

JOURNAL

OF THE
NEW ENGLAND
WATER
ENVIRONMENT
ASSOCIATION

VOLUME 49 NUMBER 1 | ISSN 1077-3002

Spring 2015



COLLECTION SYSTEMS

The winning combination for sewer overflow mitigation in the Winn's Brook Area

Ownership of pressure sewer systems, a tale of two towns



NEWEA
WORKING FOR WATER QUALITY



Is your waterworks partner still rollin' like it's 1955?

We think 1955 was a great year: it's when **TEAM EJP** was founded! But the needs of water, wastewater and stormwater are a lot more complex today.

That's why we've introduced **Beyond SPECS**, a new approach to ensure that your waterworks partner brings all the elements you need to manage your infrastructure, today and till 2055:

- *Safety Certifications*
- *Smarts about Water*
- *Training for the Future*
- *Delivery Capabilities*
- *Emergency Service*



Call or email us for your **FREE Beyond Specs** package today!

E.J. Prescott
Beyond
SPECS

*The Next Generation of Waterworks
Products & Service*

ejprescott.com/Beyond-Specs

Ask the experts at

TEAM EJP
Pipeline Specialists

1-800-EJP-24HR

ejprescott.com

WATER, WASTEWATER & STORMWATER SOLUTIONS



JOURNAL

OF THE
NEW ENGLAND
WATER
ENVIRONMENT
ASSOCIATION

VOLUME 49 NUMBER 1 | ISSN 1077-3002 SPRING 2015

Contents

EDITORIALS

President's message.....	6
From the editor.....	8

INDUSTRY NEWS

\$1.3 million awarded for community-based projects to improve health of Long Island Sound	16
EPA launches finance center to improve community water infrastructure and resiliency.....	17
Maine pulp mill and Connecticut cardboard manufacturing company settle Clean Water Act violations.....	18
EPA, states, and automotive industry to reduce copper in brake pads.....	18

FEATURES

The winning combination for sewer overflow mitigation in the Winn's Brook Area	22
by Justin Gould and Glenn Clancy	
Ownership of pressure sewer systems, a tale of two towns	30
by Henry Albro with contributions from the towns of Chelmsford and Marion, Mass.	

THIS ISSUE

NEBRA highlights	40
State director reports	44
Student scholarship essays	56

EVENTS

Annual Conference proceedings.....	58
Upcoming meetings & events.....	74

INSIDE NEWEA

Membership information.....	79
-----------------------------	----

On the cover: A storage conduit section installed in Belmont's Winn's Brook sewer network surrounds a GIS project document, an allusion to the analysis, planning, and execution necessary in any successful collection system effort.





The concepts, ideas, procedures and opinions contained in the articles in this publication are those expressed by the various authors who submit the material for publication. The New England Water Environment Association, its executive committee, the editors, the executive director, and administrative staff hereby assume no responsibility for any errors or omissions in the articles as presented in this publication, nor are the concepts, ideas, procedures and opinions in these articles necessarily recommended or endorsed as valid by NEWEA, its executive committee, the editors, the executive director or staff. References to specific products or services do not constitute endorsement of those offerings by NEWEA. The Journal's committee reserves the right to make any editorial changes as deemed necessary for publication of submitted papers.

NEWEA Journal ISSN #1077-3002
Published four times annually by
New England Water Environment
Association, Inc.
This is Volume 49 Number 1
Periodical postage paid at Woburn, MA
01801, and at additional mailing offices

**New England Water Environment
Association, Inc.**
10 Tower Office Park, Suite 601
Woburn, MA 01801-2155
Telephone: 781-939-0908
Fax: 781-939-0907
Email: mail@newea.org
Website: newea.org

Postmaster:
Send address changes to:
NEWEA Journal
10 Tower Office Park, Suite 601
Woburn, MA 01801-2155

Journal Committee Chair & Editor
Helen Gordon
hgordon@woodardcurran.com

Journal Committee
Alan Slater, Alexandra Doody
Charles Tyler, Dan Coughlin
Don St. Marie, James R. Barsanti
Joseph Boccadoro, Mark French
Matthew Hross, Meredith Zona
Michael Sullivan, Susan Landon

Guest Editor
Alexandra Doody
doodyat@cdmsmith.com

Assistant Editor
Thomas J. Heinlein
heinleintj@cdmsmith.com

Graphic Designer
Robert Randazzo
randazzor@verizon.net

Photography Editor
Charles Tyler
charles.tyler@mwra.com

Photo credits:
Frac job in process
(page 19)
Joshua Doubek
Robin with worms
(page 40)
Brocken Inaglori
Bowling
(page 49)
Michael Spring
Annual Conference
(pages 58-71)
Cindy Loo Photography
and Charles Tyler



President
Matthew Formica
Wakefield, MA

President Elect
Raymond L. Willis
Franklin, MA

Vice President
James R. Barsanti
Framingham, MA

Treasurer
Frank E. Occhipinti
Worcester, MA

Secretary
Gerald C. Potamis
Falmouth, MA

Past President
Bradley L. Moore
Bangor, ME

Communications Director
Jennifer K. Lachmayr
Wakefield, MA

**Meeting Management
Director**
Meg C. Tabacsko
Chelsea, MA

WEF Delegates
Howard F. Carter
Saco, ME
Michael J. Wilson
Boston, MA
Daniel P. Bisson
Manchester, NH
Susan J. Sullivan
Lowell, MA

Directors – State
Jay G. Sheehan
Cheshire, CT
Peter J. Goodwin
York, ME
Michael Moreau
Raynham, MA
Frederick J. McNeil
Manchester, NH
Michael L. Spring
Providence, RI
Nathan W. Lavallee
Milton, VT

Directors – Council
Priscilla J. Bloomfield
Orleans, MA
Jonathan E. Kunay
Boston, MA
Virgil J. Lloyd
Manchester, CT

Executive Director
Mary Barry

“THE” 24 HOUR ONE-STOP INDUSTRIAL SERVICE CENTER

CERTIFIED WOMAN
OWNED BUSINESS
ENTERPRISE



**associated
Electro-
Mechanics**

OSHA & DCAM
CERTIFIED

ISO 9001 COMPLIANT

CALL 24 HOURS: 1-800-288-4276

AEM IS A FM APPROVED REPAIR
FACILITY FOR



SUBMERSIBLE PUMPS



FACTORY AUTHORIZED NEW ENGLAND SERVICE CENTER FOR:



**WE REPAIR & REBUILD ALL MAKES & MODELS
OF MOTORS, BLOWERS AND PUMPS**



SERVING NEW ENGLAND SINCE 1976

WWW.AEMSERVICES.COM

185 ROWLAND ST. SPRINGFIELD, MA. 01107 413-781-4276 FAX: 413-788-4471



Join Us

OUR ASSOCIATION WAS ORGANIZED EIGHTY-SIX YEARS AGO in Hartford, Connecticut, on April 23, 1929, with the objectives of advancing the knowledge of design, construction, operation and management of waste treatment works and other water pollution control activities, and encouraging a friendly exchange of information and experience. From 40 charter members, the membership has steadily grown to more than 2,000 today. Membership is divided into the following classes:

Professional Member—shall be any individual involved or interested in water quality including any manager or other officer of a private waste treatment works; any person engaged in the design, construction, financing, operation or supervision of pollution control facilities, or in the sale or manufacture of waste treatment equipment.

Executive Member—shall be an upper level manager interested in water quality and who is interested in receiving an expanded suite of WEF products and services.

Corporate Member—shall be a sewerage board, department or commission; sanitary district; or other body, corporation or organization engaged in the design, consultation, operation or management of water quality systems.

Academic Member—shall be an instructor or professor interested in subjects related to water quality.

Young Professional Member—shall be any individual with five or fewer years of experience in the water quality industry and who is less than 35 years of age.

Professional Wastewater Operations Member (PWO)—shall be any individual who is actively involved on a day-to-day basis with the operation of a wastewater collection, treatment or laboratory facility, or for facilities with a daily flow of <1 million gallons per day. Membership is limited to those actually employed in treatment and collection facilities.

Student Member—shall be a student enrolled for a minimum of six credit hours in an accredited college or university.

WEF Utility Partnership Program (UPP)—NEWEA participates in the WEF Utility Partnership Program (UPP) that supports utilities to join WEF and NEWEA while creating a comprehensive membership package for designated employees. As a UPP a utility can consolidate all members within its organization onto one account and have the flexibility to tailor the appropriate value packages based on the designated employees' needs. Contact WEF for questions & enrollment (703-684-2400 x7213).

New England Water Environment Association | Statement of Ownership, Management and Circulation

Publication TitleThe NEWEA Journal

Publication.....#24559

Issue FrequencyQuarterly (four per year)

Annual Subscription Price.....\$20 (included with membership dues)

Complete Mailing Address, Known Office of Publication,
General Business Office, Editors and Owner
(non profit organization).....NEWEA, 10 Tower Office Park, Suite 601, Woburn, MA 01801

Contact Person/Managing Editor.....Mary Barry, Executive Director; Editor: Helen Gordon

Tax StatusNo change during the preceding 12 months

BECOME A NEWEA MEMBER TODAY

- Complete and mail the membership application form on pages 79–80
- Download a membership application from newea.org by clicking How Do I Join?
- Join online at wef.org by clicking Become a Member

2015 RATES

Professional	\$157.00
Executive	\$338.00
Corporate	\$393.00
Academic	\$156.00
Young Professional	\$67.00
PWO	\$96.00
Dual	\$40.00
Student	\$20.00



Issue date for circulation data below: 08/20/2014			
Publication title:	Extent and nature of circulation:	Average no. copies each issue during preceding 12 months	No. copies of single issue published nearest to filing date
NEWEA Journal	Technical, Educational, Environmental		
Total number of copies		2,500	2,500
Legitimate paid and/or requested distribution	Outside county paid/requested mail subscriptions	0	0
	In-county paid/requested mail subscriptions	2,200	2,000
	Sales through dealers & carriers	8	8
	Requested copies distributed by other mail classes	0	0
Total paid and/or requested circulation		2,208	2,008
Total nonrequested distribution		0	0
Total distribution		2,208	2,008
Copies not distributed		292	492
Total		2,500	2,500
Percent paid and/or requested circulation		100	100

Keep it Green with Aquastore



Small Footprint

Manufacturing at the ISO factory means you won't need to clear the forest to create manufacturing space on site.

Low Cost Site Development

If you're not clearing large spaces, then you're not paying for them either.

Confined Areas

Tight clearance is not a concern with our flexible design.

Sustained Beauty

Save money with no repainting of the interior or exterior EVER, and have the confidence that your tank will look beautiful for years and years and years.



Statewide Aquastore

6010 Drott Drive
East Syracuse, NY 13057

Phone: 315.433.2782

Fax: 315.433.5083

www.besttank.com



Matt Formica
Project Manager
AECOM
Matthew.Formica@aecom.com

President's message

NEWEA begins 2015 in an excellent position to advance our mission “to promote education and collaboration while advancing knowledge, innovation, and sound public policy for the protection of the water environment and our quality of life.” Presented below is a summary of planned events and initiatives to further NEWEA’s mission and to improve NEWEA’s value to our membership.

With great appreciation I acknowledge that all the NEWEA programs and initiatives occur only because of the great amount of planning and coordination by our many dedicated volunteers as well as our first-class office staff. Undoubtedly, the strength of NEWEA is our volunteers. These volunteers come from all walks of the water quality industry; they include operators, regulators, municipal/utility managers, students, engineers, scientists, equipment suppliers, and many others. Their passion for improving the world and the different perspectives they bring to NEWEA have resulted in NEWEA being one of the premier water quality associations in the nation.

This year, in addition to our hallmark spring and annual conferences, we are planning several specialty conferences that will cover industrial wastewater and water reuse, combined sewer overflow and wet weather issues, and residuals and biosolids topics. Also this year, NEWEA’s legislative outreach, including our April congressional breakfast in Washington, D.C., and NEWEA’s support for our affiliated state association legislative events, will build on the successes of the past few years.

A new initiative launched at this January’s Annual Conference is our NEWEA Ambassadors program. Our ambassadors will attend the many NEWEA events throughout the year and will be on hand (identified by large orange ribbons) to engage attendees and to answer questions related to NEWEA, our events, and volunteer opportunities. These ambassadors are all knowledgeable about the association, its benefits, and opportunities, so please approach and engage them to enhance your NEWEA experience.

Also this year, we will be working to improve NEWEA’s certification programs. For decades, our collection systems certification and laboratory practices certification programs have successfully provided a means for professional development for NEWEA members and non-members alike. Maintaining, improving, and potentially expanding these programs is important to NEWEA’s mission. Improvement to the visibility, transparency, prestige, and professional recognition of these programs can increase exposure of NEWEA to the many water quality professions for their benefit and the benefit of the association. Be on the lookout for improvements to these programs later in the year.



The next step is to improve NEWEA’s messaging outside our membership. We need to let those outside know the importance of what we do as water quality professionals.

Over the past two years our communication platforms, including the website, *journal*, and electronic newsletter, all received significant upgrades with great results, and continued improvements are planned. However, with these communication platforms now soundly in place, the next step is to improve NEWEA’s messaging outside our membership. We need to let those outside know the importance of what we do as water quality professionals.

Our water quality industry supports a number of societal pillars, including public health, environmental stewardship, and the economy. Every community is literally built on top of its water and wastewater infrastructure. As an industry, we need to better trumpet our successes and advocate for the value of what we do every day. It is easy to understand how we have not been our best advocates when the infrastructure we support is out of the public eye either underground or in the far corners of our cities and towns. Moreover, we have traditionally served as humble protectors of water quality and public health. The grant-rich days following the Clean Water Act are long gone, and the funding for our work depends more each year on support at the local level. As a result, today’s reality is that we need to reverse our approach of being humble water quality professionals and better market ourselves and our industry to the public.

We need to further the public’s understanding of the value of the water quality industry and the foundation it provides for society. A better understanding of the value of what we do will advance the public’s respect for all water quality professionals as well as its support of water quality infrastructure improvements and funding. NEWEA has been great at telling our membership the compelling stories of what we do. Now is the time to tell these stories to those outside our membership to let them know that what we do is important and why they need to know it. To that end NEWEA will be advancing our public education and public outreach this year through various avenues.

As noted above, we will maintain and enhance our legislative outreach, including the development of a “pitch to the politicians” that will provide them with information and talking points of the value of water quality infrastructure. We plan to increase our outreach to schools through our national award-winning public education materials or “school kits.” These “school kits” provide all the materials needed to give quality interactive presentations about a variety of water quality topics, grouped by grade level, with the purpose of educating children on the importance of water quality and the role it plays in each of our lives. Please join us in this outreach.

We also plan to increase NEWEA’s and the industry’s public and media profile through timely submission of Op-Ed articles to media outlets that have recently reported on water infrastructure issues. When a water infrastructure issue is in the public discussion because of media reports, it is the perfect time to reinforce our message that what we do is important, that people need to know about it, and that we are a good and reliable source of important information.

As a final means to advance public education and public outreach, I ask that each member advocate for the water quality industry. Trumpet the successes of our industry and the importance of what we do with your friends, neighbors, and families. People love to hear and support stories of success. As an industry we have a great many stories to tell and successes to share, illustrating how the water quality industry has made everyone’s lives and communities better.

In closing, I would like to sincerely thank Brad Moore and the other past NEWEA leaders before me for their guidance and the examples they have set at the helm of NEWEA. I am excited and pleased, both professionally and personally, to serve the membership of NEWEA as president, and look forward to a great year of advancing NEWEA as a premier water quality association, both in the region and in the nation.

From the Editor

Two years ago, an issue of *NEWEA Journal* focused on funding for infrastructure, and in it we highlighted a *NEWEA* Position Paper, “Sustainable Funding for Improving Our Nation’s Water Infrastructure.” Since the Spring 2015 *Journal* focuses on collection system infrastructure, I want to bring funding up again. I was struck that in March there finally was more public focus on failing infrastructure (not just roads and bridges) and the potential impacts it can have to our country’s economy, way of life, and, dare I say, health. It is time for our profession to go viral, and I applaud John Oliver and others for bringing this important issue to the forefront of the public’s attention, albeit in sometimes risqué ways. I believe our industry is challenged by the mere fact the water infrastructure includes: water, wastewater, reuse water and stormwater. There is strength in numbers and it is important that we partner with our sister entities (AWWA, WEF and others) to present one combined message to the public and state and federal representatives around the importance of infrastructure and the true cost of the water cycle. Ultimately, water is a finite resource that is truly reused in our environment, and it is imperative that we begin to speak consistently about good stewardship and send the important message of maintaining the basic infrastructure that has made the U.S. a global leader. I can remember the days of the Boston Harbor cleanup, and the many benefits that came from it. And the onset of basic sanitation not so long ago significantly improved public health and boosted the economy. So blog and twitter away, and raise awareness of the importance of what we do.

To this end, one of our most important events in raising awareness of our industry’s issues is just around the corner. *NEWEA*’s Congressional Breakfast in Washington D.C., will take place on April 14 and 15 (see details on page 74). We in the water industry should be very concerned about the congressional proposals to cap or eliminate the tax exemption on municipal bonds. Over the past 10 years, state and local governments have financed more than \$1.6 trillion in infrastructure using municipal bonds. According to the Congressional Budget Office, state and local governments supply approximately 75 percent of public funding for transportation and water infrastructure. If this proposal is successful, it will certainly affect the availability of funds. If you cannot attend, please reach out to your state and federal representatives to let them know your thoughts.



Helen T. Gordon
P.E., CTAM, BCEE
Senior Vice President
Woodard & Curran
hgordon@woodardcurran.com

In our focus on collection systems for this issue of the *Journal*, the first feature article focuses on sanitary sewer overflows and the impact to customers as sewage backs up into their homes. The Winn’s Brook Area project in Belmont, Mass., involved communication between two communities and the Massachusetts Water Resources Authority to ensure that unintended consequences of a collection system upgrade in one community would not negatively affect another. It is refreshing how they shared data on the systems to avoid this situation. The paper outlines the approach the community took to solve these long-term issues. The result is a winning combination of diverting flow through a storage conduit along with new sewers and diversion structures to redirect flow to an off-line pump station.

The second feature delves into the controversy of ownership of grinder pumps in a pressure sewer system and provides examples of varying types of ownership and how they affect the operations of each community. The author shares statistical information to show the impact of operations and management control over grinder pump systems.

Also in this issue we cover this year’s Annual Conference. I thank everyone who braved the blizzard conditions to attend the conference. It just goes to show that Yankee ingenuity is still strong! We had a great turnout, and the staff and volunteer organizers did all they could to accommodate vendors, speakers, presenters, and attendees. Check out the great pictures beginning on page 58.

Thanks also to Alexandra Doody, guest editor for this issue. Alex has been with the committee for two years now and continues to volunteer doing the good work of the *Journal*, to educate our membership and others who read it.

It was brought to my attention that some Winter 2014 *Journal* issues had some feature article pages missing from the publication. Please contact Linda Austin, laustin@newea.org, if you received one of these issues, and she will replace it for you.

Finally, I ask each of you to think about the projects you are working on, whether you are a consultant, municipal employee, or operator, that would be of interest to the *NEWEA* membership and to submit an abstract for publication. Writing a paper on what you do for the public every day can be satisfying, and it is amazing how impactful one paper can be for someone dealing with the same challenges as you.

