recreational exposures were responsible for all reported HAB illness, and beaches are now closed during HABs. Limited drinking water sampling detected microcystins in raw water but not finished. The draft response protocol addresses toxins and other treatment concerns.

2:30 pm–3:00 pm

Networking Break in Exhibit Hall

3:00 pm–3:30 pm

Freshwater Bryozoan Pectinatella Magnifica and Other Potential Biofouling Organisms in New York City's Kensico Reservoir

Kerri Alderisio, NYC DEP, Division of Science and Research

Bryozoans are organisms that thrive in relatively clean standing or flowing water, and feed on select small organisms. Colonies attach to submerged logs and rocks, and some species can also produce floating colonies. In the fall of 2012, NYC experienced Hurricane Sandy and began operation of its UV Treatment Plant downstream of Kensico Reservoir. Ultimately, the gelatinous material from the bryozoan colonies was observed within the Kensico intake facility and piping at the UV plant.

3:30 pm–4:00 pm

Rapid Response to a Swallow-Wort Infestation at the Pepacton Reservoir

Meredith Taylor, Barbara Diveler *(Retired)*, NYC DEP; Chris Zimmerman, The Nature Conservancy; Amanda Czechowski, Formerly with NYC DEP/ TNC

The Nature Conservancy and New York City DEP initiated a rapid response effort for an infestation of swallow-wort *(Cynanchum louiseae, C. rossicum)* discovered in 2005 near the Pepacton Reservoir in Margaretville, NY. Despite achieving a very high success rate with control efforts, total eradication was not achieved after five seasons of treatment (2007–2011). This presentation will address what is required to mount a successful rapid response to a terrestrial plant species.

AFTERNOON

SESSION V: Ultraviolet Disinfection *(Location: Pershing)*

Contact Hours: 2.0 PE* 0.5 Wastewater+ Water Hours Pending

1:30 pm–2:00 pm

Don't We All Need Validation? An Overview of UV Disinfection Testing Requirements*+

Matthew Valade, Hazen and Sawyer

Validation of UV equipment is required by the LT2ESWTR. The UV Disinfection Guidance Manual *(USEPA, 2006)* provides guidelines for conducting validations. This paper discusses the various approaches and challenges to performing validation. In addition, three case studies are presented.

2:00 pm–2:30 pm

UV Disinfection for Unfiltered Surface Water Regulatory Compliance*

Kevin Castro, GHD, Inc.

The Village of Skaneateles has a filtration avoidance determination from NYSDOH that previously allowed them to supply drinking water utilizing 3-log inactivation of *giardia* and 4-log inactivation of viruses through chlorination. Due to the LT2ESWTR, the Village was required to install UV disinfection to provide 2-log inactivation of *cryptosporidium*. The Village designed, constructed and commissioned a UV disinfection system for their unfiltered supply at their booster pumping station to meet regulatory requirements.

2:30 pm–3:00 pm | Networking Break in Exhibit Hall

3:00 pm–3:30 pm | **Advances in UV Technology and the Option to Use UV for 4-Log Virus Disinfection During Primary Disinfection of Groundwater***

Scott Bindner, Adam Festger, Terry Keep, Trojan Technologies

Compromised wastewater collection systems and septic systems are driving concerns that groundwater aquifers are increasingly being exposed to pathogens. In response, advances in ultraviolet technology have recently provided drinking water treatment systems relying on groundwater with a safe and economical approach inactivate viruses and enhance primary disinfection. This report discusses benefits of using UV to meet guidelines for groundwater disinfection and details currently active sites where UV is installed for 4-log (99.99%) virus inactivation.

3:30 pm–4:00 pm | **Commissioning the World's Largest UV Disinfection Facility– Overcoming Challenges Through Cooperation***

William Nylic III, Gary Kroll, Brian Kearney, CDM Smith; George Schmitt, Jasmin Rivera, NYC Department of Environmental Protection, Bureau of Engineering Design and Construction; Richard Fahey, Hazen and Sawyer

The New York City Department of Environmental Protection (NYCDEP) is constructing the world's largest ultraviolet (UV) light disinfection facility to serve more than nine million people within the city and in nearby upstate communities. This presentation will feature of the UV disinfection project, as well as challenges, focusing on the startup and operations. The plant's 56 UV units are the largest ever made and a special test facility was built to enable the 60 million gallon-per-day capacity UV units to be validated prior to bidding. The presentation will also provide an update on the construction progress and startup plans for placing the U.S. $1.6 billion UV disinfection facility into full-scale operation. Additionally, the role of the designer in the third party CM position will be addressed.

AFTERNOON

SESSION VI: Planning and Permitting *(Location: Bradley South)*

Contact Hours: 1.5 Wastewater+ Water Hours Pending

1:30 pm–2:00 pm | **How Will the Integrated Planning Approach Affect Your Long Term Control Plan?+**

Vijesh Karatt Vellatt, Rebecca Schaefer, Greeley and Hansen

In October of 2011 the US EPA issued a memo acknowledging the challenge that municipalities face to fully consider all water quality obligations, including wastewater, storm water and other water quality improvement needs, together holistically. The purpose of the memo was to introduce the concept of 'integrated planning'. An integrated plan may impact: the financial capability assessment, the prioritization of projects and the types of projects used to improve water quality; and implementation schedule duration. The presentation will focus on the next steps for a municipality to consider before embarking on the integrated planning approach.