Helen Gordon
Journal Committee Chair and Editor

Grit Removal at its Finest...™

Fine Grit Matters. Left unchecked at the headworks, grit wears equipment and deposits throughout the plant, increasing maintenance and energy costs. Variations in size, shape & specific gravity all influence grit’s settling velocity and allow it to enter the plant causing damaging impact on downstream processes.

At Hydro, we understand grit. That’s why we guarantee 95% removal of all grit 75 microns and larger. Through best industry performance, our solutions keep grit out of the plant maximizing hydraulic capacity, minimizing grit accumulations and reducing abrasive wear, which saves you money.

Hydro
International

www.hydro-int.com



Represented by:
AQUA
Solutions
www.AquaSolutionsInc.net

Eutek HeadCell®
Advanced grit separation system

PAVERS BY IDEAL




The Solution to Stormwater Runoff is Right Under Your Feet

Aqua-Bric®, Eco-Stone® and Andover 55 I I Permeable Pavement

Ideal permeable pavers offer built-in technology - the pavement and base act as a stormwater treatment system that reduces or eliminates runoff to reduce pollutants and improve water quality.

■ High-strength 9000psi pavement	■ Freeze-thaw and snow-plow safe	■ Cost competitive to porous asphalt
■ ADA compliant	■ Easy to clean and maintain	■ Qualifies for LEED® credits



Ideal Concrete Block Co.
www.IdealConcreteBlock.com

CALL 1-800-24-IDEAL FOR A PERMEABLE LUNCH & LEARN

HAZEN AND SAWYER
Environmental Engineers & Scientists
hazenandsawyer.com



Water | Wastewater | Wet Weather

ENGINEERING CLEAN COMMUNITIES



INFRASTRUCTURE | ENVIRONMENT | ENERGY | RESILIENCY | RECREATION

You worry about water quality so they don't have to. Communities across the country face complex challenges. **We help solve them.**

COMMITMENT & INTEGRITY DRIVE RESULTS
woodardcurran.com



MUCH MORE THAN RAW DATA

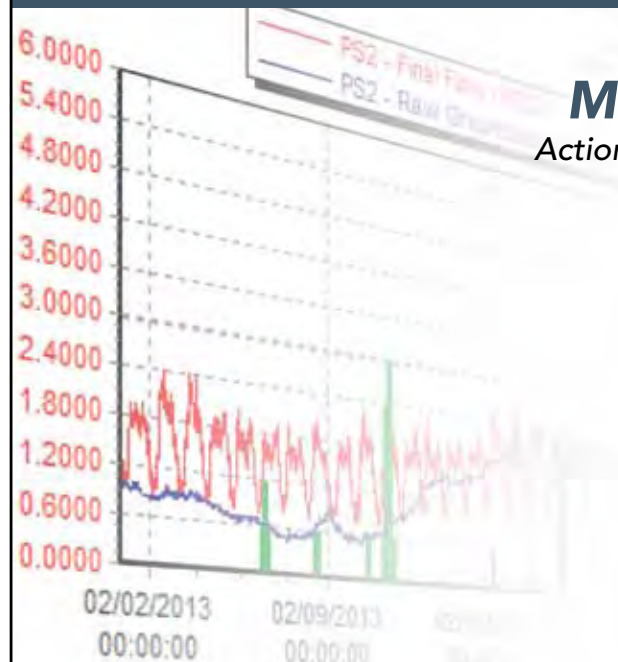
Actionable information and a staff to help you translate it.

FLOW ASSESSMENT long term monitoring systems give you data driven information for real time assessment and in depth analysis.

We provide much more than raw data. Our expert technical staff assists you in understanding the information we provide and our web based record storage gives you 24/7 access to current conditions plus accumulated history.

Permanent Wireless Telemetry Systems
Inflow/Infiltration Studies • Smoke & Dye Testing
Inspections • Inter-municipal Flow Monitoring

84 Daniel Plummer Road, Goffstown, NH
804 Plumtry Drive, West Chester, PA
Toll-Free: 888-311-9799 www.flowassessment.com



We'll handle the rest from here.

UNDERWOOD
engineers
civil & environmental engineering

www.underwoodengineers.com
Portsmouth, NH 603.436.6192 Concord, NH 603.230.9898

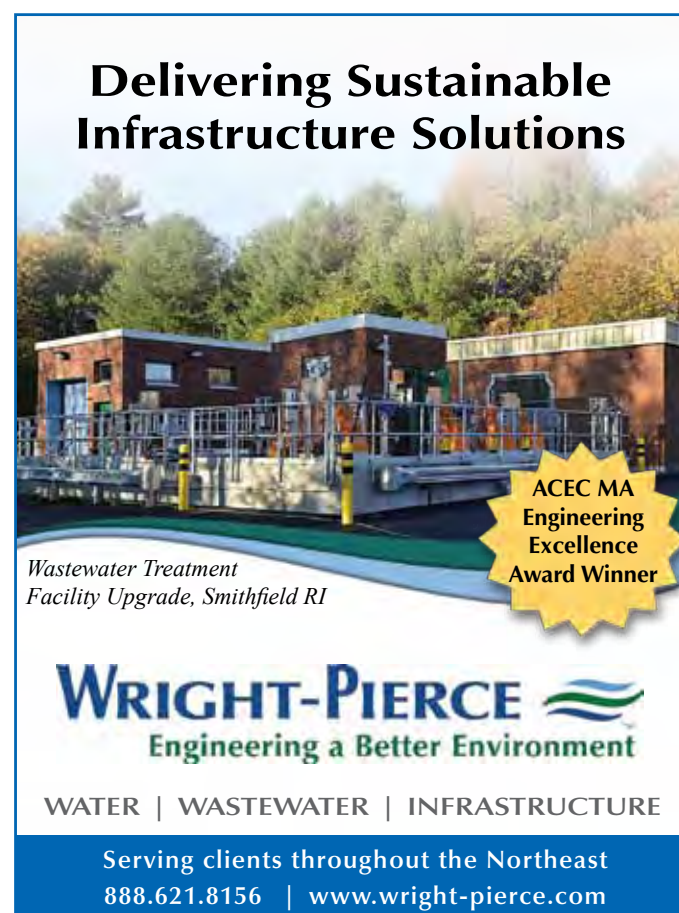


"New England's Choice for Quality Utility Construction Since 1923"

- Treatment Plants
- Design-Build
- Pump Stations
- Underground Utilities
- Mechanical Installation
- Construction Management

RH White
CONSTRUCTION & SERVICE SOLUTIONS

41 Central Street - Auburn, MA 01501
3 Johnson Road - Bow, NH 03304
800-922-8182
www.rhwhite.com



Delivering Sustainable Infrastructure Solutions

ACEC MA Engineering Excellence Award Winner

Wastewater Treatment Facility Upgrade, Smithfield RI

WRIGHT-PIERCE
Engineering a Better Environment

WATER | WASTEWATER | INFRASTRUCTURE

Serving clients throughout the Northeast
888.621.8156 | www.wright-pierce.com



Join forces with us!

Here's What's In It For You:

- ✓ Capture more market share by offering structural and protective spray-applied polyurethane linings
- ✓ Exceptional ROI
- ✓ Protected territory
- ✓ Diversify your client base—vast array of applications in wastewater, stormwater, potable water, marine, industrial and DOT segments
- ✓ Outstanding training and marketing support

Benefit from our experience. To learn more about opportunities in your area, call **Jerry Gordon**, President of Sprayroq toll free at **800.634.0504** today.

SPRAYROQ
Protective Lining Systems

sprayroq.com
jgordon@sprayroq.com




DN TANKS
DVK and Natgun
Generations Strong

Experts in all things water and wastewater.

Consider the benefits of full design and construction responsibility by experienced tank specialists capable of handling any wastewater challenge. At DN Tanks we are the experts in design & construction of all types of storage and process tanks ranging from the most basic storage tank to the most complex process tanks.





4 SBR Process Tanks Storm Water Equalization Tank Anaerobic Digester Tank

Call DN Tanks for all your water and wastewater needs
Chris Hodgson, Regional Manager
781.246.1133 | www.dntanks.com

It's prime time.

Join us at the NEWEA 2015 Spring Meeting & Exhibit

Three days of technical sessions, exhibit displays, tours, the Operations Challenge competition and a chance to network with other wastewater professionals in a relaxed setting.

June 7 – 10
Omni Mount Washington Resort
Bretton Woods, New Hampshire

STOP Treating Unwanted Water !

Save money and gain capacity with these simple, cost-effective solutions.



Infi-Shield External Seal

- ♦ Stops infiltration at the manhole chimney
- ♦ Flexible molded EPDM rubber seal
- ♦ Installs easily with no special tools



Gator Wrap

- ♦ Stops infiltration on joints
- ♦ Provides root barrier
- ♦ Non-priming intra-curing rubber



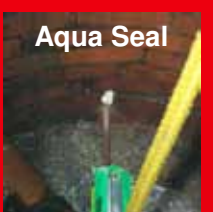
Flex-Seal Internal Seal

- ♦ Stops infiltration at the manhole chimney
- ♦ Flexible urethane with 800% elongation
- ♦ Custom fit seal for all manhole structures



SSI Manhole Insert

- ♦ Stops surface water inflow
- ♦ Stops infiltration of dirt and debris
- ♦ Custom made to order



Aqua Seal

- ♦ Stops leaks in excess of 50 GPM
- ♦ Reacts in only 3 seconds
- ♦ Two component hydrophobic grout that can be injected into flowing water

SSI
SEALING SYSTEMS, INC.

Call or email us pam@ssisealingsystems.com to get the money saving facts!

Sealing Systems, Inc.— Your Inflow and Infiltration Specialists
9350 County Road 19 • Loretto, MN 55357 • 800-478-2054 • www.ssisealingsystems.com

TECHNOLOGY SALES ASSOCIATES, INC.

PROCESS EQUIPMENT FOR THE WATER & WASTEWATER TREATMENT INDUSTRY

44 Central Street
Unit 5
Berlin, MA 01503
Tel: 978-838-9998
Fax: 978-838-9897

Mike Caso x13 – Cell: 508-878-7641
Rob Trzepacz x12 – Cell: 603-848-3950
Website: www.techsalesne.com

MANUFACTURERS REPRESENTATIVE NEW ENGLAND STATES

WATER FILTRATION EQUIPMENT

GE Water & Process Technologies/Zenon

Ultrafiltration Membrane Technology, Pressure and
Suction Driven

Leopold/Xylem

DAF Technology, Underdrains, Filtration

Wedeco/Xylem

UV Systems – Low & Medium Pressure,
Ozone Generation Equipment

Johnson Screens

Intake Screen, Triton Underdrains

Wigen Water Technologies

Greensand Filtration/Iron & Manganese Removal,
Package Membrane Systems – Micro, RO and Nano
Filtration, GAC Contactors, ION Exchange Systems

Orica Watercare

Miex Ion Exchange, TOC/DOC Removal Process

Atlantium Technologies

UV Disinfection Systems – 4 Log

Norit America

Carbon Filter Media

WASTEWATER PROCESS EQUIPMENT

Aqua-Aerobic Systems

SBR Technology, Aerators, Mixers
Cloth Media Filtration with 5 & 10 Micron Cloth Media
AquaDisk & AquaDiamond

GE Water & Process Technologies/Zenon

MBR - Membrane Bioreactor Technology

Leopold/Xylem

Tertiary Filtration & Denitrification Filters
DAF – Dissolved Air Flotation

Monroe

Clarifiers, Incline Plate Settlers, Odor Control

Komline Sanderson

Belt Press, Sludge Driers, Plunger Pumps

EnviroMix

Energy Efficient Large Bubble Mixing Systems

Mixtec

Mixing Systems, Anoxic & Aerobic Mixing

Amiad

Automatic Self-Cleaning Filters, In-Line Strainers

APG-Neuros

Turbo Blowers, Direct Drive, High Efficiency

Aerisa

Odor Control, Ion Exchange

Howden

Variable Vane Turbo Blowers, Gear Driven

Ovivo/Eimco/Bracket Green

Clarifiers & Drives, Carrousel BNR Oxidation Ditch,
Anaerobic Digestion-Gas Holder Membranes,
Digester Mixing-Linear Motion Mixer, Gas Mixing,
Covers-Fixed, Floating & Membrane,
Headworks Equipment, Fine Screens, Jeta Grit,
Bosker CSO Screen, Bracket Green Perforated Plate

Wedeco/Xylem

UV Systems, Horizontal Configuration, Ozone Generation
Equipment, Advanced Oxidation Processes

UltraTech

UV Systems – Vertical Configuration and Closed Vessels

Enviro-Care

Headworks Equipment, Multirake Screens, Septage
Systems, Perforated Fine Screening

Hydro-Dyne Engineering

Headworks Screens, Washpactor, Grit Systems

Varec Biogas

Biogas Safety & Handling Equipment, Gas Conditioning
Systems, Gas Flares, Drip Traps

Dutchland Inc.

Precast Post-Tensioned Concrete Structures,
Round & Rectangular Tanks & Covers

Guardian Environmental Products

Troll Collector System – Rectangular Chain and Flight
Primary Clarifier Equipment

PROCESS CONTROL EQUIPMENT

REXA Electraulic Valve Actuation

Reliable, Low Maintenance, Precision Positioning
Rotary, Linear Actuators and Drives

Blue In Green

Bubble-Free Gas Saturation and Delivery Systems,
Oxygen, Ozone, Carbon Dioxide

Aquanox

Stainless Steel Gates

Thirsty Duck

Buoyant Flow Control Devices

ZAPS Technologies

Real Time Water Quality Monitoring

FES-FRP Engineering Solutions

Weirs, Troughs, Covers, Handrails, Structures,
ClimateWalls, Floor Grating

One & Only

Count on Black & Veatch for global reach and expertise, delivered the one way that's exactly right for you. We're building a world of difference. Together.

Boston 781-565-5800
WeKnowWater@BV.com



BLACK & VEATCH
Building a world of difference.

Consulting • Engineering • Construction • Operation | www.bv.com



University of
Massachusetts
Lowell

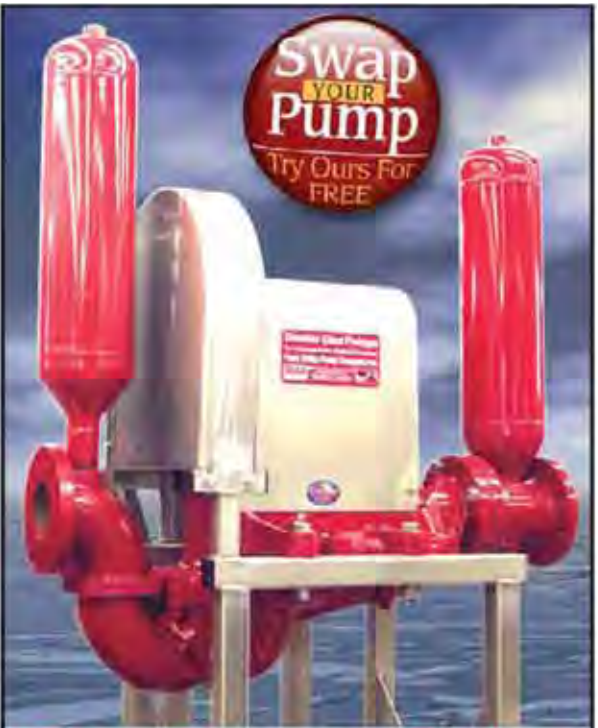
Learning with Purpose

The New England Consortium

The New England Consortium (TNEC) is the region's model HAZWOPER worker health and safety training organization.

Certified in Massachusetts, Rhode Island & Connecticut to provide training contact hours for Drinking Water Facilities and Waste Water Treatment Plant Operators.

www.uml.edu/t nec • 978-934-3329



**Let us Pump your Sludge.
Then you be the Judge**

Put our pump to the test! There's no cost to you. Take the PVP Challenge and prove it to yourself.

We are so confident in our pumps' ability to reduce your overall maintenance and labor costs that we will let you take one for a test drive... for FREE. You provide the application and we'll provide the unit. It's that simple! PVP Double Disc™, Positive Displacement pumps feature:

- Seal-less, gland-less, oil-less design for zero routine maintenance.
- Will run dry indefinitely without damaging the pump.
- Passes solids up to 2 inches in diameter and full-line semi-solids.
- Fewer moving parts means less need for repairs or maintenance.
- Patented Maintain-in-Place design reduces downtime and lowers maintenance costs.



The PVP Difference

The repair of progressive cavity or rotary lobe-style pumps can be complex and costly. Our Double Disc™ Pump system will operate up to 10 times longer in the same application and cost up to 70% less to repair when the need occurs.

Swap Your Pump

Install one of our pumps and put it to the test. There's no cost to you.

Represented by:

781.275.1001

www.ne3inc.com



Toll free:
800.311.3311
PennValleyPump.com

**New England
Environmental**





Industry news

The Long Island Sound projects will open up 12.4 miles of river for passage of native fish and restore 80 acres of coastal habitat

\$1.3 MILLION AWARDED FOR COMMUNITY-BASED PROJECTS TO IMPROVE HEALTH OF LONG ISLAND SOUND

John Martin, EPA Region 2, Dave Deegan, EPA Region 1, and Mike Smith, National Fish and Wildlife Foundation

On November 19, 2014, top federal and state environmental officials announced 22 grants totaling more than \$1.3 million to local government and community groups in Connecticut and New York to improve the health of Long Island Sound. The projects, which are funded through the Long Island Sound Futures Fund, will open up 12.4 miles of river for passage of native fish and restore 80 acres of coastal habitat, including intertidal marsh, coastal forest, grasslands, and freshwater wetlands. More than 70,000 citizens will be reached by environmental and conservation programs supported by the grants. Nearly 2.9 million gallons of water pollution will be treated through the delivery of water quality improvement projects. The grants will be leveraged by \$1.4 million from the grantees themselves, resulting in \$2.7 million in funding for on-the-ground, hands-on conservation projects in both states.

This public-private grant program pools funds from the U.S. Environmental Protection Agency (EPA), National Fish and Wildlife Foundation (NFWF), U.S. Fish and Wildlife Service (FWS), the Long Island Sound Funders Collaborative, and the Dissolved Oxygen Environmental Benefit Fund—the result of a New York and Connecticut legal settlement.

“Protecting and restoring Long Island Sound has long been a priority for the EPA,” said EPA Region 2 Director, Clean Water Division, Joan Leary Matthews. “These grants will support vital and diverse projects throughout the region. These efforts will help improve water quality and remove pollution from the Long Island Sound watershed and involve the public in the protection of one of the nation’s most important natural treasures.”

“From restoring habitat to reducing pollution to promoting public awareness, these grants will help make tangible improvements in the health of Long Island Sound,” added EPA New England regional administrator Curt Spalding. “In addition, the grants will ensure the continued involvement of all the community groups and local governments that are so crucial to the state and federal governments’ efforts here.”

“One of the greatest environmental challenges facing our nation and its communities is the protection and restoration

of highly productive estuaries,” said David O’Neill, NFWF vice president, conservation programs. “The funding awarded today represents the foundation’s and partners, to restoration efforts aimed at improving the overall health of Long Island Sound.”

The Long Island Sound Study (LISS) initiated the Long Island Sound Futures Fund in 2005 through EPA’s Long Island Sound office and NFWF. To date, the program has invested \$13 million in 306 projects in communities surrounding the Sound. With grantee match of \$25 million, the Long Island Sound Futures Fund has generated almost \$38 million for locally based conservation in both states.

“We are pleased to support our conservation partners through this collaborative funding effort,” said U.S. FWS Northeast regional director Wendi Weber. “This year, funded projects will help youth become stewards of the outdoors and introduce them to wildlife in their schoolyards. Additionally, work will help restore the health of our rivers, coastal marshes, forests, and grasslands for the benefit of fish, wildlife, and coastal communities.”

“The Long Island Sound Futures Fund continues to fund valuable projects to restore habitats, improve water quality, and promote public awareness throughout the Sound’s watershed,” said New York State Department of Environmental Conservation (NYSDEC) commissioner Joe Martens. “In addition, these on-the-ground projects ensure continued involvement and partnerships on the local, state, and federal level to help protect and restore Long Island Sound. NYSDEC is proud to support the Futures Fund and congratulates all of this year’s applicants.”

“Connecticut Department of Energy and Environmental Protection (DEEP) is honored to be a partner in the Long Island Sound Study, and to work with our neighbors in New York as well as the EPA, the U.S. Fish and Wildlife Service and NOAA to preserve and protect Long Island Sound as one of our most valuable natural resources,” said Connecticut DEEP commissioner, Robert Klee. “This year \$849,938 in Long Island Sound Futures Fund grants will support Connecticut projects that ensure protection and preservation of this valuable estuary, one of the most important and valuable estuaries in the nation. We are pleased that these grants leveraged over \$750,000 in local and private funding to support 14 Connecticut projects valued at nearly \$1.6 million. These projects will build on our efforts to protect and improve the

health of Long Island Sound by fostering improved water quality, habitat restoration, coastal stewardship, and open space preservation, and also watershed-based planning, public awareness, and education.”

Long Island Sound is an estuary that provides economic and recreational benefits to millions of people while also providing habitat for more than 1,200 invertebrates, 170 species of fish, and dozens of species of migratory birds. LISS, developed under the EPA’s National Estuary Program, is a cooperative effort among EPA and the states of Connecticut and New York to protect and restore the Sound and its ecosystem. To learn more about LISS, visit longislandsoundstudy.net. For full descriptions of the Long Island Sound Futures Fund grants, visit longislandsoundstudy.net/about/grants/lis-futures-fund.

“The Long Island Sound Funders Collaborative is delighted to provide joint funds toward the ecosystem report card project, an innovative tool to be used by communities to foster management and sustainability of the health and living resources of the Sound,” said David Okorn, executive director of the Long Island Community Foundation and member of the Long Island Sound Funders Collaborative.

“We hope that our pooled funding toward development of a Long Island Sound Report Card will offer communities around the Sound a tool to educate people about the value of the Sound and influence future priorities, policies, and action to benefit it,” said Jeniam Foundation, executive director and member of the Long Island Sound Funders Collaborative.

Chartered by Congress in 1984, NFWF protects and restores the nation’s fish, wildlife, plants, and habitats. Working with federal, corporate, and individual partners, NFWF has funded more than 4,000 organizations and committed more than \$2.3 billion to conservation projects. Learn more at nfwf.org.

EPA LAUNCHES FINANCE CENTER TO IMPROVE COMMUNITY WATER INFRASTRUCTURE AND RESILIENCY

EPA Headquarters News Release

EPA launched the Water Infrastructure and Resiliency Finance Center on January 16, 2015, to help communities across the country improve their wastewater, drinking water, and stormwater systems, particularly through innovative financing and by building resilience to climate change. The center was announced as Vice President Biden and EPA administrator Gina McCarthy toured the construction site for a tunnel to reduce sewer overflows into the Anacostia River in Washington, D.C., by 98 percent. The center is part of the White House Build America Investment Initiative—a government-wide effort to increase infrastructure investment and promote economic growth by creating opportunities for state and local governments and the private sector to collaborate, expand public-private partnerships, and increase the use of federal credit programs.

“Infrastructure is central to the president’s plan to build on the progress the U.S. economy is making by creating jobs and expanding opportunity for all Americans,” said McCarthy. “By modernizing the nation’s infrastructure we can protect our drinking water sources and enhance resilience to the impacts

of climate change by avoiding financial and water supply losses from leaking pipes and reducing pollution from sewer overflows and wastewater discharges.”

Key points regarding water infrastructure and resiliency include:

- EPA’s center will serve as a resource for communities, municipal utilities, and private entities as they seek to address water infrastructure needs with limited budgets.
- EPA will help explore public-private partnerships and innovative financing solutions.
- Aging and inadequate water infrastructure hinders the ability of communities to provide clean drinking water, manage wastewater, reduce flooding, and provide recreational waters that are safe to swim and fish in.
- Impacts of climate change—including intense and frequent storms, drought, floods, sea-level rise, and water quality changes—create challenges for communities as they prepare water infrastructure that can withstand these impacts.

- More than \$600 billion is needed over the next 20 years to maintain and improve the nation’s water infrastructure.

For a state-by-state breakdown of water infrastructure funding needs, visit: water.epa.gov/infrastructure/upload/clean-water-and-drinking-water-infrastructure-needs-by-state.pdf.

The Water Infrastructure and Resiliency Finance Center will:

- Explore innovative financial tools, public-private partnerships, and non-traditional finance concepts to better leverage federal funding programs. The center will build on the highly successful State Revolving Fund and other programs of EPA and its federal partners.
- Explore ways to increase financing of climate-resilient water infrastructure projects that integrate water efficiency, energy efficiency, water reuse, and green infrastructure
- Support communities to develop sustainable sources of funding, particularly for stormwater activities
- Build upon existing work to support small community water systems to build technical, managerial, and financial capacities through collaboration with the U.S. Department of Agriculture
- Coordinate closely with the EPA-supported Environmental Finance Centers and consult with the agency’s Environmental Finance Advisory Board

Water infrastructure includes the pipes, drains, and concrete that carry drinking water, wastewater, and stormwater. It includes industrial wastewater pretreatment facilities, wastewater treatment plants, municipal separate storm sewer systems, decentralized, onsite and septic systems, public drinking water systems, and private wells. It also includes green infrastructure, which uses natural land cover to capture rain where it falls, allowing it to filter into the ground.

For more information, visit EPA’s Water Infrastructure and Resiliency Finance Center: water.epa.gov/infrastructure/waterfinancecenter.cfm.

MAINE PULP MILL AND CONNECTICUT
CARDBOARD MANUFACTURING
COMPANY SETTLE CLEAN WATER ACT
VIOLATIONS

David Deegan
EPA Region 1 News Release

Two companies operating under the control of Cascades USA, Inc.—Cascades Auburn Fiber and Norampac New England, Inc.—have agreed to settle EPA allegations that they violated the federal Clean Water Act.

Cascades Auburn Fiber has agreed to pay a fine of \$65,000 for alleged clean water violations at its Auburn, Maine pulp mill. Norampac New England has agreed to pay a fine of \$100,000 for alleged clean water violations at its Thompson, Conn. corrugated cardboard manufacturing facility.

According to allegations in a complaint filed by EPA this past summer, Cascades violated the conditions of its stormwater permit and the federal Oil Pollution Prevention Regulations by failing to prepare and implement a Spill Prevention, Control, and Countermeasure Plan. According to the complaint, Cascades’ stormwater control measures were inadequate to prevent on-site pollutants from combining with stormwater and discharging to nearby surface waters. The company also failed to conduct certain monitoring and stormwater sampling as required by its stormwater permit.

EPA also filed a complaint against Norampac last summer, alleging that the company violated the conditions of its stormwater permit and the federal Oil Pollution Prevention Regulations by failing to fully implement its Spill Prevention, Control, and Countermeasure Plan. According to the complaint, the facility failed to implement best management practices described in its Stormwater Pollution Prevention Plan related to site maintenance, failed to conduct certain inspections, and failed to take certain corrective measures after learning of benchmark sampling exceedences.

The Clean Water Act requires that certain industrial facilities, such as pulp manufacturers and corrugated cardboard manufacturers, have controls to minimize pollutants from being discharged with stormwater into nearby waterways. Each site must have a Stormwater Pollution Prevention Plan that describes the best management practices that the company will follow to prevent runoff from being contaminated by pollutants.

Without adequate on-site controls, stormwater runoff can flow directly to the nearest waterway and cause water quality impairments such as siltation of rivers, beach closings, fishing restrictions, and habitat degradation. As stormwater flows over these sites, it can pick up pollutants, including sediment, biological and chemical oxygen demand, and chlorine. The law also prohibits the discharge of process wastewaters without a permit. Untreated wastewater discharges and stormwater runoff can harm or kill fish and wildlife and can affect drinking water quality.

Every year, thousands of gallons of oil are spilled from oil storage facilities. Even the effects of smaller spills add up and damage aquatic life, as well as public and private property. Spill prevention plans are critical to prevent such spills or, if spills do occur, to adequately address them.

For more information, visit:

- EPA’s enforcement of the Clean Water Act in New England: epa.gov/region1/enforcement/water
- Stormwater permits in New England: epa.gov/region1/npdes/stormwater
- National oil spill prevention: epa.gov/emergencies/content/spcc/index.htm

EPA, STATES, AND AUTOMOTIVE INDUSTRY
TO REDUCE COPPER IN BRAKE PADS

Robert Daguiard
EPA News Release

On January 21, 2015, EPA, the automotive industry, and states signed an agreement to reduce the use of copper and other materials in motor vehicle brake pads. The Copper-Free Brake Initiative calls for cutting copper in brake pads to less than 5 percent by 2021 and 0.5 percent by 2025. This voluntary initiative also calls for cutting the amount of mercury, lead, cadmium, asbestiform fibers, and chromium-6 salts in motor vehicle brake pads. These steps will decrease runoff of these materials from roads into the nation’s streams, rivers, and lakes, where these materials can harm fish, amphibians, and plants.

California and Washington have already passed requirements to reduce these materials in brake pads. Prior to their enactment, dust from vehicular braking released an estimated 1.3 million pounds of copper into California’s environment in 2010 and about 250,000 pounds into Washington’s environment in 2011. Estimates for California show copper in urban runoff down as much as 61 percent thanks to changes in brake pad composition.

“EPA is proud to partner with the automotive industry and the states to reduce the use of copper in motor vehicle brake pads,” said Stan Meiburg, acting deputy administrator for EPA. “The environment and public health in our country will benefit from this type of collaboration between the public and private sector.”

“This historic MOU “(Memorandum of Understanding) will provide the motor vehicle industry with consistent copper reduction guidelines and eliminate the potential for disparate state regulations,” said Steve Handschuh, president and CEO of the Motor and Equipment Manufacturers Association. This initiative includes:

- Education and outreach to reduce the amount of copper and the other materials listed above in brake pads
- Testing friction materials and constituents for alternatives
- Marking and labeling friction material packaging and products
- Providing reporting registrars’ and agents’ contact information to manufacturers, suppliers, and other industry entities
- Working towards achieving the goals in the Copper-Free Brake Initiative within specified times

In addition to EPA and the Environmental Council of the States, eight industry groups signed the initiative: Motor & Equipment Manufacturers Association; Automotive Aftermarket Suppliers Association; Brake Manufacturers Council; Heavy Duty Manufacturers Association; Auto Care Association; Alliance of Automobile Manufacturers; Association of Global Automakers, Inc.; and the Truck and Engine Manufacturers Association.

For more information, visit: water.epa.gov/polwaste/npdes/stormwater/copperfreebrakes.cfm.

SHOULD YOUR FACILITY ACCEPT FRACKING WASTEWATER?

By the WEF Fracking Task Force, as edited by Elizabeth Conway. Elizabeth is the committee coordinator at the Water Environment Federation (Alexandria, Va.). The full fracking paper created by the task force is found in the link at the end of the article. Elizabeth can be reached at econway@wef.org.



Hydraulic fracturing, commonly referred to as fracking, is conducted at shale formation locations throughout the U.S. to increase production of natural gas. The fracking process requires a large amount of water (flowback, production, and drilling), thereby producing wastewater that must be either disposed of, stored, or treated. Because of the constituents in the wastewater, treatment poses problems for water resource recovery facilities (WRRFs). Several considerations and preparations should be made by a WRRF prior to accepting such wastewater.

Non-typical wastewater pollutants

The largest concern for WRRFs is typically the high salinity of fracking wastewater, measured in total dissolved solids (TDS). In addition, fracking wastewater can contain high levels of fluid additives, metals, and naturally occurring radioactive materials. The constituents are often at levels not typically found in WRRF influent.

Fracking wastewater quality can vary significantly, depending on pretreatment, if any. Moreover, it is important to know the volume, frequency, and delivery method of the material. A clearer picture of these constituents and characteristics can be obtained by enrolling the fracking operation in an industrial influent management program. Through such a program, the WRRF should be able to control the receipt of fracking water by setting pretreatment quality specifications.

Regulations for fracking wastewater

States and EPA share responsibility for regulating treatment and disposal of wastewater from shale-gas extraction under the National Pollutant Discharge Elimination System (NPDES). In October 2011, EPA announced a schedule to develop categorical effluent standards for wastewater discharges produced by natural gas extraction from underground coal-bed and shale formations. EPA will publish the Final 2014 Effluent Guidelines Program Plan after incorporating feedback gathered during the public comment period, which ended in November 2014.

Several states have developed or will be developing their own rules for the acceptance of fracking water at WRRFs



(see www2.epa.gov/hydraulicfracturing). Some state regulators are also imposing new regulations on WRRF discharges to protect aquatic organisms and drinking water purveyors from excess concentrations of effluent constituents such as TDS in receiving waterbodies.

To ensure that the latest regulatory requirements (such as permitting, additional monitoring, and effluent discharge limits) are identified, each WRRF should discuss current NPDES requirements and other regulations for accepting water from fracking operations with its state regulatory agency and EPA before accepting fracking wastewater. Also, it is best to engage the regulatory community as soon as possible in an open discussion of the current and planned regulatory requirements for fracking wastewater treatment at a WRRF.

Confirm WRRFs ability to treat wastewater

Once a WRRF understands potential influent constituents and what is needed to achieve consistent compliance with its NPDES permit, the WRRF should carefully review its ability to continue optimal operations with additional loading. The WRRF should review control processes and understand the potential impact of fracking wastewater on the facility, and in particular, the stability of operations in light of projected salt levels and concentration variability. Also to be considered are potential changes in the biosolids quality due to constituents that are removed from the liquid stream.

More resources available

In summary, prior to accepting fracking water at a WRRF, four steps should be followed:

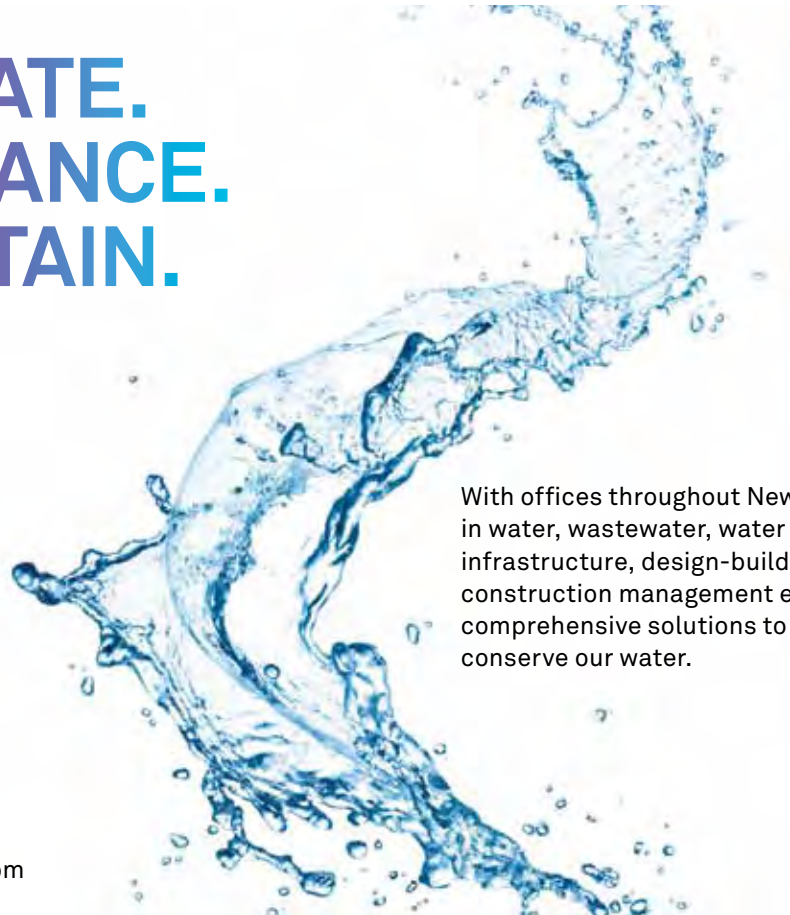
1. Determine the fracking wastewater constituents, volume, frequency, and proposed delivery method
2. Determine the type of pretreatment the fracking water has undergone
3. Discuss NPDES requirements and other regulations with the state regulatory agency and EPA
4. Consider the effects on both final effluent quality and biosolids

For more information, download the fact sheet

“Considerations for Accepting Fracking Wastewater at Water Resource Recovery Facilities,” at wef.org/uploadedFiles/Access_Water_Knowledge/Wastewater_Treatment/Fracking%20Factsheet%20Final%281%29.pdf.

“The information provided in this article is designed to be educational. It is not intended to provide any type of professional advice including without limitation legal, accounting, or engineering. Your use of the information provided here is voluntary and should be based on your own evaluation and analysis of its accuracy, appropriateness for your use, and any potential risks of using the information. The Water Environment Federation (WEF), author and the publisher of this article assume no liability of any kind with respect to the accuracy or completeness of the contents and specifically disclaim any implied warranties of merchantability or fitness of use for a particular purpose. Any references included are provided for informational purposes only and do not constitute endorsement of any sources.”

**CREATE.
ENHANCE.
SUSTAIN.**



With offices throughout New England, our expertise in water, wastewater, water resources, community infrastructure, design-build, program and construction management enables us to provide comprehensive solutions to manage, protect and conserve our water.

www.aecom.com

AECOM

Weston&Sampson®

Innovative Solutions Since 1899



ENVIRONMENTAL/INFRASTRUCTURE CONSULTING

- wastewater collection & treatment
- stormwater BMPs
- construction management
- iDataCollectSM
- geotechnical and structural
- environmental permitting
- energy - renewables & efficiency
- biosolids & organics
- water supply & treatment

WATER & WASTEWATER HANDS-ON SPECIALISTS

- 24/7 emergency repairs
- preventative maintenance
- construction
- design/build
- cross connection control
- backflow prevention
- operations & training
- electrical & instrumentation

1-800-SAMPSON
www.westonandsampson.com

OFFICES IN: MA, NH, CT, VT, NY, NJ, PA, SC & FL

Passion. Commitment. Success.

At ARCADIS, we share a single purpose: to improve the environments and lives we touch. A lofty goal, but one we deliver on every day. From source to tap, and then back to the environment, we are driven to create innovative, balanced solutions that provide safe and adequate water supplies to help communities and industry thrive.

Together we can do a world of good.