2:00 pm–2:30 pm | **Life-Cycle Project Management: EIS and Permit Integration+**

Jennifer Farmwald, NYC Department of Environmental Protection

Preparing an environmental assessment is a complex and nuanced exercise in timing and coordination. By integrating the environmental assessment and permits into life-cycle project management, risk and cost can be managed more effectively. The Department of Environmental Protection's plan to repair the Delaware Aqueduct is a case study in how effective coordination can facilitate a smooth transition from design through procurement and to construction.

2:30 pm–3:00 pm | Networking Break in Exhibit Hall

3:00 pm–3:30 pm | **Incorporating Affordability in Water and Wastewater Utility Planning+**

Sangamithra Iyer, NYC Department of Environmental Protection

This presentation will explore how affordability concerns can be incorporated into integrated planning for water supply and wastewater utilities. It will explore the challenges and opportunities utilities face to meet clean and drinking water goals while operating on limited resources, and the importance examining the environmental, social and financial benefits of all water-related obligations to develop priorities and schedules for spending.

3:30 pm–4:00 pm

Westchester County GIS Products and Services for Collaborative Watershed and Land Use Planning
Sam Wear, Westchester County
Westchester County GIS makes available web-based map services which can be readily accessed by government and industry agencies involved in southeastern New York State watershed and water supply programs. Map services represent the next generation of intergovernmental data sharing allowing users to access large geospatial data catalogs with a variety of GIS software packages and viewers.

4:15 pm–5:30 pm — Tour of West Point Campus

4:30 pm–5:30 pm — Exhibitor Reception – Grant Room

5:30 pm–6:30 pm — Rooftop Reception - Zulu Lounge

6:30 pm — Dinner – McArthur Restaurant

DAY 2 Thursday, September 19, 2013

8:00 am — Registration

8:00 am – 9:00 am — Breakfast *(Location: Washington)*

MORNING SESSION VII: Drinking Water Treatment *(Location: Eisenhower)*

Contact Hours: 2.5 PE Water Hours Pending

9:00 am–9:30 am

Effective Use of Filter Pilot Testing and Chlorine Dioxide Demonstration Testing to Optimize Treatment Plant Performance*
John Civardi, Mark Tompeck, Hatch Mott MacDonald; Marc Lucca, Aqua Pennsylvania
The presentation will describe pilot and demonstration testing that was performed at Aqua Pennsylvania's 16 MGD Shenango Water Treatment Plant. Pilot testing of four filter configurations was performed and the results were used to select the optimum filter media. Demonstration testing of chlorine dioxide was performed for a four-month period at the full plant capacity.

9:30 am–10:00 am

Full-Scale Testing of Innovative High Rate Filter Media for Plant Expansion*
Robert Raczko, James Mastrokalos, United Water
In an effort to improve the filter performance and potentially increase the throughput through the existing filters, United Water Matchaponix (UWMX) is conducting a demonstration test by modify two of the six filters at its water treatment plant to evaluate two new media configurations: Filtralite media are an expanded clay that has a higher surface area for particle capture and a larger anthracite/sand media than is currently in place.

10:00 am–10:30 am — Networking Break in Exhibit Hall

10:30 am–11:00 am

Air Bubble Column Dynamics in Water and Wastewater Treatment Process– A Review of Recent Advances in CFD Application*
Sean Zhang, Julie Herzner, Bill Becker, Hazen and Sawyer, P.C.
Review of advances of CFD applications in water and wastewater treatment processes involving air-bubble column such as aerated grit setting tanks, activated sludge tanks, ozone contactors and dissolved air floatation (DAF) tanks. With the knowledge and experiences we have accumulated and lessons learned from other industries, we are steps closer to use CFD model as design and optimize tools.

11:00 am–11:30 am

Volute Press Application on Water Treatment Plant Residuals*
Richard Gell, O'Brien & Gere Engineers
The dewatering of water treatment plant residuals are challenging and often require high energy, labor intensive or large land areas solutions. As an alternative, an innovative volute or screw press technology is evolving that is compact, energy efficient and easily automated. Two manufacturers' products successfully were piloted and the owner ultimate decided to incorporate the volute press into its overall water supply project to reduce its energy and labor footprint.

11:30 am–12:00 pm

Use of a Kinetic Dye Adsorption Test for Predicting Granular Activated Carbon Performance*
Adam Redding, Siemens Industry, Inc.; Michael Greenwald, Fred S. Cannon, Penn State University; Joseph Roccaro, Suffolk County Water Authority
No standardized activated carbon test method exists that quickly determines the relative ease of mass transport into the carbon structure. As such, end users cannot readily specify an activated carbon with both the adsorption capacity and mass transport ability that meets the demands of their application. To this end, a simple and inexpensive kinetic dye test method has been developed which provides the relative Intraparticle Diffusion Constant, or "Dye Number" for an activated carbon.

MORNING

SESSION VIII:
Water Quality in the Watershed and Emerging Contaminants *(Location: Washington)*

Contact Hours: 1.0 PE Water Hours Pending

9:00 am–9:30 am

Ashokan Reservoir Turbidity: 1987–2012
James Mayfield
A review of turbidity data from the last 25 years in the Ashokan watershed will be presented. During this time period, several large runoff events led to extended periods of elevated turbidities. In addition to looking at the impacts and duration of these events, turbidity data from DEP's fixed-frequency sampling program will be examined for trends. Finally, more recent data from DEP's robotic monitoring system will be presented and compared to fixed-frequency turbidity data.

9:30 am–10:00 am

Land Acquisition: Quality and Quantity Considerations
Dave Tobias, NYC Department of Environmental Protection
As more land is acquired in the watershed, DEP's land acquisition strategy changes in response to best forecasts about how to avoid such future degradation. Several factors inform DEP's evolving strategy, including: changes in levels of protected land within sub-basins, local zoning changes, fluctuating real estate markets, landowner perceptions and responses, and acquisition and management costs. This presentation offers an inside view of how LAP acquisition strategies evolve in response to such forces.

10:00 am–10:30 am

Networking Break in Exhibit Hall

10:30 am–11:00 am

Full Scale and Pilot Scale Evaluation of Endocrine Disrupting Compounds Removal through WTP Processes *
Robert Raczko, John E. Dyksen, United Water
United Water completed two projects to evaluate the removal of Endocrine Disrupting Compounds (EDCs) through surface water treatment plants:

- Water RF Project 4221: Removal of Unregulated Organic Chemicals in Full-Scale Water Treatment Processes
- A Suez Environment R+I Alliance sponsored project: Removal of Spiked Concentrations of EDCs through the Haworth Pilot Plant

The results are very promising, indicating significant removal of EDCs through preozonation, intermediate ozonation, UV/Peroxide and virgin GAC.

Photo by Amanda Bauner

11:00 am–11:30 am

Innovative Strategies for Removing Emerging Contaminants for Indirect Potable Water Reuse–Oak Bluffs, MA Case Study*

Marc Drainville, GHD Inc.

Due to the location of one of its effluent disposal sites being in a Zone II water protection area, the Oak Bluffs WWTP is undertaking an evaluation of treatment technologies to meet a 3 mg/L total organic carbon (TOC) effluent limit. This presentation will focus on bench testing of Actiflo® by Kreuger, MIEX® by Orica and Ferrate by Ferrate Treatment Technologies (FTT) as a pre-treatment coagulation step to reduce TOC levels before final treatment.

11:30 am–12:00 pm

Treatment of Emerging Environmental Contaminants in Water

Terry Keep, Trojan Technologies; Adam Festger, Market Manager Drinking Water and ECT

A wide variety of environmental contaminants exist at trace concentrations in streams, lakes, rivers and groundwater throughout the world. These contaminants include industrial byproducts, fuel additives, pesticides and pharmaceuticals. Many of these chemicals have both carcinogenic and endocrine-disrupting effects at extremely low concentrations. UV oxidation is a destructive treatment technology that breaks up environmental contaminants versus transfer technologies from one medium to another. This presentation will review some of the installations in the United States that presently make use of this technology to treat contaminants in water.

MORNING

SESSION IX: Extreme Weather Events *(Location: Pershing)*

Contact Hours: 1.0 PE Water Hours Pending

9:00 am–9:30 am

Hydrological Impact of Hurricane Irene and Tropical Storm Lee in Historical Context: Is the Frequency and Magnitude of Extreme Hydrological Events Changing in Southern New York State?

Adao Matonse, City University of New York Institute for Sustainable Cities; Allan Frei, City University of New York, Institute for Sustainable Cities, Hunter College; David Laounsbury, Donald C. Pierson, NYC Department of Environmental Protection, Bureau of Water Supply

Hurricane Irene and Tropical Storm Lee caused unprecedented flooding and significant material damage across the Catskill Mountains and Hudson River Valley in southern NYS. We analyze (i) these events in historical context; and (ii) trends in frequency and magnitude of extreme events across the region. Despite a spatially heterogeneous impact, each event was among the most extreme on record, and the frequency of extreme hydrologic events has been increasing during the last two decades.

9:30 am–10:00 am

Using Historical Data to Assess Potential Fecal Coliform Contribution During Storms at Kensico Reservoir: A Case Study

Christian Pace, Kerri A. Alderisio, NYC Department of Environmental Protection

During major storms it is believed Kensico's watershed likely provides enough fecal coliform bacteria (FC) to increase concentrations at the reservoir effluents. Tropical Storms Irene and Lee brought more than a total of 13 inches of rain to the Kensico watershed. Stream samples were not able to be collected during peak storm flow. This analysis adds historical FC data to supplement information collected from August to October 2011 to create a mass balance estimate for this period.

10:00 am–10:30 am

Networking Break in Exhibit Hall

10:30 am–11:00 am

Recent Storm Activity and its Effect on Turbidity Levels in Neversink Reservoir *

Richard Van Dreason, New York City, Department of Environmental Protection

Since October 1, 2010, several large rain events, including Tropical Storm Irene in late August 2011, have resulted in damage to stream banks within the Neversink watershed, creating locations of active erosion. In this presentation, we will evaluate the effect of recent storms by examining temporal and seasonal trends of turbidity, stream flow and rainfall in the Neversink basin and by comparing recovery rates of past and recent storms.

11:00 am–11:30 am

Green Stormwater Infrastructure Design: Lessons Learned in Philadelphia*

Stephen Maakestad, Hatch Mott MacDonald

The Philadelphia Water Department's Long Term Control Plan focuses on implementing green stormwater infrastructure practices in order to reduce combined sewer overflows. The design and construction of these projects has been a learning experience and development of the program has provided opportunities for innovative solutions to stormwater management. A summary of the program and several case studies are discussed as well as lessons learned from each.

11:30 am–12:00 pm

Extreme Events in the Major Rivers of New York State

Nicholas Rossi, Richard Palmer, University of Massachusetts, Amherst

The expected increase in climate variability in the Northeastern United States poses a number of challenges for water managers. This study aims to alleviate these challenges for the New York City water supply system by focusing on how the major rivers in the system have reacted to past extreme weather events. Creating a taxonomy of the effects caused by different weather regimes can be combined with forecasts to help prepare for a wide variety of possible climate scenarios.