Offices throughout New England

www.arcadis-us.com
Imagine the result

ARCADIS

CSO Compliance Flow Monitoring

Most combined sewer communities struggle with regulatory and budgetary concerns for necessary collection system flow, rainfall, and wet weather monitoring programs. ADS has developed a cost-effective, highly efficient, technology-based system for CSO monitoring and reporting. This includes measurement and reporting of overflow duration and quantity for individual events, verifiable with video confirmation.



For more information, please contact Mike Bonomo at 203.257.3224 or mbonomo@idexcorp.com
www.adsenv.com

ADS ENVIRONMENTAL SERVICES

We apply the most appropriate and cost-effective wastewater solutions the first time, every time



Our team of wastewater engineers deliver solutions that minimize cost and maximize sustainability.

Stantec

Design with community in mind
stantec.com/water



The winning combination for sewer overflow mitigation in the Winn's Brook Area

JUSTIN GOULD, P.E., FAY, SPOFFORD & THORNDIKE, BURLINGTON, MA
GLENN CLANCY, P.E., OFFICE OF COMMUNITY DEVELOPMENT, TOWN OF BELMONT, MA

ABSTRACT | The low-lying Winn's Brook Area is in the northeast section of Belmont, Mass. For years, residents in this area have experienced periodic sanitary sewer overflows and backups into the basements of their homes during large storm events. Using four basic concepts—increased capacity, flow diversion, system storage, and isolation and pumping—the town developed 13 overflow mitigation alternatives to address this problem. Hydraulic modeling was used to rank the alternatives based on lowering the hydraulic grade line and reducing peak discharge. This process required close collaboration with neighboring communities and the Massachusetts Water Resources Authority (MWRA) to ensure the project created no detrimental downstream effects. The winning combination includes diverting flow through a 2,800-foot-long (853-meter-long) storage conduit along with new sewers and diversion structures to redirect flow to an off-line pump station. Once the pumping station is activated, the Winn's Brook Area is isolated from the general sewer system.

KEYWORDS | Alternatives, hydraulic grade line (HGL), flow diversion, increased capacity, infiltration and inflow (I/I), isolation and pumping, sewer overflows, system storage



PROJECT LOCATION
Belmont's Winn's Brook Area is bounded by Channing Road, Brighton Street, and Chilton Street. This area is directly connected to the town's largest sewer, a 30-inch-diameter (762-mm-diameter) pipe on Channing Road, and near Belmont's primary connection to the MWRA's intercepting sewer system on Flanders Road. Approximately 85 percent of the town's sewage discharges via the Flanders Road connection. As shown in Figure 1, extensive upstream tributary sewers convey sewage through the Winn's Brook Area.

CAUSES OF SEWER OVERFLOWS
The hydraulic grade line (HGL) is the level to which liquid rises in a sewer. During normal conditions, the HGL remains below the crown (top) of the sewer pipeline. Under surcharged conditions, the HGL rises above the crown of the sewer pipe, in effect

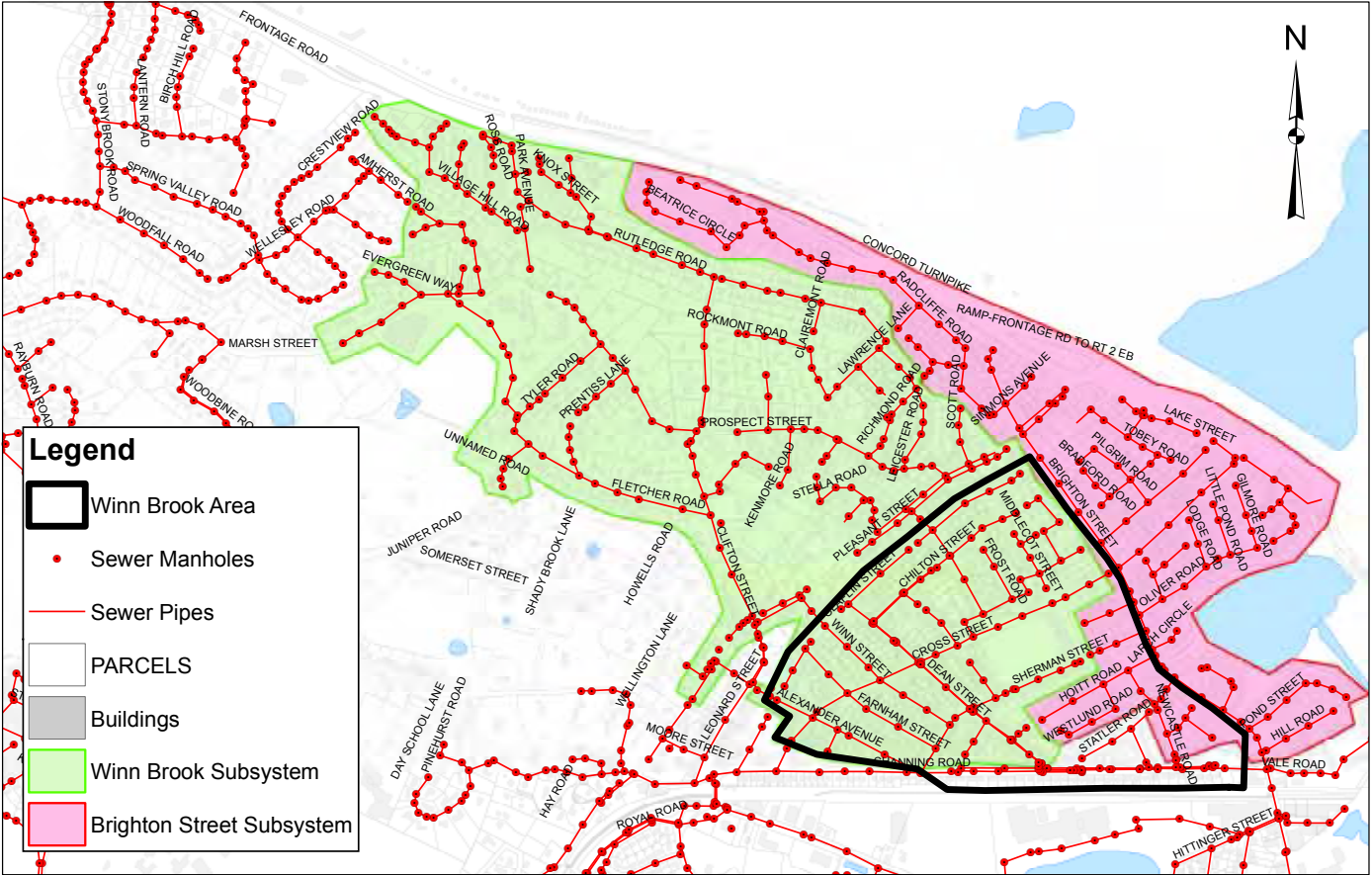


Figure 1. Extensive upstream tributary sewers convey sewage through the Winn's Brook Area

pressurizing the pipe. Sewer overflows in the Winn's Brook Area occur when the HGL rises above the level of open basement plumbing connections, thereby allowing the "pressurized" sewage to be alleviated (see Figure 2).

Elevated HGLs in the Winn's Brook Area have two primary causes:

- Excessive infiltration and inflow (I/I) generated within Belmont
- Elevated sewage levels in the MWRA interceptor

A comprehensive flow monitoring program was conducted in the spring of 2007 to quantify the amount of I/I entering the sanitary sewer system. The flow monitoring program measured over 3 million gallons per day (mgd) (11350 m³/day) of peak infiltration entering Belmont's sanitary sewer system tributary to Flanders Road in March and April 2007. During a large storm event on April 15, 2007, this area reached a peak flow rate of 14 mgd (53,000 m³/day), with a total volume of approximately 22 million gallons (83,300 cubic meters) of inflow related to the storm entering the sanitary sewer. The average wastewater component for this area (i.e., with no I/I) is approximately 1.5 mgd (5,700 m³/day). A subsequent Sewer System Evaluation Survey (SSES) identified specific sources of I/I. Although it was not feasible to mitigate the Winn's Brook Area sewer overflows through I/I reduction alone, I/I removal was a major and necessary component of the long-term solution.

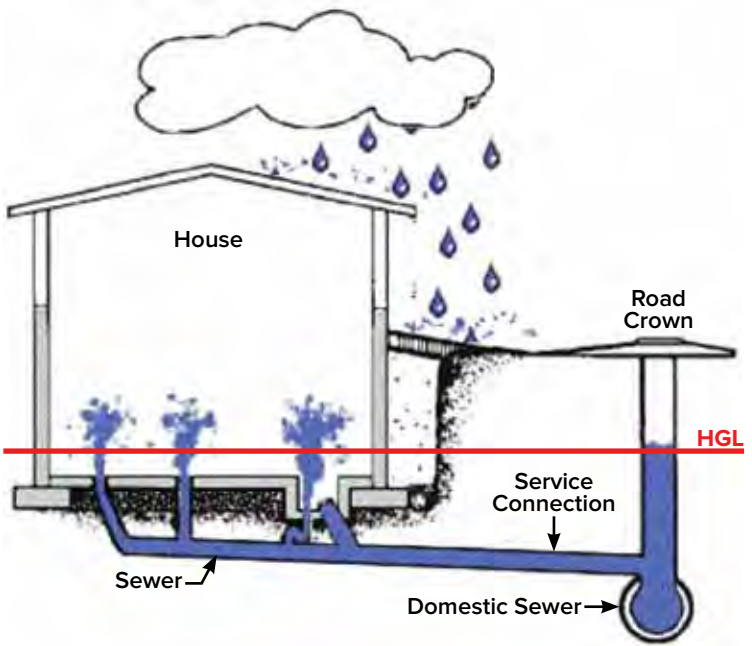


Figure 2. Sewer overflows occur when the HGL rises above the level of open basement plumbing connections

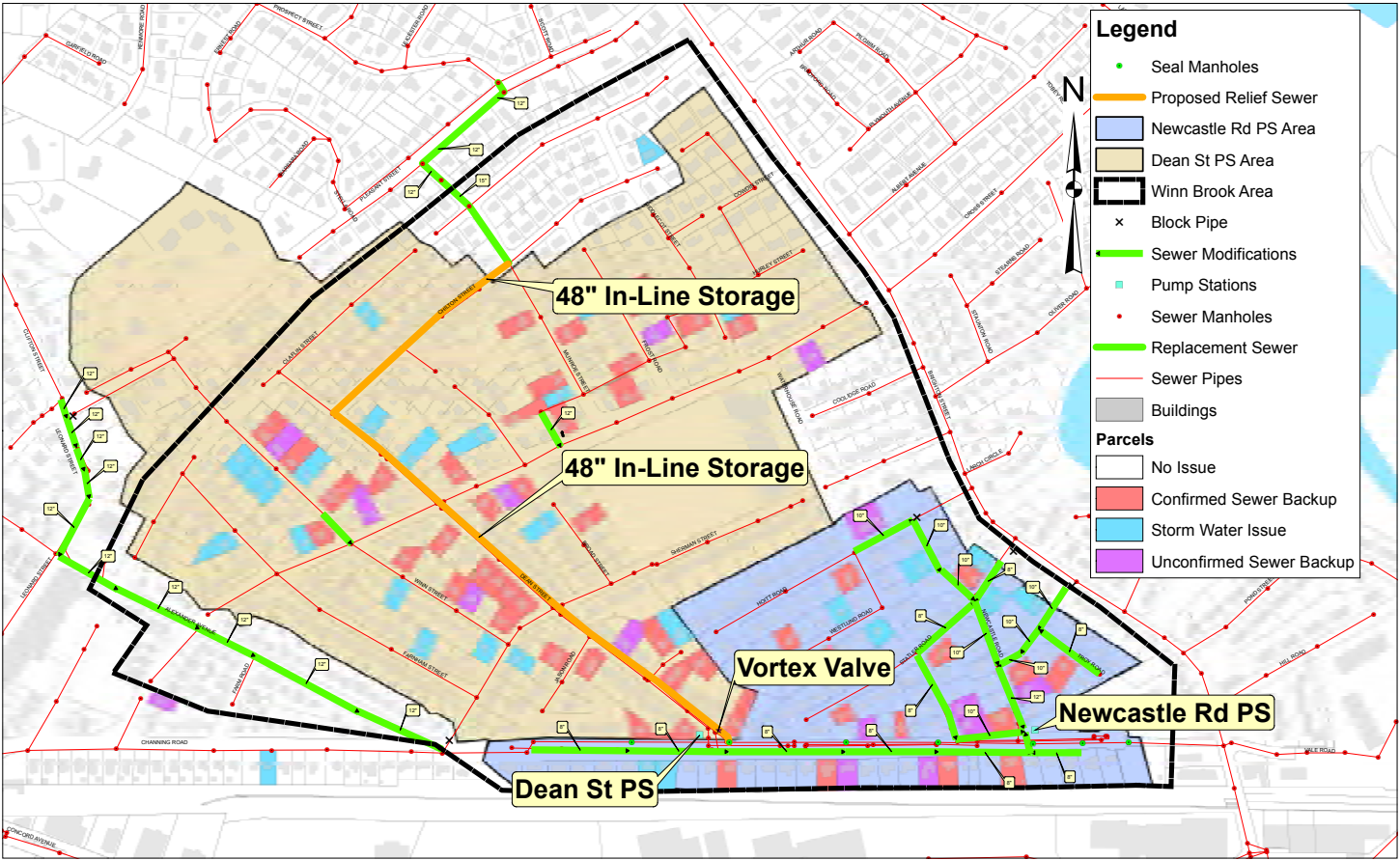


Figure 3. Information was collected for 69 of the 95 target houses

Similarly, Belmont's neighboring downstream communities also experience excessive I/I. These increased flows during large storm events create elevated levels in the MWRA interceptors, resulting in a "backwater effect" on Belmont's sanitary sewer system. The backwater effect raises the HGL and increases surcharge conditions within Belmont's system.

Although Belmont's neighboring MWRA member communities are also reducing I/I, this process is slow, and a reduction in the backwater effect alone cannot be relied on to mitigate sewer overflows. Furthermore, any proposed alternative should not significantly increase the MWRA interceptor's HGL, as this could create or exacerbate sewage overflow problems in other downstream communities.

HOUSE INSPECTIONS

Belmont's Department of Public Works historical database identified 95 Winn's Brook Area houses with reported overflows during large storm events. These houses were targeted for inspection to obtain vital first-hand knowledge of the circumstances under which periodic overflows occurred. To optimize the inspection program, the town's Office of Community Development sent a letter to all homeowners outlining the importance of the project and requesting their input. A survey form was also

included with the letter for homeowners to complete if they were not available during the 2-week inspection period.

Information was collected for 69 of the 95 target houses (73 percent) and is shown in Figure 3. Sewage overflows were confirmed at 49 houses, while the inspections determined that reported problems at 20 houses were due to stormwater runoff and not sewage backups. The inspections further revealed that many homeowners had installed backflow prevention devices (e.g., check valve, manual shut-off valve) to combat sewage overflows.

The town performed an instrument survey to obtain the sill elevation (top of foundation) for each target home. Combined with measurements taken inside the home during the inspection, the elevation of the sanitary sewer service was determined. This information was entered into the town's GIS database for use during modeling of mitigation alternatives.

MITIGATION ALTERNATIVES

Sewer overflows can generally be mitigated by lowering the HGL during storm events through:

- Increasing sewer capacity through the installation of larger pipes
- Reducing sewage quantity through diversion by re-routing upstream sewers

- Providing in-system or off-line storage
- Isolating the HGL through installation of one or more pumping stations

Thirteen mitigation alternatives were developed and evaluated using various combinations of the four methods above. The following lists all the alternatives:

1. Increase gravity sewer capacity to pass 1-year, 6-hour storm
2. Bypass upstream flow around Winn's Brook Area onto Alexander Road and Brighton Street
3. Bypass upstream flow around Winn's Brook Area, isolate and pump during storm event
4. Isolate and pump during storm event (no bypass)
5. Isolate and pump during storm event (Alt. 4) with extended force main to Flanders Road
6. Isolate and pump during storm event (Alt. 4) with second pumping station at Newcastle Road
7. Isolate with two pumping stations (Alt. 6) with sewer lining on Channing Road and Brighton Street
8. Isolate with two pumping stations (Alt. 6) with pumping to 6 million gallon (MG) (22,700 cubic meter) underground storage tank (UST)
9. Increase gravity sewer capacity in the area to pass flow quantities equivalent to the May 2006 Mother's Day storm
10. Isolate with two pumping stations (Alt. 6) with bypass (Alt. 2) with pumping to 2 MG (7,571 cubic meter) UST
11. Isolate with two pumping stations (Alt. 6) with bypass (Alt. 2)
- 11A. Isolate with two pumping stations (Alt. 6) with Dean Street bypass (Brighton Street eliminated)
12. Isolate with two pumping stations (Alt. 6), enlarge Dean Street bypass to a 48-inch (1,220-mm) storage conduit

Reducing the quantity of sewage through I/I removal is also viable to mitigate overflows. The town's continuing I/I reduction initiatives provide an inherent benefit to the Winn's Brook Area. Any I/I reduction in the Flanders Road tributary area (85 percent of Belmont) will help reduce the HGL. However, because I/I reduction was required as an offsetting measure for most alternatives, future I/I reduction was not considered a direct part of any of the alternatives and thus not included in the modeling results.

COMPUTER MODELING OF MITIGATION ALTERNATIVES

Belmont's computerized sanitary sewer hydraulic model was used to construct and perform model simulations for each mitigation alternative. The May 2006 Mother's Day storm was selected as the

Table 1. Modeling results by alternative				
Alternative	Average HGL Above Services* (ft)	HGL Average Reduction (ft)	Flanders Road Peak Discharge (MGD)	Peak Discharge Increase (%)
Base	3.58		16.53	
1	2.92	0.66	19.52	18.12
2	2.50	1.08	19.62	18.73
3	0.28	3.30	19.75	19.51
4	1.21	2.37	17.31	4.75
5	1.01	2.57	21.42	29.62
6	-0.86	4.44	17.33	4.87
7	-0.86	4.44	17.41	5.35
8	-0.88	4.46	16.49	-0.22
9	1.41	2.17	20.43	23.63
10	-1.12	4.70	18.36	11.10
11	-1.12	4.70	18.71	13.22
11A	-1.12	4.70	17.55	6.20
12	-1.12	4.70	17.18	3.96

* HGL = Hydraulic Grade Line
Negative HGL indicates level below service connections

comparative design storm for this study due to the availability of reliable data, including sewage flow meter data from Belmont's Flanders Road connection, sewage levels in the MWRA interceptor (to quantify the backwater effect), and rainfall.

During the modeling, Belmont collaborated with the neighboring city of Cambridge so that proposed work in Belmont had no detrimental effects to nearby low-lying areas of Cambridge. Cambridge integrated Belmont's model into the existing Cambridge model and developed appropriate boundary conditions for use during the Mother's Day storm.

The effectiveness of each alternative was measured by the simulated HGL reduction in the Winn's Brook Area (i.e., greater HGL reduction = greater effectiveness) and by the amount of peak discharge increase at the Flanders Road connection (i.e., lower peak discharge increase = greater effectiveness). To determine the effectiveness of HGL reduction on reducing sanitary sewer backups, the invert elevations of the sanitary service connections were compared to the peak HGL predicted by the model.