MORNING

SESSION X:
Water Quality Monitoring and Modeling *(Location: Bradley South)*

Contact Hours: 2.0 PE* Water Hours Pending

9:00 am–9:30 am

Water Quality Modeling Used to Inform Operational Decisions for the NYC Water Supply: A Ten Year Retrospective*

Mark Zion, Donald C. Pierson, Elliot M. Schneiderman, NYC Department of Environmental Protection; Adao Matonse, City University of New York, Institute for Sustainable Cities

During periods of elevated turbidity in the Catskill System portion of the New York City Water Supply, daily decisions are carefully taken to optimize system operations for turbidity control, while ensuring adequate water storage levels within the entire water supply system. A combination of watershed, reservoir water quality and water system simulation models are used to evaluate alternative operational scenarios. This presentation describes the different types of model simulations which help to inform system operation decisions.

9:30 am–10:00 am

Advanced Techniques for Monitoring NOM and Controlling DBPs*

Ben Wright, Bill Becker, Hazen and Sawyer, P.C.; Dave Reckhow, University of Massachusetts; Steve Schindler, NYC Department of Environmental Protection

In order to improve the ability of utilities to target treatment processes or management strategies to minimize costs of compliance, we are pursuing a project to analyze the causal structure of NOM as it relates to DBP formation. This presentation will detail laboratory and field investigations being conducted to explore how NOM, turbidity, and algal growth depend on temperature and concentration loadings.

10:00 am–10:30 am

Networking Break in Exhibit Hall

10:30 am–11:00 am

An Enhanced Hydro-ecological Model (RHESSys) to Explore Climate Change Interactions Between Precipitation Patterns, Topography and Forests in the New York City Water Supply Watershed*

Antoine Randolph, Hunter College, City University New York; NYC Environmental Protection, Bureau of Water Supply; Larry Band PhD, UNC Chapel Hill; Christina Tague PhD, UC Santa Barbara; Elliot Schneiderman PhD, NYC Environmental Protection, Bureau of Water Supply

This presentation provides an overview of enhancements to an existing hydro-ecological model (RHESSys) that are designed to expand the model's ability to downscale and investigate the potential effects of global climate change scenarios on individual catchments, hillslopes and topographic patches. In particular, this version of RHESSys emphasizes modeling changes in forest structure, composition and spatial distribution and changes in surface water budget.

11:00 am–11:30 am

Ice Cover in New York City Drinking Water Reservoirs: Modeling Simulations and Observations*
Nihar Samal, Institute for Sustainable Cities/Hunter College of City University of New York;
Donald C. Pierson, NYC Department of Environmental Protection; Klaus D. Joehnk, CSIRO Land and Water; Mark S. Zion, NYCDEP
An ice model is applied to New York City Reservoirs and nearby lakes with long ice cover records. The model was tested by comparing simulated ice cover to eight years of observed ice-on and off data. These eight years of observed data are compared to 163 years Otsego Lake ice phenology, when translated to hindcast reservoir's ice conditions, can provide a powerful, integrative description of long-term winter and spring time climatic conditions for the region.

11:30 am–12:00 pm

Snowpack Monitoring in the New York City Water Supply Region: Past, Present, and Future
James H. Porter, Glenn D. Horton, NYC Department of Environmental, Bureau of Water Supply
Management of the NYC water supply system requires data on the amount of snow water stored in the reservoir watersheds. This talk will focus on current and potential future methods used by the NYCDEP to monitor snowpack in the water supply region. Solid-state snow pillows, non-contact gamma sensors on terrestrial and aerial platforms, and space-based measurements and modeling are some of the tools that will be described.

12:00 pm–1:30 pm

Lunch, McArthur Restaurant

AFTERNOON

SESSION XI: Iron and Manganese Control/Planning and Permitting *(Location: Eisenhower)*

Contact Hours: 1.0 PE 0.5 Wastewater+ Water Hours Pending

1:30 pm–2:00 pm

Orange County, NY Water Supply Development and NYSDOS Grant Funding*
Ginger Modafferi, Michael Principe, HDR Engineering, Inc.;
Peter Hammond, David Church, Orange County Water Authority
This project included preliminary testing of the Dwaar-Kill well field and the development of a conceptual design of a water supply, treatment and conveyance system, which included a review of treatment (for iron and manganese removal) and disposal options and a constructability and permitting evaluation of the two mile-long routing to the distribution system. This project was funded in part by a NYSDOS Shared Municipal Service Incentive Grant and is awaiting approval of NYSDOS Local Government Efficiency Grant to fund the remaining engineering services.

2:00 pm–2:30 pm

Use of Calcite Beds for Iron and Manganese Removal*
Tim Bradley, Martine Poffet, Jochen Kallenberg, Omya
The use of calcite contactors for the removal of iron and manganese. Calcite contactors are used extensively throughout Europe for the removal of iron and manganese. This presentation will describe the system configuration which has been successfully utilized for decades. A case will be made that calcite contactors offer a cost effective means for the treatment of low pH waters containing iron and manganese.

2:30 pm–3:00 pm

Networking Break in Exhibit Hall

3:00 pm–3:30 pm

A Tale of Three WWTPs: **How the City, Local Government and the Private Sector Worked Together to Protect the Environment+**
Robert Ravallo, NYC Department of Environmental Protection
This presentation will cover how a plan was developed and implemented to consolidate three possible WWTPs into one, to eliminate failing septic systems and to benefit the local business community served by these septic systems.