Table 1 summarizes the modeling results for each alternative. As shown in Table 1, under the base condition, the model-predicted HGL during the May

Table 2. Alternative effectiveness ranking				
Alternative	HGL Average Reduction Rank	Flanders Road Peak Discharge Rank	Combined Score	Combined Rank
Base	14	2	16	9
1	13	10	23	11
2	12	11	23	11
3	8	12	20	10
4	10	4	14	8
5	9	14	23	11
6	6	5	11	6
7	6	6	12	7
8	5	1	6	2
9	11	13	24	14
10	1	8	9	4
11	1	9	10	5
11A	1	7	8	3
12	1	3	4	1



Vortex valve

2006 storm averaged more than the 3½ feet (1 meter) above the sewer service connections in the Winn's Brook Area. The simulated HGL reduction of the alternatives ranged from 0.66 to 4.70 feet (0.2 to 1.4 meters). Simulated peak discharge increases ranged from –0.22 to 29.62 percent.

A predicted reduction in HGL greater than 3.58 feet (1.1 meter) indicates the average level was below the service connections. Table 1 shows that only those alternatives that included two pumping stations, beginning with Alternatives 6, 7, and 8, reduced the average HGL below the service connections. When upstream flow was bypassed around the Winn's Brook Area in Alternatives 10 and 11, the HGL was further reduced, but the peak discharge at Flanders Road increased. Under Alternative 11A, the peak discharge was reduced by relocating the Brighton Street bypass to Dean Street, thereby maintaining all Winn's Brook Area flow tributary to the Channing Road interceptor. The peak discharge was further reduced in Alternative 12 by enlarging the Dean Street bypass to a 48-inch (1,220-mm) storage conduit and restricting peak flow with a vortex valve.

Table 2 ranks each alternative based on HGL reduction effectiveness and peak discharge increase. The base condition is included as the “Do Nothing” alternative. The combined ranking weights each criterion equally. Alternative 12 ranks No.1 overall with the largest HGL reduction and the third lowest peak discharge increase (including the base condition). Alternative 8 is the second-ranked alternative with a slightly higher HGL but a reduction in the peak discharge compared to the base condition.

Alternatives 8 and 12 were selected for further evaluation and are described below. Although the average service connection elevation for Alternatives 8 and 12 was significantly above the HGL, individual services that were below the HGL may have needed additional protection case by case.

MITIGATION ALTERNATIVE 8

Alternative 8 included the installation of new sewers to redirect flow to two off-line pump stations (i.e., pump stations that would only activate during surcharge conditions) and an underground storage facility. The pump stations would be constructed on town property at the end of Dean Street and Newcastle Road. The storage facility would be below the Winn's Brook School playground.

During normal dry weather operation, overflow weirs in the diversion chambers would prevent flow from entering the pumping station wet well. Flap gates would be installed on the connections to the Channing Road interceptor to prevent backflow. During surcharge conditions, the flap gates would close so that flow overtops the weir and enters the pump station's wet well. Once the pumping stations are activated, the Winn's Brook Area is isolated from

Table 3. Effects outside the Winn's Brook Area													
Alternative	Manholes with Predicted Flooding		Flanders Road Connection					Depth of HGL Below Grade (feet) for Key Manholes **					
	Number	Volume (MG)	Peak Discharge (CFS)	Peak Discharge (MGD)	Change (%)	24-Hour Volume* (MG)	Change (%)	22S014 280 Hamilton Rd		22S025 Baker @ Hittinger		41S033 23 Oliver Rd	
								Baseline	Change	Baseline	Change	Baseline	Change
Baseline Conditions	25	4.41	25.57	16.53	NA	15.34	NA	0.07	NA	0.23	NA	0.25	NA
Alternative 12	12	3.07	26.58	17.18	3.98%	15.83	3.24%	0.00	0.07	0.12	0.10	0.28	(0.03)
Alt 12 with 15% Upstream Target Area Inflow Reduction	7	1.55	26.05	16.84	1.90%	14.90	-2.84%	0.10	(0.03)	0.23	(0.00)	0.34	(0.09)

* 24-Hour Period covers the peak of the rainfall period starting on May 13, 2006 at 1:00 PM to May 14, 2006 at 1:00 PM
** Negative change indicates reduction in HGL

the general sewer system and flow is pumped to the storage facility. The storage facility is sized to capture all the flow generated from within the Winn's Brook Area during a storm similar to the May 2006 event—approximately 6 million gallons (22,700 cubic meters). Once capacity is restored in the Channing Road interceptor (i.e., surcharge conditions have subsided), the storage facility would be pumped out and cleaned. Once full, however, pumping of the storage facility must commence, regardless of conditions in the Channing Road interceptor, to prevent potential overflows in the isolated Winn's Brook Area.

MITIGATION ALTERNATIVE 12

Alternative 12 was similar to Alternative 8 except the storage facility was eliminated and the two pump stations would discharge directly to the Channing Road interceptor. To reduce the size of the pumping stations, upstream tributary flow was diverted around the Winn's Brook Area to Alexander Road and Dean Street. The Dean Street bypass was a 250,000-gallon (950-cubic-meter) storage conduit with a vortex valve to restrict flow to 1 mgd (3,785 m³/ day) during peak discharge periods.

RECOMMENDED ALTERNATIVE

The opinion of probable construction cost for Alternatives 8 and 12 was \$19.8 million and \$7.1 million, respectively. Alternative 12 required an additional \$2 million to \$3 million for I/I reduction, increasing the cost to about \$10 million.

Alternative 8 was by far the most costly option and presented the most formidable construction-related issues. During construction of the 6-million-gallon (22,700-cubic-meter) storage facility, the entire Winn's Brook School playground would be a construction zone for 2 years, creating serious traffic and pedestrian concerns for the school. Thorough cleaning of the UST following each activation would be required to prevent potential generation of odors around the facility.



Storage conduit installation



Storage conduit sections with v-notched invert



5-by-5-foot box storage conduit

Based on maximum HGL reduction effectiveness and cost, the town proceeded with Alternative 12. The sewer system modifications required for Alternative 12 are illustrated in Figure 3.

EFFECTS ON DOWNSTREAM SYSTEM

Table 3 shows the simulated effects of Alternative 12 on other key low-lying areas in Belmont. As shown in the table, the Oliver Road HGL decreased slightly, but the HGL on Hamilton Road and Baker Street increased over the baseline condition. To eliminate this negative impact, Alternative 12 incorporated offsetting I/I removal. An achievable goal of 15-percent I/I removal was adopted in the target areas tributary to Flanders Road, as identified by the flow monitoring and SSES programs. Table 3 shows that with inclusion of targeted 15-percent I/I removal, the HGL in the other key areas remained at or below baseline conditions. The I/I removal reduced the peak discharge increase to less than 2 percent over baseline conditions and also resulted in a 24-hour volume reduction of nearly 3 percent.

Finally, the model for Alternative 12 with 15-percent I/I removal was provided to the city of Cambridge. The city ran the integrated Belmont/Cambridge model for this alternative and determined that the alternative would not negatively affect the Cambridge sewer system. The integrated model also showed no increase in Belmont's peak discharge.

DESIGN AND CONSTRUCTION

Final design refinements included consolidation of the Dean Street and Newport Road pumping stations into a single facility located in the cul-de-sac at the end of Channing Road. The 48-inch-diameter (1,220-mm-diameter) storage conduit was converted to a box culvert to navigate the vast array of underground utilities. The conduit comprises eight sections

ranging in size from 2.5 by 3 feet (0.8 by 0.9 meters) to 4 by 7 feet (1.2 by 2.1 meters). The storage conduit design incorporates a v-notched invert to convey normal dry weather flow at an appropriate velocity.

The project was constructed in 18 months with completion in December 2011. The construction cost of \$6 million included \$4.9 million for the sewer overflow mitigation facilities and \$1.1 million for Phase 1 I/I removal. I/I removal Phases 2 and 3 were completed in 2014 at a cost of approximately \$3.5 million.

CONCLUSION

Residents of Winn's Brook Area had been plagued with sewer overflows and backups for as long as most can remember. Various combinations of four basic mitigation concepts were used to formulate 13 alternatives. The winning combination incorporated all the mitigation concepts (increased capacity, flow diversion, system storage, and isolation and pumping). An achievable goal of 15 percent town-wide I/I removal ensured the Winn's Brook Area's sewer overflow nightmare would not be passed to other areas of Belmont. Since becoming operational in 2011, the system has activated on more than a dozen occasions and no overflows have been reported in the Winn's Brook Area. 🌍

ABOUT THE AUTHORS

- Justin Gould is a vice president with Fay, Spofford & Thorndike and has more than 20 years of experience in wastewater collection and treatment.
- Glenn Clancy has been with the Town of Belmont for 30 years and is director of the Office of Community Development and town engineer. Mr. Clancy's responsibilities include design and construction management for all new sewer and sewer rehabilitation projects.



KLEINFELDER
Bright People. Right Solutions.

Expertise. Insight. Innovation.

Kleinfelder Delivers on Your Water Challenge.

www.kleinfelder.com

800.489.6689

OAKSON, INC.

Drip Dispersal & Water Reuse... Solutions For All Sizes



New England's Distributor of
Perc-Rite® Drip Dispersal



- Perc-Rite® Drip Dispersal Systems are installed throughout New England in residential, commercial, and industrial applications ranging from 200 gpd to over 100,000 gpd
- Can disperse septic tank effluent or treated effluent
- The drip dispersal tubing can be plowed into the soils, saving time and money on excavation and expensive fill material
- For sloping sites, drip tubing can be installed following the land contours, rather than in a flat bed configuration
- The application of small doses of effluent into the soil throughout the 24 hour cycle is key to effective treatment, disposal, and management of the effluent

The most innovative and environmentally beneficial leaching system available

www.OaksonInc.com

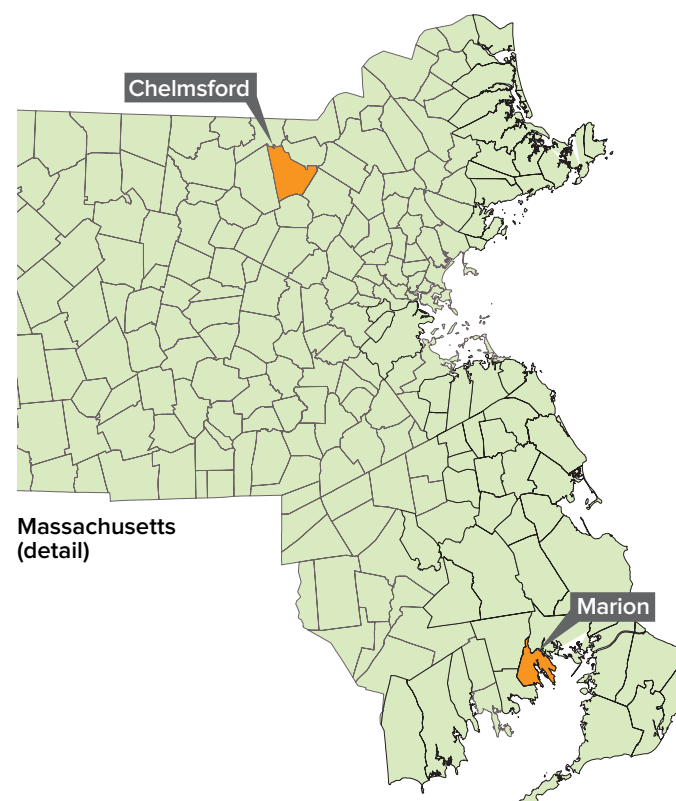
Ownership of pressure sewer systems, a tale of two towns

HENRY S. ALBRO, F. R. MAHONY & ASSOCIATES

WITH CONTRIBUTIONS FROM THE TOWNS OF CHELMSFORD AND MARION, MASS.

ABSTRACT | Pressure sewers have been installed throughout New England over the past 45 years and there is still discussion on the best way to operate them in terms of ownership. This article presents the approach and results of two New England communities, Chelmsford and Marion, Mass. The two communities have followed different paths; however, both installations have been successful and each demonstrates that success and greater operation and maintenance reliability result when communities share in the oversight and operation of these systems. Key characteristics of these successful installations are discussed along with modifications to operating methods based on “lessons learned” from 12 years of operation. Actual cost data and mean-time-between-service-calls (MTBSC) data are evaluated in light of data on installation issues, abuse, and system wear and tear. Political and public perception aspects are also presented.

KEYWORDS | Pressure sewer, grinder pumps, Sewer Fairness Alliance, Chelmsford, Marion



INTRODUCTION

Private gravity sewer connections have long been a significant source of infiltration and inflow (I/I) into public sewer systems. Studies have concluded the following:

- EPA estimates there are 75 million service laterals in the U.S.
- EPA estimates that 80 percent of these laterals are failing or in need of repair
- The infiltration from laterals accounts for 50 to 80 percent of the infiltration from groundwater
- Approximately 50 to 80 percent of inflow to public collection systems is from privately owned systems

In light of the conclusions above, one question is whether abdicating the maintenance of private service laterals to users was the most cost-effective way to manage a public wastewater collection system. Similarly, was abdicating the maintenance of private grinder pumps the most cost-effective way to manage a public pressure sewer collection system?

Pressure sewers can help to eliminate I/I influences inherent with gravity sewer service connections, but the pressure services and associated grinder pumps used can result in direct service costs to private users. The public and private costs associated with operation of pressure sewer systems affect the overall cost benefit of choosing these sewer collection systems.

Pressure sewer system experience has shown that communities that participate in collection system construction and system maintenance often better control and reduce system costs. These communities are also more knowledgeable and better prepared to answer questions from the public, enhancing sewer user satisfaction. Community involvement is not solely related to grinder pump ownership or providing grinder pump maintenance. This involvement can be simply as facilitators or liaisons with equipment and service providers. Many communities may decide not to become involved in the ownership and maintenance of private grinder pump installations, however they can still enhance user satisfaction by overseeing pump service vendors and guiding users on the repair of their pumping units.

TOWN OF CHELMSFORD

Issues in Chelmsford grew over the years along with the construction and expansion of sewers in that community. Several phases of construction took place, evolving as conditions changed relative to funding and onsite disposal regulations. The key regulatory change was the Massachusetts State Sanitary Code, 310 CMR 15.000, commonly referred to as “Title 5,” and specifically section 15.301(1), which required septic system inspections at time of property transfer, verifying that on-site disposal systems complied with current standards.

As a result of these regulation changes, many communities saw a significant change in the public attitude toward sewer expansion as “system failures” were discovered and became more prevalent. Chelmsford was no different. Early plans to expand the public sewers in Chelmsford grew to include the entire community. Expansion options were limited, however, due to topographic elevations, funding, and the ability of existing infrastructure to receive the new flows. Alternative sewage collection methods were deemed necessary to achieve the expansion goals. Pressure sewer systems began to be the preferred technology compared to more costly gravity sewer systems, using larger sewer lift stations. Private developments also followed this trend. Construction of pressure sewers instead of larger private pumping stations became commonplace.

Some Chelmsford residents resisted the pressure sewer trend and tried to convince the town to install more conventional gravity sewers and pumping stations. Other residents initiated a political debate regarding the ownership and maintenance of the individual pressure sewer grinder pumps and the privately owned lift stations in residential developments within the town, proposing that the town assume the cost of operation and maintenance. The joining of these two factions built momentum in support of town ownership. The ensuing town debate raised more concerns over quantifying the

actual ownership costs that the town would be assuming.

In 2013 Chelmsford residents formed Sewer Fairness Alliance with the key objective of convincing the town to take over the cost of operation and maintenance of approximately 525 private grinder pumps. This led the town to form a study group to examine the ramifications of a town-owned-and-operated grinder pump system. Presently, around 525 individual grinder pumps are installed in Chelmsford, along with 41 public lift stations, and an estimated 39 private lift stations of various ages and in questionable or unknown condition. Many of these private lift stations were old and did not have the equipment and controls to enhance reliability that would normally be considered a minimum standard of the town. The study group would help to define the cost to rehabilitate and update these stations, and formulate a “plan of acceptance” for town consideration.

The study also investigated legal access, reviewed special permit conditions, analyzed private escrow funds that may exist for maintenance of private systems, and evaluated past and future fees and assessments needed to sustain and improve the system. If the town was to take ownership of the grinder pumps, compensation to private owners through fee and/or assessment reduction must also be considered. A similar arrangement would also be needed for private lift stations serving discrete developments. Many of these lift stations were believed to have had a long history of failure, and this was a compelling reason for many residents within the developments to promote town ownership.

The study group first evaluated how the individual grinder pumps performed over the years. The population of grinder pumps in Chelmsford has grown from 1996 to present day. Currently the community has 525 grinder pump stations. There are two types of grinder pumps currently in operation. The study group utilized service records of the manufacturer with the largest number of grinder pumps in town.

One of the key industry terms for evaluating pressure sewer performance is to calculate MTBSC. Claims of service performance by the key manufacturers of grinder pumps in Chelmsford indicate that MTBSC can be expected to be 8 to 10 years.

To determine MTBSC history, the age of the pumps along with the frequency of service must be reviewed. MTBSC does not denote a complete pump failure or replacement; instead, it represents a service interval. Service repairs can be mechanical or electrical. Service may result from manufacturing defects under warranty, normal wear and tear, and installation issues such as improper backfilling, poor grading, and improper wiring. Damage can also occur from extreme weather or homeowner abuse or neglect. For a given study period, the number of “pump years”

Table 1. Chelmsford Mean-Time-Between-Service-Calls (MTBSC)									
2014 Report Year	Age in Years	Pumps Sold	Cumulative Pumps in sys.	Pump Years ¹	Cumulative Pump years	Service Calls Per Year ⁴	Cumulative Service Calls	Percent of Pumps ² Serviced Per Year	MTBSC “Pump Year”
2000	14	136	136	1904	1,904	4	4	2.94%	476.00
2001	13	10	146	130	2,034	1	5	0.68%	406.80
2002	12	3	149	36	2,070	7	12	4.70%	172.50
2003	11	4	153	44	2,114	3	15	1.96%	140.93
2004	10	8	161	80	2,194	7	22	4.35%	99.73
2005	9	27	188	243	2,437	12	34	6.38%	71.68
2006	8	22	210	176	2,613	17	51	8.10%	51.24
2007	7	16	226	112	2,725	15	66	6.64%	41.29
2008	6	32	258	192	2,917	21	87	8.14%	33.53
2009	5	28	286	140	3,057	28	115	9.79%	26.58
2010	4	41	327	164	3,221	29	144	8.87%	22.37
2011	3	61	388	183	3,404	46	190	11.86%	17.92
2012	2	101	489	202	3,606	40	230	8.18%	15.68
2013	1	4	493	4	3,610	45	275	9.13%	13.13
TOTAL		493		3,610			AVERAGE	6.55%	
Weighted MTBSC based on growing age of pumps ³ 13.13									

Notes:
This table reflects the total pump years and the cost per pump year @ \$45.90 for the total period 2001 through present day 2013
¹ “Pump-Years” is number of pumps in service over the life of system in years.
² Percent of pumps serviced are usually expected to be 8 to 10 percent. Data includes repairs for service and installation issues.
³ MTBSC (Mean-Time-Between-Service-Calls) expected to be 8 to 10 years.
⁴ 2013 Service calls exclude 12 warranty calls and one upgrade to competitor station.

is calculated by multiplying the number of pumps in service per year by the number of years in service. The cumulative number of “pump years” can then be divided by the cumulative number of repairs during that same period to obtain MTBSC.

Table 1 shows the Chelmsford pump population with 3,610 “pump-years” of service and 275 cumulative service calls with a resulting MTBSC slightly greater than 13 years.

Concerns about age of pumps and the service life can be better examined by comparing the average life of these pumps to the current age. Grinder pump systems are generally reliable with life expectancies of 15 to 20 years with possibly a pump “core” replaced over time. Pump life is greatly influenced by the quality of the installation and owner use. The pump basins have a longer life expectancy and have been known to exceed 30 years.

When the pump population in Chelmsford was examined, more than half of the pumps were 5 years

old or younger (see Table 2). Presently the average age of pumps in Chelmsford is 7.3 years.* Around 30 percent of the pumps are near the end of their expected useful life. Future repairs of these pumps must be weighed against the useful life and return on investment.

Service records were examined from 1999 through 2013, to determine the reason for the service call. Calls were categorized into three types—warranty calls, installer-related issues, and regular service. More recently, service record tracking policies further distinguish the root cause of service calls to better isolate areas that need attention such as through stepped-up training and education. The records for Chelmsford were examined and categorized with results shown in Figure 1.

The service data can be summarized as follows:

- Warranty Calls average about 2 percent of the installed pumps (0 to 7 percent)
- Installer Issues average about 4 percent of the installed pumps (0 to 14 percent)

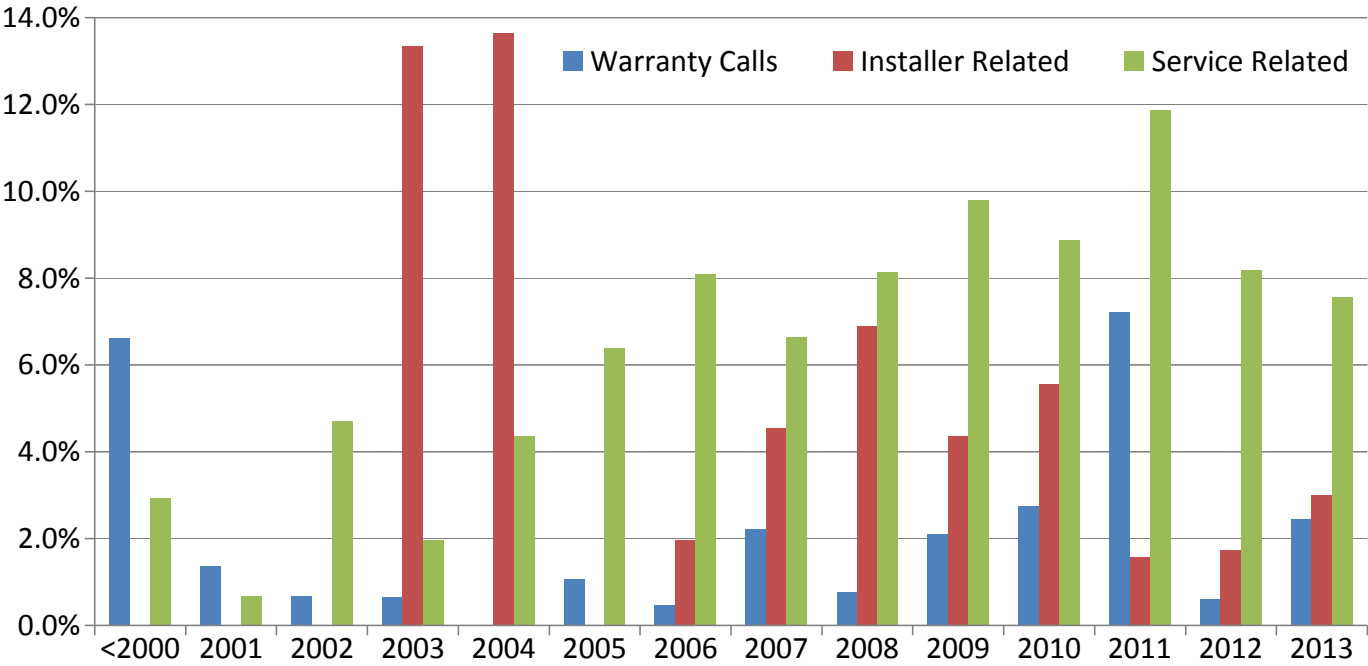


Figure 1. Chelmsford service percent of calls by category

Table 2. Chelmsford—age of pumps		
Pump Years	Pumps	Average Age
3610	493	7.32*
Percentage		
53.35%	263	0 to 5 years
15.62%	77	5 to 10 years
30.22%	149	10 to 15 years

*Pump age includes products installed prior to year 2000 when the data collection of the FRMA Service Department was developed. This data reflects service records for Environment One® pump units. Other manufacturers’ data may vary.

- Service Issues average about 6.5 percent of the installed pumps (1 to 12 percent)—(Also see Figure 1 for detailed data for a given year.)

In 2003 and 2004, improper installation-related service calls dramatically increased. Installer training efforts were stepped up in 2004 to stem the spike in these service calls. Chelmsford began to require grinder pump installation training endorsements for licensed drain-layers. This stepped-up training and additional periodic inspections helped to reduce these issues to a more manageable level in later years. Actual “Service Calls” showed that the town has an MTBSC of slightly more than 13 years.

Ownership costs are the final measure of a system’s performance; the lower the cost, the more affordable the sewer alternative. For comparison purposes, data published for other large pressure sewer systems

were compared to Chelmsford’s costs. These systems included three southern communities with more than 500 pumps each. In these instances, the communities perform their own service work and maintain records of their costs. (see Table 3).

Table 3. Large pressure sewer system ownership costs			
Community	No. pumps	Service dates	Cost to maintain
Carbondale Penn.	>500	1988 – 1997	\$46/year
Fairfield Bay Ark.	>564	1996 – 2004	\$19.45/year
Fairfield Glade Tenn.	>2,341	1978 – 2004	\$42.04/year (rolling average)

As noted, projections of cost generally range from \$20 to \$46. Chelmsford residents do not seem to deviate from this trend as can be seen from the repair costs during the targeted time.

Using local distributor accounting records, total annual service costs were summarized and are presented in Table 4. Accounting records from 2000 to 2013 did not itemize costs and were not sorted by repairs, parts, or spare cores. In 2001 and 2003, some parts or spare cores may have been purchased.

Based on the service history in Chelmsford, the cost of ownership of these pumps has fallen close to the expected ranges. Service costs do not include power costs, which are estimated at \$22 per year based on \$0.11/kWh. Also, if past-year costs were subjected to a present worth analysis, the average service cost in current dollars would increase.

Table 4. Total annual service costs					
Service Year	Service Cost Total / Year	Average Cost Per “Pump Year”	Cost Per Serviced Pump	Comments	Average Annual Cost Per Installed Pump
2001	\$2,801.77	\$1.38	\$2,801.77	Parts Purchase (1)	\$19.19
2002	\$5,068.88	\$2.45	\$724.13		\$34.02
2003	\$6,075.22	\$2.87	\$2,025.07	Parts Purchase (1)	\$39.71
2004	\$5,249.45	\$2.39	\$749.92		\$32.61
2005	\$2,643.50	\$1.08	\$220.29		\$14.06
2006	\$10,892.31	\$4.17	\$640.72		\$51.87
2007	\$6,726.32	\$2.47	\$448.42		\$29.76
2008	\$12,721.91	\$4.36	\$605.81		\$49.31
2009	\$13,732.01	\$4.49	\$490.43		\$48.01
2010	\$28,641.54	\$8.89	\$987.64		\$87.59
2011	\$35,932.20	\$10.56	\$781.13		\$92.61
2012	\$31,931.15	\$8.86	\$798.28		\$65.30
2013	\$36,696.06	\$10.17	\$815.47		\$74.43
TOTAL	\$199,112.32	\$55.16	\$929.93	AVERAGE \$49.11	

Service calls occur for a wide range of reasons beyond a pump issue. These issues are included in the total service calls and may not truly reflect only service calls for actual pump service to the grinder pumps. Examples of service calls not related to regular service are listed below:

- Calls to service pumps found to be from another manufacturer
- Submerged generator transfer switches
- Broken or blocked discharge lines
- Blocked drain lines
- Nothing wrong
- Sand in station
- Circuit breakers off
- Excessive grease
- Rags

In 2013, the local distributor began to code service call invoices for the grinder pumps with prefix letters to denote type of call.

- “S” – Denoted pump service calls
- “N – Non-service related or non-pump related issue such as plumbing clog before the pump
- “W” – Manufacturer warranty call or local distributor warranty

This information helped to classify the types of calls more accurately and point out areas in which more education of the installer, customer, and service provider may be warranted. Table 5 shows the classifications that occurred during 2013.

- Warranty work was covered by the manufacturer

Table 5. 2013 service call breakout		
		% Total Pumps
Total Calls	58	11.8%
Warranty	9	1.8%
FRMA warranty	3	0.6%
Installer issue	8	1.6%
Abuse	6	1.2%
Upgrade competitor station	1	0.2%
Service	31	6.3%

- The local distributor warranty covered service issues missed during an initial call and identified service training areas that need attention
- Installer issues included improper wiring, stations buried below grade, cut power cords, and leaking panels from improper penetrations to the electrical box
- Abuse issues included excessive rags and baby wipes which are common issues in wastewater collection systems, excessive grease, sand, or latex paint
- Abuse also included refusal of service from owners who were opting not to repair their pump, assuming the town would later take service responsibility

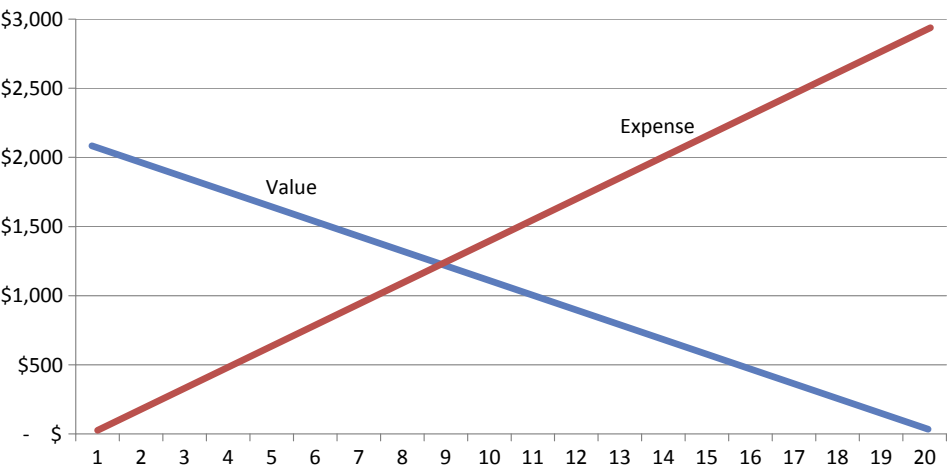


Figure 2. Depreciation compared to the cost of maintenance and replacement

- One station was upgraded with a new pump, because the existing pump was beyond repair and the homeowner elected to replace this unit with the semi-positive displacement grinder pump used throughout the town
- The remaining calls were actual pump service issues

Over the life of the pump the owner should be able to pay for repairs and also plan for the replacement of the pump at the end of its useful life. As detailed earlier, a pump can typically have a useful life of 15 to 20 years at which point the unit could be replaced. Generally only the core or the pump itself would need replacing since the chamber has a longer useful life. Assuming regular system maintenance and service are applied to the grinder pump, a core replacement would be required at year 20. By this time, the pump owner should have sufficient funds set aside to cover the cost of the replacement pump core.

Long-term ownership of any sewer capital asset should include provisions for future replacement costs. Depreciation of capital assets is a common tool to track asset deterioration. Some private property owners may struggle to meet current expenses let alone set money aside to replace asset items such as the roof, the furnace, or in this case, the grinder pump. Nonetheless, planning for these major items and being prepared when servicing is required is important.

As a simplified example of expenditure planning, Table 6 shows the straight line depreciation based on a pump “core” replacement cost of \$2,083 spread over a 20-year period. This straight line method sets aside \$104.15 per year to cover the replacement cost at the end of the useful life. Allowing for service repairs in years 8 to 10 (MTBSC average) an additional \$50.48 each year would need to be set aside for an annual cost of \$154.63 over the 20-year useful life/recovery period. (The \$50.48 value comes from the \$49.11 average annual service cost with a 3-percent escalator to 2014 dollars.) For simplicity, it is assumed

that accrued funds would appreciate with inflation; however, a present worth assessment could also be conducted to better simulate inflation impacts.

This data is represented graphically in Figure 2, which shows the depreciation of the asset compared to the cost of maintenance and replacement. Based on the plot of this data, there appears to be a point where the two plots meet near year 9, where a repair vs. replacement analysis may be warranted. For example, it would make sense that a repair estimate of, say, \$900 in year 12 would generate a discussion regarding the expected life beyond this repair. Can enough life be projected to gain a return on this investment? In many cases the answer would be, yes, if the basic pump motor casting is sound and there are no major structural flaws.

Actual life expectancy of the pump core depends on the use habits and the installation issues at each location. Monitoring the service history of each location can help in understanding if there are repeat calls for a particular reason that may or may not be able to be corrected. The repair history can give further insight when evaluating the repair vs. replacement options.

POLITICAL AND ECONOMIC DECISIONS

Chelmsford residents will have to decide if these costs can be borne by a service plan either through a public/private partnership or through contractual arrangement. While this paper looks at average costs there are certainly times when a homeowner or business owner will see a repair bill that will exceed the “average.” If the town were to establish some

Table 6. Straight line depreciation		
Year	Value	Expense
1	\$2,083.00	\$ —
2	\$1,973.37	\$154.63
3	\$1,863.74	\$309.26
4	\$1,754.11	\$463.89
5	\$1,644.47	\$618.52
6	\$1,534.84	\$773.15
7	\$1,425.21	\$927.78
8	\$1,315.58	\$1,082.41
9	\$1,205.95	\$1,237.04
10	\$1,096.32	\$1,391.67
11	\$986.68	\$1,546.30
12	\$877.05	\$1,700.93
13	\$767.42	\$1,855.56
14	\$657.79	\$2,010.19
15	\$548.16	\$2,164.82
16	\$438.53	\$2,319.45
17	\$328.89	\$2,474.08
18	\$219.26	\$2,628.71
19	\$109.63	\$2,783.34
20	\$0.00	\$2,937.97

Table 7. Town of Marion grinder pump analysis												
Year	Pumps In Service	Total Service Calls	Real Service Calls			Warranty Service Calls			Installer Issues			Annual MTBSC
			Calls	%	Cum.	Calls	%	Cum.	Calls	%	Cum.	
2005	118											
2006	439	7	0	0%	0	3	1%	3	4	1%	4	62.71
2007	441	22	1	0%	1	12	3%	15	9	2%	13	20.05
2008	441	21	1	0%	2	14	3%	29	6	1%	19	21.00
2009	442	37	4	1%	6	26	6%	55	7	2%	26	11.95
2010	443	28	7	2%	13	11	3%	66	10	2%	36	15.82
2011	444	35	10	2%	23	16	4%	82	9	2%	45	12.69
2012	445	41	31	7%	54	2	0%	84	8	2%	53	10.85
2013	450	42	33	8%	87	1	0%	85	8	2%	61	10.71
Average				2.5%			2.4%			1.7%		
									Average MTBSC 2007 – 2013		14.72	

form of cost recovery and acceptance of responsibility of service and maintenance, these spikes in repair cost could be normalized by spreading the costs over a much larger user base. Residents would likely not be charged for the single repairs but instead would pay an annual fee or premium. This is not unlike other services covered by municipal general funding.

One concern for the town would be if this type of arrangement would increase the instances of abuse or owner neglect if the “town” now owns the pump and the maintenance. Some cost recovery method for repeat issues or neglect would most likely be needed to limit liability to the town. Regulation and ordinance updating would be required to ensure that owners use the equipment responsibly and help streamline cost recovery when abuse or neglect is evident. Also to be addressed would be the maintenance of piping systems and the pump chambers in the event of damage. As presented earlier, the pumps serviced from abuse are a very low percentage of the total service calls and a low percentage of the total inventory.

The town also has issues of managing long-term power failures. Alarm panels have been installed with the ability to connect to a portable emergency generator during a power outage. The question remains: Who provides this generator under a public/private partnership? The issue is before the study group to evaluate.

TOWN OF MARION

Some communities such as Marion, Mass., had little choice whether to take control of pressure grinder pumps. As a condition of State Revolving Fund (SRF) funding, Marion had to establish a maintenance program and agree to carry on the maintenance of the pumps and system as part of its overall collection system. Marion has established a system to manage the system repairs and to collect fees for service repairs that are the result of user abuse. Service repairs are coordinated through the Sewer Department, and the department is directly in contact with the local service providers.

Marion had its challenges to convince residents of the benefits of pressure sewers versus installing what were considered to be more conventional gravity sewers with multiple lift stations. Residents attempted to stop the grinder pump installations and to force the project toward what some felt to be a more reliable system. An article in the February 2008 WEF journal, “Beyond Gravity—Lessons from the largest pressure sewer project in New England,” by Deborah Primeau Mahoney, Thomas Parece, Jay Hall and Robert Zora, discusses this subject and demonstrates the cost advantage of installing pressure sewers within that community.

The Marion project was completed in October 2006 and included a 5-year warranty from the manufacturer and local distributor.

Following the initial 5-year warranty an additional and renewable service agreement was executed between the town of Marion and the local distributor.

Table 8. Marion service cost per pump						
Fiscal Year	Service Cost Residents	Service Cost Town	Service Cost Total/Year	Service Calls	Cost Per Serviced Pump (4)	Cost Per Installed Pump
2007	—	\$1,682.68	\$1,682.68			
2008	—	\$4,104.47	\$4,104.47	21	\$195.45	\$9.35
2009	\$939.31	\$2,387.51	\$3,326.82	37	\$89.91	\$7.54
2010	\$612.19	\$2,597.95	\$3,210.14	28	\$114.65	\$7.28
2011	\$1,585.57	\$6,792.04	\$8,377.61	35	\$239.36	\$18.95
2012	—	\$21,839.04	\$21,839.04	41	\$532.66	\$49.30
2013	\$1,008.61	\$5,813.97	\$6,822.58	42	\$162.44	\$15.37
TOTAL	\$4,145.68	\$43,534.98	\$47,680.66	204		
AVERAGE				34	\$222.41	\$17.97

The town of Marion was required to establish a maintenance plan as part of the grant acceptance in 2004. The following excerpt, which summarizes the Marion program, is from a presentation at the NEWEA Annual Conference in 2006.

MARION HOMEOWNER RESULTS

Homeowners had a certain amount of responsibility to maintain their units. But how the service agreement worked was easy and limited the amount of effort on the homeowner’s part. Each grinder pump unit is equipped with an exterior mounted control panel to indicate alarm conditions. In alarm conditions residents call the number on the box, or the same number which is located on an O&M pamphlet given to the resident, and a local distributor, who the service agreement is with, will come out to the home and determine cause of the problem and how to fix it. In addition, each resident is provided with an interior alarm panel which will sound in case of high water.