3:30 pm–4:00 pm

Wetland Mitigation for the Route 28A Realignment Project in Ulster County, NY: Results from Three Years of Post-construction Monitoring
Laurie Machung, Frank Parisio, Maria Tupper-Goebel, NYC Department of Environmental Protection
The DEP has completed three years of post-construction monitoring of a wetland creation project designed to mitigate impacts of the Route 28A realignment in Ulster County. DEP has evaluated vegetation, soils, and hydrologic characteristics to determine if suitable wetland habitat has been established, and to actively manage any noted deficiencies. This project has provided DEP with important information on designing, monitoring, and managing wetland mitigation areas that will undoubtedly benefit future projects.

AFTERNOON

SESSION XII: Regulations *(Location: Washington)*

Contact Hours: 2.0 PE* 1.0 Wastewater+ Water Hours Pending

1:30 pm–2:00 pm

Proposed Nutrient Criteria for Drinking Water Lakes and Reservoirs*+

Clifford Callinan, New York State Department of Environmental Conservation;
John Hassett, SUNY ESF; Jim Hyde, NY State Department of Health;
Ron Entringer, NY State Department of Environmental Conservation

Nutrient enrichment of lakes and reservoirs used for potable water supply (PWS) can have adverse effects ranging from operational problems to increases in health-related risks such as disinfection byproducts (DBPs), cyanotoxins and arsenic. New Yorl state is developing numeric nutrient criteria (NNC) for the protection of source waters based on relationships between total phosphorus (TP), algal biomass, dissolved organic carbon (DOC) and trihalomethanes (THMs), and then establishing NNC that target regulatory endpoints for total THMs.

2:00 pm–2:30 pm

NYSDEC Programmatic and Regulatory Implementation of Numeric Nutrient Criteria for Drinking Water*

Ronald Entringer, Clifford Callinan, NY State Department of Environmental Conservation

The development of Numeric Nutrient Criteria protective of source waters used for public water supply will affect NYSDEC water quality management programs. NYSDEC will use the criteria to implement regulatory and non-regulatory programs, including water quality-based effluent limits in SPDES permits protective of the drinking water use, and as targets for watershed plans and Total Maximum Daily Loads to restore waters to the drinking water designated use.

2:30 pm–3:00 pm

Networking Break in Exhibit Hall

3:00 pm–3:30 pm

Total Coliform Issues and Complying with the Revised Total Coliform Rule with Effective Water Well Rehabilitation and Maintenance*

Neil Mansuy, Subsurface Technologies, Inc.

This presentation will describe how to solve coliform failures on wells.

3:30 pm–4:00 pm

Numeric Endpoints and Adaptive Management: New York's First Stream Nutrient TMDL*+

Steve Gladding, Brian Duffy, NY State Department of Environmental Conservation;
Tammo Steenhuis, Steve Pacenka, Cornell University, Biological and Environmental Engineering

Many states have only narrative nutrient standards for streams but the development of nutrient TMDLs requires numeric endpoints. To determine a numeric endpoint, a multiple regression model using data from western New York established a relationship between macroinvertebrate impairment, phosphorus concentrations, riparian width and fine sediments. The TMDL, New York's first stream nutrient TMDL, outlines an implementation plan that incorporates adaptive management to include a holistic, more cost effective approach to stream management than phosphorus reductions alone.

AFTERNOON

SESSION XIII: Wastewater Treatment and Infrastructure *(Location: Pershing)*

Contact Hours: 1.0 PE 2.0 Wastewater+ Water Hours Pending

1:30 pm–2:00 pm

Investigation of Alternative On-Site Sewage Disposal Systems Capable of Meeting Effluent Total Nitrogen Requirement of 10 mg/L or Less*+

Eliora Bujari, H2M Group

A thorough investigation of alternative on-site treatment systems (AOSSDS) was undertaken to evaluate and select technologies that can consistently achieve an effluent total nitrogen concentration of 10 mg/L or less as required by Suffolk County Department of Health Services. The systems selected for further consideration include (1) BioMicrobicsMicroFAST® system, (2) Nitrex™ system, (3) Aqua Points Bioclere® system, and (4) WesTechs STM-Aerotor" system.

2:00 pm–2:30 pm

Simplifying Onsite Wastewater Treatment Using Containerized Membrane Bioreactors (MBR)*+

Fraser Kent, Michael Lee, H2O Innovation

Since Membrane Bioreactors reduce plant footprint, provide extremely high effluent quality and can now be designed with minimal operator involvement, this technology is very well suited for onsite/decentralized wastewater treatment. In this presentation, an MBR system is presented that is designed to be contained within a standard shipping container. Low cost, simple design, minimal operator involvement and superior effluent quality make this and ideal candidate for decentralized wastewater treatment applications.

2:30 pm–3:00 pm | Networking Break in Exhibit Hall

3:00 pm–3:30 pm | **Impact of Cold Weather Operations on Nitrogen Removal Performance for Deep Bed Denitrification Filters in the Northeast United States+**
Gary Lohse, Ken Wineberg, Severn Trent Services
Deep bed down flow filters have proven reliable as tertiary treatment to remove suspended solids while achieving lower effluent nitrogen levels. Most of these facilities are operating on the East Coast of the United States where wastewater temperatures range from 20 degrees C in the Southeast to 8 degrees C in the Northeast during cold weather. Two of the Northeastern facilities are operating in year round denitrification mode with excellent performance during cold weather temperatures.

3:30 pm–4:00 | **Cured-In Place Pipe Rehabilitation for Water Transmission Mains–Roses and Thorns* +**
Paul Mourt, Hatch Mott MacDonald
An emerging rehabilitation technique for water transmission mains is cured-in-place pipe (CIPP) lining. CIPP is an established technique for the structural rehabilitation of sewers but has not been broadly utilized for the rehabilitation of pressurized pipelines. Using two recently completed projects, this paper will examine the reasons for selecting CIPP rehabilitation; differences between CIPP rehabilitation for sewers and water transmission mains; the items which affect thickness calculations; and a review of the installation methodology.

AFTERNOON | **SESSION XIV: Supply Protection** *(Location: Bradley South)*
Contact Hours: 2.0 PE* Water Hours Pending

1:30 pm–2:00 pm | **Water for the Future Supply Augmentation Need Planning***
Mark Page Jr., New York City Department of Environmental Protection, Bureau of Environmental Planning and Analysis
The New York City Department of Environmental Protection, Bureau of Environmental Planning and Analysis will present on the decision making and modeling that went into determining the augmentation need for New York City during the shutdown of the Rondout West Branch section of the Delaware Aqueduct to repair known leaks in the tunnel.

2:00pm–2:30 pm | **Linking Air Quality Protection to Watershed Protection***
Lorraine Farrell, NYC Department of Environmental Protection
The New York City Department of Environmental Protection (DEP) is tasked with protecting the approximately 1,900-square-mile watershed area to ensure delivery of high quality drinking water. Protecting and enhancing air quality and understanding its relationship on watershed management is fundamental to effectively protect the water supply system and its natural resources. This presentation will focus on air quality concerns and their potential effect on the watershed, the environmental assessment process, and additional tools and resources available for evaluating air quality impacts on the watershed.

2:30 pm–3:00 pm | Networking Break in Exhibit Hall

3:00 pm–3:30 pm | **Sediment Quality Assessment of New York Watersheds***
Stephen Lewandowski, United States Military Academy
Sediments represent an important and dynamic compartment in aquatic ecosystems due to their ability to serve as a sink of many chemical contaminants. However, there is currently no single recommended sediment regulatory framework available. This study reviews existing sediment quality guideline (SQG) approaches for their application to watershed protection and examines US EPA National Sediment Inventory (NSI) data from the Catskill/Delaware and Croton watersheds. Key findings from the NSI analysis will be presented.

3:30pm–4:00 pm | **Major Changes in the Phase I ESA Standard: Implications for Watershed Protection?***
Stuart Spiegel, O'Brien & Gere Engineers
The ASTM *Standard Practice for Environmental Assessments* is a tool to evaluate the environmental quality of properties for watershed protection. New York City has long had a major program for the review and acquisition of properties in its watershed. The standard has undergone a significant revision, being issued in 2013, which will alter the long-understood definition of "recognized environmental condition". These changes, which will cause uncertainty on the part of users and practitioners alike, will be presented.

4:30 pm | Meeting Adjourns

Watershed Science and Technical Conference – Exhibition

September 18–19, 2013 – 2-Day Exhibition

New online exhibit registration expected to go "live" on August 5 at 10:00 am.

A limited number of exhibit spaces are available at the Thayer Hotel.
Six-foot tabletop cost is $550 (includes 1 registration). For more information,
contact Trina Carman at (315) 455-2614.

Space Is Limited!

Notes: Only 6-foot tabletops allowed.
A booth cannot be cancelled to relocate to a new space.

Conference sponsorships are also available.

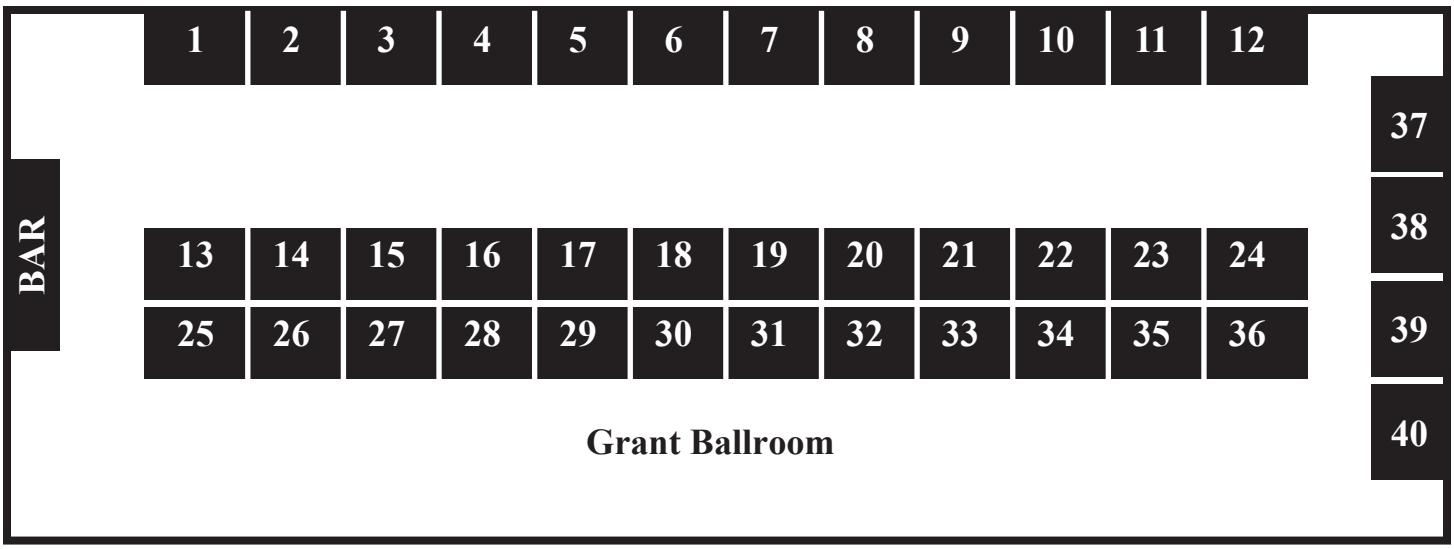
For more information, contact Trina Carman at (315) 455-2614.