Each resident is provided an O&M manual to help the town and the residents know who is responsible for what and how to maintain their units. This O&M helps the town with less frequent involvement in the process. The first year is still the residents trying to figure out who is in charge of what; however, the town has less O&M than if it would have put in any other



type of system. This O&M manual includes winterization procedures and what to do in case of long down times. This also includes policies that the town has put in place for proper maintenance and homeowners’ responsibilities with their grinder pumps, including specifications for personal generators.

TOWN OF MARION RESULTS

As part of the original installation contract, the town included the purchase of three emergency generators, one for each neighborhood. In extreme emergency cases, these generators would allow the town DPW staff to go to each neighborhood and pump down pumps while waiting for power to be restored. Such was the case during Hurricane Bob in which power was lost in the town of Marion for more than 3 days.

Since substantial completion of the project, the town has experienced only a few resident calls, mostly dealing with property restoration during the contractor’s warranty period, and only a handful of equipment warrantee issues.

LESSONS LEARNED

- Client education on alternatives and impacts is critical to the successful implementation of pressure sewer systems
- Increased and informative public education and outreach must be an integral part of implementing pressure system approach to wastewater collection with a focus on education around resident responsibility
- Construction contract documents (either standards for developers or standards for publicly bid projects) must include specifications focused on sequence of construction, resident responsibility, equipment warranty, equipment guarantee, and formalized startup system (signoffs from manufacturer)
- Modify municipality regulations and standards for installation of grinder pumps and low-pressure sewers; key to this project was the overall cost savings and timesaving from pressure sewers compared to construction of gravity sewers and several lift stations



Palmer, Mass.—a newer series pump core (right) being sized up for future installation beside a first-generation series of pump

Service data has been maintained for this grinder pump population of 442.

Service calls have been categorized as “Real Calls” for actual pump issues, “Warranty Calls” under the original 5-year warranty agreement, “Installer Issues” for calls related to wiring issues and “other” installation related problems. As an example of “other” problems, some pump chambers were damaged or power cords were damaged during installation.

This data reflects service records for pump units from the same manufacturer highlighted in the town of Chelmsford system. Other manufacturers’ data may vary.

Grinder pumps in Marion were installed at the same time by the general contractor performing the main service line work. Pumps were inspected prior to startup. The startup included a visual inspection of the pump and testing to make certain that the pump was wired properly, had adequate power supply, and operated within acceptable parameters. The relatively low percentage of installer issues, seen in Table 7, of 2 percent or less compares well against the installer issues in other installations.

The higher MTBSC average reflects the benefits of the extended manufacturer’s warranty. The current MTBSC greatly exceeds the commonly predicted 8 to 10 years.

Actual service costs beyond the initial 5-year warranty are shown in Table 8. Service costs are included in the sewer use budget for “normal wear and tear.” The town reviews service invoices with the service provider to determine if abuse or neglect issues are the cause of a call. The town will forward charges to residents when service is due to neglect or abuse. Normal service is supported by the town and is presently funded in their operating budget.

Marion has a large percentage of seasonal homes. Seasonal dormancy may contribute to service issues of corrosion or moisture in control panels when power is turned off for 3 months. Residents have been instructed on the proper winterization procedure to minimize these issues.

ADDITIONAL RESEARCH

Other communities were queried to gain understanding of ownership costs.

A survey was sent to communities that manage pressure sewer systems, asking the total number of grinder pumps in their system, and if they are residential, commercial, or industrial uses. The information provided was based on estimates of cost and age of these systems.

TOWN OF PALMER

Palmer, Mass., has a customer base of 3,621 single-family homes, 465 commercial properties and four industrial properties. Palmer reports a population of 60 grinder pumps averaging 10 years of age. The basins were actually installed over 18 years ago with a blend of pumps from one manufacturer that were produced until 1996. The town provides full maintenance and rebuilds pump cores.

Palmer is unique as it fully rebuilds pumps that are in for service and replaces all wear parts when the core is in the shop.

This level of service had been the practice until recently when the town began to replace these older cores with the newer series cores. The town reports it spends between \$5,000 and \$10,000 per year maintaining grinder pumps or replacing the oldest with new cores.

TOWN OF EDGARTOWN

The seasonal community of Edgartown, Mass., has 899 single-family homes, 201 commercial properties, and no industrial users. The rest of the customers are public buildings, churches, and museums, bringing the total customer base to 1,112.

Edgartown services 321 residential grinder pumps and 48 commercial grinder pump stations. The average age is balanced, with a third 1 to 3 years old, a third 5 to 7 years old, and the remaining third more than 10 years old. Edgartown estimates the annual expense to maintain the grinder pumps at

\$12,500 with an additional \$3,600 to \$7,900 spent repairing main lines from damage by excavators and landscapers.

Because of the unique location and limited access to Edgartown, town staff have been factory trained to perform some service locally. The cost to maintain each pump in Edgartown averages \$33.87 per year. This lower cost is due in part to the local service work performed by the town staff, since travel charges that would otherwise be included in service costs are avoided. Labor costs are part of the operating budget. There is no revolving fund system in place to recover the cost of labor; therefore, labor is not counted in the total maintenance cost.

CONCLUSIONS

Knowing rather than fearing the true cost of maintenance helps towns to engage in the discussion and to embrace the servicing of grinder pumps in their system. The actual service cost is manageable as can be seen by the previous examples.

Installer training and startup inspections are important in maintaining lower service costs.

Chelmsford has dealt with a blend of betterment and assessment issues that evolved over time. Following the report of the Grinder Pump Study Committee the town voted at the 2014 Spring Town Meeting to direct the Public Works Department to enter into a services agreement to maintain private property single-family home pump systems. All existing pumps are being inspected and will be brought up to current standards. This effort is being funded by user fees. Service repairs exclude any abuse or neglect that may be found during the system-wide inspection.

Marion’s involvement with grinder pump servicing was much more streamlined. The town needed to accept the system maintenance through either increased town staffing or through contract service to receive SRF funding. Marion chose the latter and works with and supports the service provider. Assessments were dealt with during construction. This timing made things much easier and left little to question.

System owners should be involved with the pressure sewer system though all phases of design, specification writing, construction, and startup. Pressure sewers are a “system” requiring the understanding and proper management of the components.

Support and education for the residents is crucial to the project’s success. While it may sound easy to simply draw a line at the pipe connection or the property line, the long-term success depends on everyone fully understanding how these systems work and gaining user support at the initial stages of the project.

Keys to a successful installation include an education program with the community focused on:

- Training owners on
 - How the system works and what they can expect
 - How they can help make the project successful
 - Developing a partnership between owner, engineer, contractor, and supplier
- Education of residents on
 - How the system works and its limitations
 - What they can expect
 - How they can help make their installation successful
- Proper training for installers and startup inspections focused on
 - Solving problems before they become major issues
 - Verifying performance
 - Reducing issues such as issues of inflow, improper grading, wiring issues, and much more

ABOUT THE AUTHOR

• Henry Albro is a senior sales and application engineer for F.R. Mahony & Associates, Inc., Rockland, Mass. He has collaborated on recent updates to NEIWPCC TR-16 Guides as well as assisted New Hampshire Department of Environmental Services with rules changes for pressure sewer systems. He has an associate degree in civil engineering from Vermont Technical College and holds various wastewater operator and collection system licenses. He is past president of Massachusetts Water Pollution Control Association and is now finance committee director.

ACKNOWLEDGEMENTS

- Michael Vosnakis, Superintendent Chelmsford DPW-Sewer Division
- Frank Cooper, Town of Marion DPW Sewer Division
- Gerry Skowronek, Town of Palmer Sewer Superintendent
- David Thompson, Edgartown Sewer and Wastewater Department
- Jeffrey A. Murawski, P.E., Fitchburg DPW Civil Engineer and Chair of MWPCA Collections Committee
- Dave Beauchamp and Andy Bryant, Ted Berry Company, Presenters to MWPCA June 2013 Meeting

NEBRA Highlights

Tests performed on earthworms may eventually provide information on soil health (see *Research—Biosolids Trace Chemicals*)

Triple Bottom Line (TBL) for biosolids management

The Water Environment Research Foundation (WERF) has published “Triple Bottom Line Evaluation of Biosolids Management Options,” providing guidance on bringing environmental and social criteria into decision-making regarding biosolids management options. A NEBRA team played a large role in this project.

users to modify them and the weightings—the impact—of each criterion.

Ultimately, a TBL model is truly useful only when there is much stakeholder involvement in understanding the significance of each social, environmental, and economic criterion included in decision-making and how each criterion is weighted. As the WERF report notes, those planning biosolids management systems will benefit from working with community members and other stakeholders in tweaking the TBL model to represent local conditions and goals.

The WERF report includes an example of running the TBL model. The project team applied its best professional judgment regarding biosolids management options available to a typical 10-mgd WRRF, entering pertinent data and weightings into the TBL spreadsheet model. Six biosolids management scenarios were compared. The highest TBL score was for the system that included anaerobic digestion with co-digestion and combined heat and power (CHP), followed by land application. While this scenario was not the least costly, it scored higher on environmental criteria such as net greenhouse gas emissions, net energy consumption, and resource utilization. It also scored well for social criteria that include nuisance issues and the public engagement inherent to the biosolids management system.

NEBRA encourages application of TBL analyses to help make our biosolids management choices and systems more sustainable. The full report is available from WERF.org.

Welcome new NEBRA members:
Portland Water District
David Duest

Biosolids information on the Web



**nebiosolids.org highlights what NEBRA is all about:
Recycled organics—tools for sustainability**

Research—biosolids trace chemicals

In NEBRA's region one researcher is looking extensively at key questions about microconstituents in biosolids: Gordon Price at Dalhousie University's Truro, Nova Scotia agricultural campus.

Microconstituents—trace chemicals such as pharmaceuticals and personal care products (PPCPs) and other emerging substances of concern (ESOCs)—and their presence and impacts in the environment have held public attention for more than a decade. While research has found that these trace chemicals are unlikely to present significant risk to public health and the environment via their presence in biosolids, more research is needed.

WERF has been reviewing the state of the science and developing research plans. Meanwhile, a research agenda in Canada, funded in part by the Canadian Water Network (CWN), has been advancing several projects assessing the presence, fate, and potential impacts of microconstituents in biosolids.

The field study sites in Truro, overseen by Dr. Price, have received biosolids since 2008. An initial part of

Dr. Price's research was looking at the nitrogen and pH values and dynamics of Halifax lime-treated biosolids applied to agricultural test plots.

As it was conducting the initial pH and nutrient analyses, Dr. Price's team developed partnerships with other laboratories to measure microconstituents in biosolids, soils, and plants. However, nutrients, metals, pH, and crop quality and yield also continue to be monitored.

“Our first few years of studying trace chemicals was just trying to do a broad scope survey of the various compounds that might be here,” Dr. Price explained during a site visit in September. “We monitor and soil sample this site every three to four weeks from April through October or November. We've been doing that every year.” Samples are analyzed and/or frozen and stored for future testing. A critical part of the research has been developing and improving analytical methods, which are challenging because of the complexity of the biosolids and soil matrix and the low concentrations of chemicals being investigated.

(continued on next page)

Try it on your smartphone or tablet. Click through its links. Search its content. View its images. The new nebiosolids.org is dynamic, fresh, rich with information—and easily navigated.

And it highlights what NEBRA is all about: recycled organics - tools for sustainability.

Biosolids and other organic residuals are resources in widespread use solving environmental challenges and providing economic benefits. Browse the new Member Highlights section for examples of how NEBRA members are advancing sustainability through residuals management.

And if you are skeptical about biosolids use on soils, we have plenty of resources related to the research and safety of biosolids recycling at About Biosolids. Then click to the Resources section, which covers topics, including the “Scientific basis...” and “Allegations...”

We're continually adding to these pages, with the most current, scientific information and with links to the best resources on the Web. Check back often. And let us know what you think!

NEBRA Members

The new nebiosolids.org is your resource! And you can help make it even better: forward your blog topics, Tweets, photos, and stories of sustainability. And use the “For Members Only” page, with its membership directory, committee work, compiled research abstracts, and more. Click to it from the Home page (contact the NEBRA office for the password).



Gordon Price of Dalhousie University's Truro, Nova Scotia agricultural campus.

For 2013 and 2014, CWN provided funding for the Dalhousie-led research team to continue its biosolids work with a focus on “impacts of alkaline stabilized biosolids application on fate and transport of emerging substances of concern in agricultural soils, plant biomass, and drainage water.”

Nearby are additional study sites. One field is segmented into plots, each of which has an individual tile drainage system that captures soil water and transmits it to a central

building. “This allows us to apply a treatment to a plot and capture the tile drainage water from just that plot,” Dr. Price explained.

Rob Jamieson, a colleague at Dalhousie, is modeling the biosolids, soil, and plant system and trace contaminant fluxes in the soil/soil water system. Dr. Price explains: “Rob Jamieson’s group has calibrated the model to the hydraulics of these test cells, so that measured concentrations of microconstituents found in these experiments can be related to expected real-world field

concentrations.”

Another field contains monitoring wells that extend as far as the bedrock sandstone. These fields have not had biosolids applied in recent years. “So we will capture samples before application and then do a fall application of NViro

soil (lime-stabilized biosolids), drill a multi-level groundwater sampling well, and sample all wells and tile drainage through next spring and maybe next fall. This means we’ll be capturing short-term movement of groundwater.”

Dr. Price is focused on chemicals chosen based on quantities of sales—the top 20 chemicals based on production and use in pharmaceuticals, personal care products, etc. They include phthalates, because they are ubiquitous in plastics. As an example of initial findings from Dr. Price’s microconstituents work, in the fall of 2014 the *Canadian Journal of Soil Science* published a paper focused on the anti-microbial triclosan (TCS) and its aerobic degradation in soil.

One student of Dr. Price is focused on phthalates. Another student is looking at sorption and desorption of three pharmaceuticals in mixture (most prior work has been done on individual chemicals). And his team has looked at biological health indicators. “We have done earthworm sampling at intensively disturbed plots over one year, spring and fall. We’re hoping to do a fall sampling this year too. We found the worms tended to move to the places where biosolids were applied.”

The earthworm work has included some metabolomics, looking at changes in metabolites as a way to understand stresses. “Think of this as a blood test,” explains Dr. Price. “Can we take a test on earthworms and use it as an indicator of soil environmental health? For example, if a worm presents a certain metabolite profile, it may indicate some kind of stress.... The metabolite signature will be a physiological response to a stressor.”

The CWN funding in 2013 helped Dr. Price expand the research team. He fully expects this long-term project to be able to produce understanding and tools useful to the biosolids management profession. Already he has improved understanding of nitrogen dynamics from land application of the Halifax, lime-treated biosolids in Nova Scotia.

The models being developed are an expected output of the project: “The models we’re developing could be applied to other soils—New England soils, for example,” says Dr. Price. “They can help ensure best management: If a projected, modeled scenario indicates a negative impact, then you know to change the management practice to avoid those impacts. It’s about sustainability: How do we moderate the rate of application to work for each soil so that the soil can deal with it? We might find that different solids treatments may be more or less appropriate for a particular soil system.”

With systems and research teams developed at great cost over many years, Dr. Price hopes to see this research continue for several more years. So does NEBRA. The field sites, laboratory capabilities, and researcher understanding of biosolids are investments that provide critical support for biosolids management in this region.

Ned Beecher, Executive Director
Tamworth, N.H.
603-323-7654 | info@nebiosolids.org

For additional news or to subscribe to NEBRAMail, NEBRA’s email newsletter visit nebiosolids.org



PIPELINE SERVICES

Providing Safe, Reliable, & Cost-Effective Environmental Services
Since 1989

- FLOW MONITORING
- CCTV INVESTIGATIONS
- TELEMETRY SYSTEMS
- SMOKE & DYE TESTING
- MANHOLE & BUILDING INSPECTIONS

EST
Associates, Inc.

51 Fremont Street
Needham, MA 02494
781-455-0003



VISIT US AT
ESTASSOCIATES.COM



Delivering innovative solutions for the
New England wastewater market.



ASSET MANAGEMENT | ENERGY & SUSTAINABILITY | NUTRIENT REMOVAL | COLLECTION
TREATMENT | STORMWATER MANAGEMENT | FUNDING & RATES

Tighe&Bond

Consulting Engineers | Environmental Specialists

Offices throughout New England | 413.562.1600 | www.tighebond.com



Connecticut State Director Report

by Jay G. Sheehan
jsheehan@woodardcurran.com



As the snow finally melts and the resulting high flows hit our water pollution control facilities, it is the perfect time to examine the challenge of maintaining our sewer collection systems. This becomes even more difficult when public demands for more service are coupled with today's downward economic pressures. A modern wastewater utility has to be evermore creative and diligent in addressing collection system renewal.

Are we de-emphasizing our sewer collection systems too much?

Ironically, we are paying less and less attention to the continual degradation of our sewer collection system infrastructure. One example is in the

treatment-related topics (the rest of the presentations were generally on stormwater, regulations, management, safety, and other issues).

So, in Connecticut and throughout New England, we seem to be emphasizing collection systems less than treatment facilities, even though the collection system value may be greater. Perhaps our high flows due to winter runoff will remind us of how important our collection systems are.

How do our Connecticut associations help address our collection systems?

The two primary Connecticut wastewater associations are the Connecticut Water Pollution Abatement Association (CWPA) and the Connecticut Association of Water Pollution Control Authorities (CAWPCA). Each association strives to engage membership through training, advocacy, and outreach, and each directly and/or indirectly helps our utilities address collection system challenges.

On February 25, 2015, CWPA and CAWPCA partnered with NEWEA as well as several other clean water partners (Connecticut Fund for the Environment, Save the Sound, etc.), to host a legislative breakfast at the Connecticut Legislative Office Building to advocate for additional sewer infrastructure funding. During this breakfast, we introduced our state representatives and senators to the importance of clean water and its positive effect on the Connecticut economy and job creation. Over the past several years, we have been pleased to see the Clean Water Fund increase significantly, thus validating our legislative outreach.

Connecticut Clean Water Fund (CWF). The 2015 CWF priority list shows 15 projects representing \$460 million of investment for 2015. Only five of the projects are for sewer and combined sewer overflow (CSO) projects. However, in reviewing financial benchmarking data for Connecticut wastewater utilities, we see that the replacement cost (i.e., asset value) of a typical sewer collection system is generally greater than the replacement cost of a typical wastewater treatment plant. In addition, benchmarking data shows many sewer collection systems in New England are 50 to 100 years older than treatment facilities—and we all know that the average design life of an early 20th century sewer is not 100 years, especially with little or no maintenance.