Exhibit Hours–

Wednesday: 8:30 am–4:00 pm

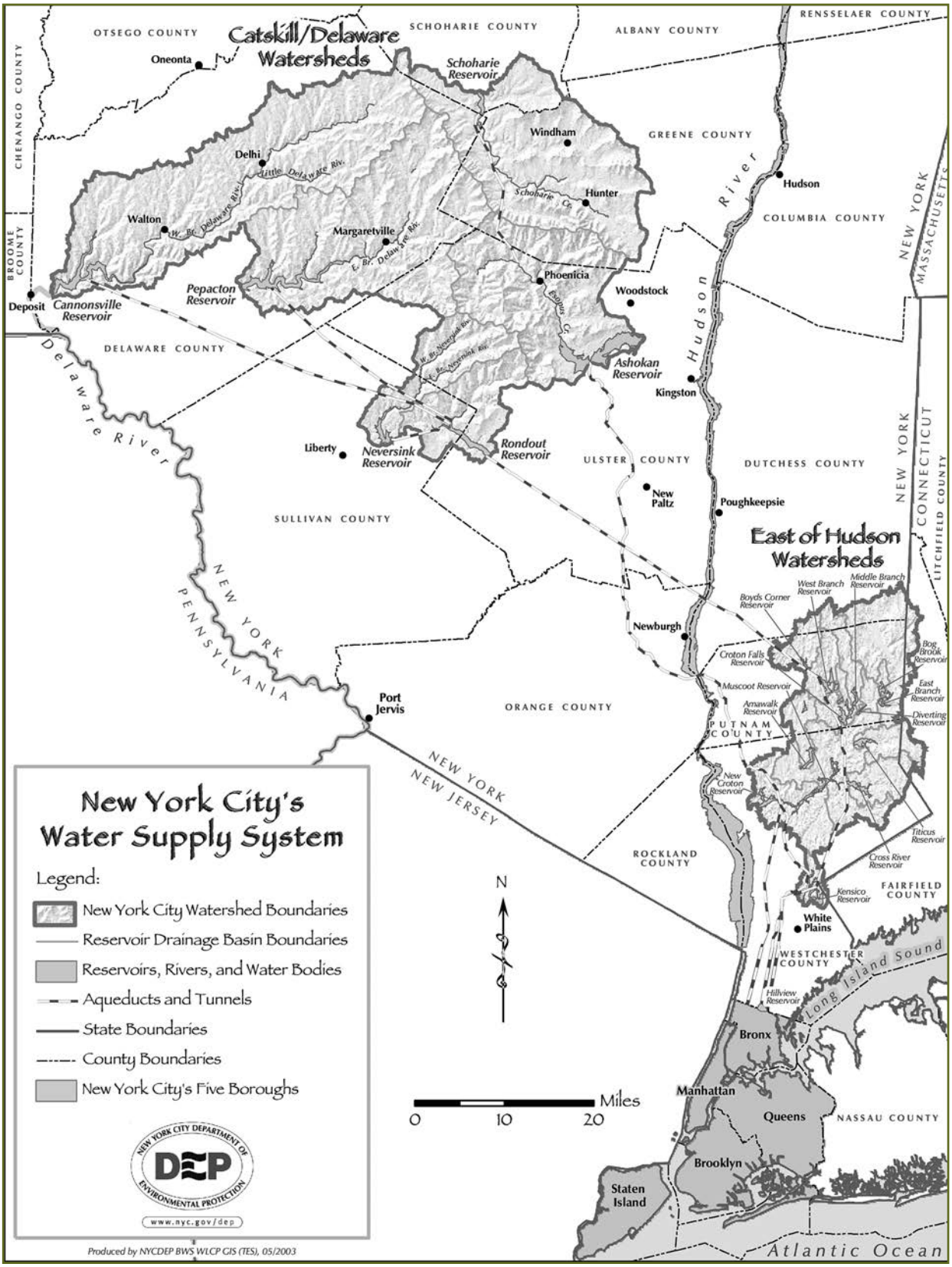
Thursday: 8:30 am–3:00 pm

Exhibitors' Floor Plan



There is no electrical capability for Booths 13–24 and 25–36.

New York City's Water Supply System Map



"Watershed – An area of land, a bounded hydrologic system; within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community."

– John Wesley Powell

Hotel Information

Thayer Hotel at West Point
674 Thayer Rd., West Point, NY 10996
800-247-5047 or 845-446-4731
Fax 845-446-0338

The Thayer Hotel at West Point, part of American history since 1926, offers a truly unique venue for the Watershed/Tifft Symposium. Named for Colonel Sylvanious Thayer, Superintendent of the Military Academy from 1817 to 1833, the Thayer Hotel shares its grounds with the makers of America's top military leaders.

Listed on the National Registry of Historic Places, Thayer Hotel boasts spectacular views of the Hudson River and surrounding highlands.

A block of rooms has been reserved at the Thayer Hotel for the Watershed/Tifft Symposium. To make your reservation, please contact the hotel directly. Room rate is $129 Single/Double.

Please reference Group Code: **Watershed**

Special Note: Please be prepared with proper identification (Driver's License) and conference information as you enter the military campus.

Wednesday Special Events

4:15 pm–5:30 pm

Tour of United States Military Academy at West Point
Cost: $25 (Limited Seating)

Enjoy a fascinating bus tour of the USMA campus with interesting contemporary and historical stops. The tour starts at the Visitors Information Center and stops at the Cadet Chapel which houses the world's largest church pipe organ as well as beautiful stained glass windows. Other stops include Trophy Point and the parade field where you will see monuments (Battle Monument) and statues of Patton, Eisenhower, MacArthur, Thayer, and Washington – to drop a few names!

Our guide will talk about cadet life and the history of the Academy including West Point's importance in the Revolutionary War and The Great Chain. The final stop will be a cemetery, stopping at grave sites of some of the more famous graduates (Custer, Marcus, White, Goethals and Anderson).

4:30 pm–5:30 pm

Exhibitor Reception, *Grant Room*

5:30 pm–6:30 pm

Rooftop Reception at the Thayer Hotel overlooking the scenic Hudson River, *Zulu Lounge*
Enjoy refreshments while networking.

Evaluation Criteria

The Watershed Protection and Partnership Council's Technical Program Committee reviewed submitted abstracts for quality, technical merit, interdisciplinary utility, as well as temporal and substantive relevance. All papers presented will be included in the Compendium of Abstracts that will be published for distribution at the conference and to interested parties.

2013 NYC Watershed/Tifft Science and Technical Symposium Registration Form

Register online at http://tinyurl.com/2013Watershed or go to www.nywea.org.

September 18–19, 2013 • Thayer Hotel , West Point, NY

Instructions

Complete all portions of this form. Print or type information.

Name _____

Title _____

Employer _____

Address _____

City/State/Zip _____

Phone _____

E-mail _____

❑ Check here if you are a speaker*.

Day: _____

Speaker registration is waived ***on the day*** of presentation.

Payment

❑ Cash ❑ Check ❑ Voucher Received by _____

Credit Card: ❑ Visa ❑ MC ❑ AMEX

Card # _____ Exp. Date _____ V-code _____

Signature _____

Make all checks payable to ***NYWEA***

525 Plum Street, Suite 102, Syracuse, NY 13204

Please complete all vouchers before submitting for payment.
Registration form can also be faxed to: 315-422-3851,
or emailed to mah@nywea.org.

Complete and mail or fax to NYWEA

Complete and mail or fax to NYWEA

Watershed/Tifft Science and Technical Symposium	Registration Costs			Enter Fees
	Student**	**Member**	**Non-Member**	
Two Days – Wednesday & Thursday, September 18–19, 2013	$50.00	$225.00	$300.00	
One Day – Wednesday, September 18, 2013	$25.00	$175.00	$250.00	
One Day – Thursday, September 19, 2013	$25.00	$175.00	$250.00	
Tour of West Point	$25.00			
Additional Exhibit Booth Representative***		$175	$250	
❑ Yes! I will attend Wednesday Night Dinner				
			Total Registration	**$**

Two Days (Wednesday & Thursday)
One Day (Wednesday)
One Day (Thursday)
} Includes: All meals as listed in the Technical Program

*Speakers = 1 person/day } Registration includes lunch.
Dinner tickets may be purchased separately.

**Registration includes lunch.

***Must be with a confirmed Exhibiter.

NYWEA
LEADING THE WAY IN WATER QUALITY MANAGEMENT

New York Section
American Water Works Association

Registrations received after August 30, 2013 will be charged an additional $35 site-registration fee.

Cancellations must be submitted in writing by August 30, 2013. A 20% service fee will apply to all cancellations received before August 30, 2013; no refunds will be made on registration fees or special events after August 30, 2013.

NYSAWWA – Protecting the Public Health by Providing Clean Drinking Water

100th Anniversary Celebration

May 13–15, 2014 at the Hyatt Recency, Rochester, NY

Featuring Keynote Speaker, Michael McGuire, author of
The Chlorine Revolution: Water Disinfection and the Fight to Save Lives

Upcoming NYWEA Meetings

DMR–Electronic Reporting and Proper Completion
September 19, 2013
Lockport, NY

WEFTEC, Chicago, IL
October 7–9, 2013

DMR–Electronic Reporting and Proper Completion
October 17, 2013
Rochester, NY

Portable Pumps–Uses, Sizing and Planning
October 23, 2013, Babylon, NY

DMR–Electronic Reporting and Proper Completion
October 29, 2013
Monticello, NY

Clarifier Optimization and Flow Measurement
November 6, 2013
Rochester, NY
November 7, 2013, Ithaca, NY

DMR–Electronic Reporting and Proper Completion
November 8, 2013, Rexford, NY
November 20, 2013
Babylon, NY

86th Annual Meeting
New York City Marriott Marquis
February 4–6, 2014
(Please note: Tuesday–Thursday dates)

For more details, visit www.nywea.org

Upcoming NYSAWWA Meetings

GIS & Facilities Management
August 21, 2013
Melville, NY

Activated Carbon for Water Treatment
September 10, 2013
Springville, NY

Use of Permanganate and Corrosion Control Chemicals
September 10, 2013
Troy, NY

Use of Permanganate and Corrosion Control Chemicals
September 11, 2013
Canastota, NY

Basic Chemistry for Water Treatment
September 11, 2013
Ogdensburg, NY

Activated Carbon for Water Treatment
September 11, 2013
Binghamton, NY

Fundamentals of Hydraulics
September 11, 2013
Woodbury, NY

Top Ops Boot Camp
September 24, 2013
Troy, NY

For more details, visit www.nysawwa.org