Additional proof that we do not focus on sewer investment to the degree that we do wastewater treatment facility projects came at the 2015 NEWEA Annual Conference. During this year's conference, there were approximately 150 technical presentations. Of these, 10 percent focused on collection system and CSO topics, while more than a third focused on wastewater

Congratulations to the 2014 NEWEA award winners from Connecticut

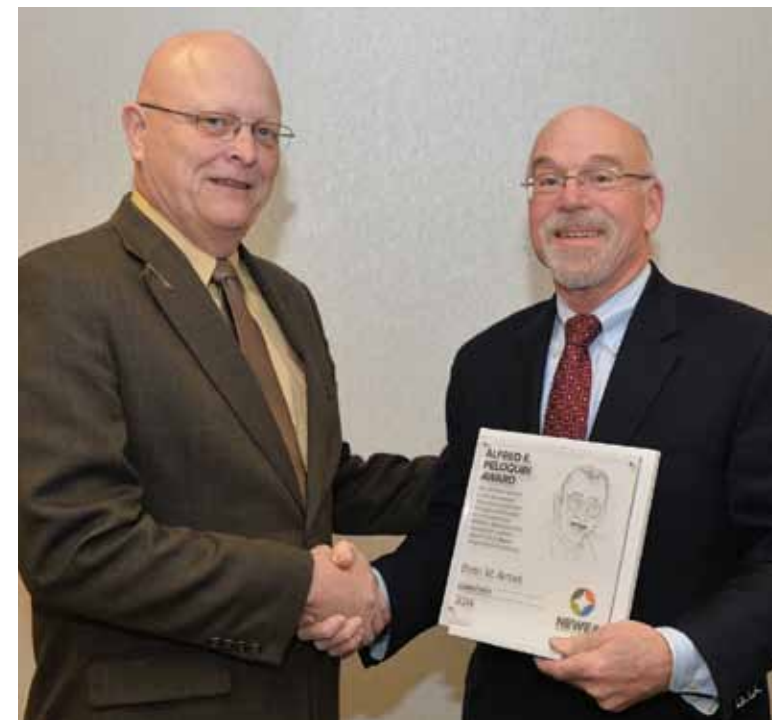
The Connecticut wastewater community is proud of our 2014 NEWEA award winners. We congratulate the following people for achieving excellence in our wastewater community:

- Dan Sullivan (Wallingford WPCF)
Operator of the Year
- Bridget Oei (Student - Hebron)
Stockholm Junior Water Prize
- Brian Armet (Mattabasett District)
Alfred E. Peloquin Award
- Donald Dubiel (Hartford MDC)
Operator Safety Award
- Mike Bonomo (ADS Environmental Services)
NEWEA Past President Award
- Sid Holbrook (Greater New Haven WPCA)
E. Cutone Executive Leadership Award
- Ed Sweeney (Darien WPCA)
WEF Life Member
- Mary Jersey (Greenwich WPCF)
WEF Lab Analyst Excellence
- Jeanette Brown (Darien)
WEF Service Award
- Mike Bisi (Glastonbury WPCF)
WEF Quarter Century Operator

continued from previous page

In addition, CWPA and the New England Interstate Water Pollution Control Commission (NEIWPCC) are hosting a third consecutive session of the Connecticut Wastewater Operators Management class. Led by Art Enderle (East Windsor water pollution control facility [WPCF]) and Kevin Shlatz (Enfield WPCF), this 10-month program trains operators in various disciplines of leadership so they can make the difficult transition from operator to utility manager. One of the program sessions focuses on collection system investigation and improvement techniques in addition to asset management.

Through these examples, you can see how our Connecticut wastewater associations appreciate and support investment in our aging and potentially neglected sewer collection systems. However, as always, each of us wastewater professionals must proactively manage and improve our aging collection systems, commensurate with our investment in wastewater treatment.



Brian Armet (Mattabasett District) receiving the Alfred E. Peloquin Award from NEWEA President Bradley Moore

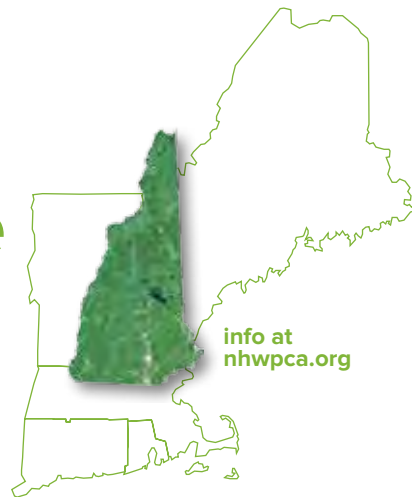
2015 Connecticut Wastewater Events

Event	Date (2015)	Location
CWPA Annual Tradeshow	April 23	New Life Church, Wallingford, CT
NEWEA Joint Water Reuse & Industrial Wastewater Conference	April 28	University of Hartford Gray Conference Center, West Hartford, CT
CAWPCA Annual Meeting	May	TBD
CWPA Sewer Open	June 19	Skunkamaug CC in Coventry, CT
CWPA Scholarship Awards	June/July	TBD



New Hampshire State Director Report

by Fred McNeill
fmcneill@manchesternh.gov



The New Hampshire Water Pollution Control Association (NHWPCA) enters 2015 celebrating its 48th year with 239 active members. A newly elected board of directors led by Peter Goodwin, president, is excited to promote, strengthen, and sustain our water industry. In addition, New Hampshire will be hosting NEWEA's spring meeting at the world-famous Mount Washington Hotel. We are working with NEWEA to showcase the best our state has to offer while hosting our water professional colleagues from throughout New England. Some of NHWPCA's recent work, events, and highlights are presented below.

Committee Work

NHWPCA has several active committees that contribute to the success of the association. Our Activities, Communications, Education, Legislative, Permits, Newsletter, Safety, Scholarship, and Certification committees all have ongoing programs and annual deliverables. The Activities Committee is responsible for our meetings, golf outing, and ski day among other events. The Communications Committee coordinates our successful student Clean Water Week poster contest. The Education Committee offers seminars and training sessions, and coordinates our wastewater management school with the state. Our Safety Committee also offers training sessions and recently completed a safety survey of our membership. Our Certification Committee works with the state to ensure the proper licensing and continued education of our operators. These committees are the lifeblood of NHWPCA as they continue our legacy of successful programs. New volunteers are always warmly welcomed.

Legislative Update

NHWPCA is following and supporting several critical pieces of legislation. HB-376 restores delayed and deferred state aid grant payments for water, wastewater, and landfill projects. Several NHWPCA members testified before the state's finance committee in support of this bill. NHWPCA is still supporting the findings from SB-60, which recommends a \$40 million annual

water trust fund to support the state's water, wastewater, stormwater, and dam projects. This trust fund will be funded from a beverage container fee. SB-29 appropriates \$200,000 for both fiscal year 2016 and fiscal year 2017 to assist the Southeast Watershed Alliance in protecting Great Bay.

Hot Topics

Nutrient and metal limits in newly issued NPDES permits continue to be the "hot topic" in New Hampshire. Wastewater treatment plants (WWTPs) along the Merrimack River are receiving phosphorous limits, smaller inland WWTPs are receiving metal limits, and our WWTPs along the coast are receiving nitrogen limits. These nutrient limits, especially the nitrogen limits, have initiated great debate among regulators, communities, and other stakeholders. This has resulted in studies, litigation, and ultimately several major WWTP upgrades, all at a tremendous cost for all parties involved. The other "hot topic" is the upcoming MS4 stormwater permit. More than 30 New Hampshire communities formed a coalition, retained legal counsel, and submitted joint comments on this draft permit. As the draft permit is written, New Hampshire communities will be faced with tens of millions of dollars in compliance costs. To address these "hot topics" NHWPCA continues to promote rational, reasonable, and cost-effective environmental regulations.

Award Winners

At our recent WEF/NEWEA Annual Conference in Boston several New Hampshire water professionals were honored for their contributions to the industry:

- Rick Cantu – *EPA Region 1 Plant Operator Excellence Award*
- Ray Gordon – *EPA region 1 Wastewater Trainer Excellence Award*
- Mario Leclerc – *Quarter Century Operator's Club*
- Ken Noyes – *Operator of the Year*
- Ed Rushbrook – *Clair N. Sawyer Award*
- Harry Stewart – *Alfred E. Peloquin Award*

Several New Hampshire WWTPs were also honored for their achievements at NEWEA's Annual Conference.

- Dover WWTP – *NEWEA Asset Management Award*
- Hampton WWTP – *EPA Region 1 O&M Excellence Award*
- Penacook WWTP – *EPA Region 1 O&M Excellence Award*
- Winnepesaukee River Basin WWTP – *WEF George W. Burke, Jr. Award*

Recent Events

NHWPCA held its Winter Meeting along our short, but beautiful, coastline in the town of Hampton. Morning tours were given at two of Hampton's recently upgraded wastewater facilities. At the WWTP the recent dewatering upgrade with new presses, piping, and process controls was showcased. The Church Street pump station received a major upgrade, including a new building, wet well, and grinder manhole. After the informational tours, our annual business meeting was held at Ashworth by the Sea where our new board of directors was formally elected. The meeting ended with a great lunch and then a visit from Santa.

NHWPCA was one of 12 sponsors of Conservation New Hampshire's Green Eggs and Ham-shire Breakfast. This policy breakfast is a premiere event for New Hampshire's environmental community. Top elected officials and policy makers spoke about the direct link between clean water and the state's economic well-being.



Ed Rushbrook
Clair N. Sawyer Award

Future Events

- On March 27, NHWPCA will once again join our sister organization in Maine, MEWEA, to host a ski day at Sunday River. Last year we had a pow-pow day at Saddleback Mountain as 18 inches of snow fell the day before. We are hoping for the same great conditions this year.
- On April 13, a delegation from New Hampshire will join hundreds of other water professionals in Washington, D.C., to attend Water Week. This will culminate with NEWEA's congressional breakfast on April 15. The objective of Water Week and the congressional breakfast is to promote the water industry's interests, increase awareness of the importance of water, and establish a source of sustainable funding for water projects.
- On April 16, the annual Trade Fair will be held at the Executive Court in Manchester. Technical sessions will be added to this annual event. NEWEA/EPA award winners will be recognized in front of their "hometown" crowd.
- On April 18, NHWPCA will continue its educational outreach by participating in Discover Wild NH Day. This fun-filled educational day is sponsored by the New Hampshire Fish and Game Department. Along with educating our residents about the wildlife and recreational opportunities that New Hampshire offers, it also focuses on the criticality of clean water to New Hampshire's wildlife.

- On June 26, NHWPCA will hold its annual summer meeting at Ellacoya State Park on the shores of beautiful Lake Winnepesaukee. Technical sessions will be held along with NHWPCA's world famous summer cookout.
- On August 6, NHWPCA will host its 26th Annual Golf Tournament at the historical Beaver Meadow Golf Course in Concord. The association is proud to support the city of Concord's 118-year-old municipal course, one of the three municipal courses in New Hampshire. NHWPCA's fall and winter meetings will be held in October and December, respectively, at locations to be determined.

A Big Thank You

Two long-time and key NHWPCA contributors retired from their positions at the end of 2014. Linda Gaudette served as NHWPCA's administrator for almost a decade. Linda's strong organizational skills, timely deliverables, and warm smile were critical in the successful operation and growth of the association. Also retiring was Nancy Lesieur, a recognized industry leader who has spent her career at the Nashua and Franklin WWTPs. Nancy was treasurer of the association for the past 5 years. A big professional and personal thank you to both of these wonderful women. Also, a big and warm welcome to our new administrator, Elizabeth Harrington, and to our new treasurer, Noelle Osborne, from the Nashua WWTP.

Two Key Votes

NHWPCA is voting on whether to undergo a name change to New Hampshire Water Environmental Association. This re-branding will allow us to focus and sharpen our message. Another vote is to simplify future voting to allow a two-thirds majority for elections and other major business during our annual business meeting rather than the currently required written ballot mailed to all members. The election closed in mid-February, and we hope to unveil our name change and new voting process at our Spring Trade Fair.



Rhode Island State Director Report

by Michael Spring
mspring@narrabay.com



As the new Rhode Island state director, I would like to introduce myself. I am a maintenance supervisor for the Narragansett Bay Commission at the Field's Point wastewater treatment facility, and I have worked in the wastewater field for 21 years. My wastewater experience has been primarily in maintenance, safety, and operations. I have worked on and with multiple hearth and fluidized bed incinerators, conveyors and vacuum systems, dewatering systems such as plate and frame, belt presses, centrifuges, and positive displacement and centrifugal pumps, as well as pump controls, level sensors, flow meters, and valve operators.

With the support of Narragansett Water Pollution Control Association (NWPCA) and NEWEA, I have been on several Rhode Island Operations Challenge teams, first from 1994 to 1996 and then from 2012 to 2014. The most recent team competed in the 2014 National Operations Challenge in New Orleans; it was an exciting experience for me and my teammates, Joe Crosby, Ed Davies, Michael Ceasrine, and Vinnie Russo. It was a thrill to compete side by side with the top Operations Challenge teams throughout the U.S., and the operations challenge was fun and rewarding.

As the new Rhode Island state director I plan to increase Rhode Island's interest in Operations Challenge, equipment reliability, asset management, infrastructure, emergency management, and safety. Please feel free to contact me for more information: 401-461-8848 ext. 279, mspring@narrabay.com

Thanks to Janine Burke for three years of dedicated service as NEWEA's Rhode Island state director. Through Janine's efforts, Rhode Island has become more actively involved in NEWEA, and I will continue that trend. Janine will continue to work within NEWEA as the vice chair of the Awards Committee. One of her achievements as director was initiation of Rhode Island's annual Legislative Breakfasts, which we have conducted over the last three years. This year will be our 4th annual legislative event, but with a twist, as we will hold a Legislative Luncheon near our State

House. We hope that by conducting this event in a more convenient location, attendance by our legislators will increase.

NWPCA's 2014 Holiday Christmas Party/Election of Officers and Food Drive was held at the Kelley Gazerro VFW Post in Cranston. More than 70 NWPCA members enjoyed a family style meal of pasta, salad, grilled vegetables, and roasted chicken. Members donated 589 pounds of canned and dry food, which were delivered after the event to the Rhode Island Food Bank for distribution to those in need throughout Rhode Island.

NWPCA's 2105 Board Members

(Newly elected board members are in Italics)

- *Scott Goodinson, Warwick Sewer Authority, President*
- *Janine Burke, Warwick Sewer Authority, Vice President*
- *Peter Connell, Rhode Island Resource Recovery Corporation, Treasurer*
- *Kathy Perez, South Kingstown, Secretary*
- *Dennis Colberg, Quonset Wastewater, Executive Board*
- *Edward Davies, Narragansett Bay Commission, Executive Board*
- *Bob Mack, New England Environmental Equipment, Director of Vendor/Consultant & Coordination*
- *Jim DeLuca, Aqua Solutions, Director of Vendor/Consultant & Coordination*

NWPCA hosts weekly bowling Wednesdays at 4:00 PM



NWPCA hosts a weekly bowling night on Wednesdays at 4:00 PM. This is our third consecutive year of sponsoring a bowling league at the Cranston Lanes. We have a core group of about 10 members who bowl four strings back to back. Everyone is welcome to participate, and many others come when their busy schedules allow. This is a great inexpensive way to network, and get to know one another within NWPCA and in the Rhode Island wastewater community.

continued from previous page

- Michael Spring, Narragansett Bay Commission, NEWEA State Director
- Bernard Bishop, West Warwick. Executive Board
- Peter Eldridge, Town of Narragansett, Executive Board
- Paul A. Desrosiers, Narragansett Bay Commission, Operator Certification Board Rep.
- Doug Nettleton, Rhode Island Airport Corporation, Past President

2015 Committee Chairs

- Membership – Peter J. Connell
- Entertainment – Peter Eldridge
- Public Relations – Janine Burke
- Operator Training – Janine Burke
- Scholarships – Bernard Bishop
- Golf Tournament – Peter J. Connell
- Trade Show – Kathy Perez
- Awards Banquet – Paul Desrosiers
- Operations Challenge – Edward Davies
- Website – Edward Davies

NWPCA's 2015 Calendar of Events

Event	Date (2015)	Location
Board of Directors Meeting	April 7 7:00 PM	Rhode Island Resource Recovery Facility (Johnston)
NEWEA Congressional Briefing	April 14-15	Washington, D.C.
Annual Awards Banquet	April 30 7:00 PM	Potowomut Country Club
Board of Directors Meeting	June 19 Noon	Quonset Point Development Corporation Admin. Building
NEWEA Spring Meeting	June 7-10	Mount Washington Resort
Annual Golf Classic	June 29	Potowomut Country Club
Hot Dog Roast/General Business Meeting	July 14 5:00 PM	Smithfield WWTF
Chowder Cookoff/General Business Meeting	August 11 5:00 PM	Narragansett WWTF
Annual Clambake and Exhibition	Sept. 11	Twelve Acres, 445 Douglas Pike, Smithfield, RI
WEFTEC	Sept. 26-30	Chicago, Illinois
General Business Meeting	October 13 Noon	Narragansett Bay Commission Fields Point
General Business Meeting & Nomination of Officers	November 17 7:00 PM	
Annual Holiday Party & Food Drive & Election of Officers	December 8	TBA

Monthly board meetings will be held at the Warwick Sewer Authority, unless otherwise indicated.

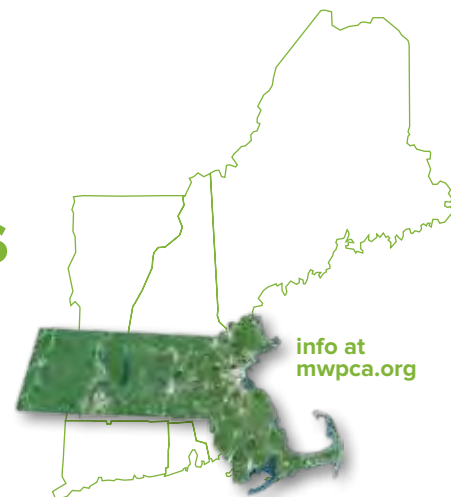


We have received great feedback on our NWPCA Facebook page. To date we have received 111 likes—like us at facebook.com/NWPCA.



Massachusetts State Director Report

by Mike Moreau
mikem@wwtsinc.com



The Massachusetts Water Pollution Control Association (MWPCA) is in its 50th year as an association of water quality professionals. As we reflect on the history of the association and the industry served by those professionals, we realize how far we have come. From an idea that as an organized group we could share ideas and solutions among water quality professionals facing similar challenges, the initial gathering has evolved into a group of more than 800 collaborative members made up of plant operators, plant managers, regulators, equipment manufacturers and their representatives, engineers, consultants, and other practitioners in the field. As we look forward at the changing industry we serve, MWPCA is determined to focus energy and resources on training, outreach, and government affairs to continue to serve our growing membership.

Recent Events and MWPCA News

MWPCA has continued to expand its membership and the dwindling work force by appealing to high school students, college students, and veterans. MWPCA is also broadening its recruitment of members from the stormwater and industrial sectors, and decentralized wastewater treatment professionals. As part of this effort the association held its second annual combination Job Fair/Quarterly Membership Meeting on December 9 at Bristol Community College in Fall River, Mass. About 70 students from surrounding vocational technical high schools joined students from the college at the event. The students attended the technical sessions provided by vendors and industry practitioners, and a special discussion presented by the Massachusetts Department of Environmental Protection about changes to state regulations. After the session the students joined members at the job fair where vendors joined forces to promote and educate the students on the vast number of career paths available to individuals within our industry. Nearly 40 students of the Greater New Bedford Vocational Technical High School have embraced the new student membership opportunity offered by the association and have officially joined our membership.

Operations Challenge

The Massachusetts Operations Challenge team, the MASSerators, placed second in the regional competition earlier this year, earning a slot in the international competition, which took place at WEFTEC in New Orleans in September. This year's team was truly a regional effort with members from both Massachusetts and New Hampshire. The team did well, and they hope to be returning again next year.

NEWEA Annual Conference

Despite the historic blizzard conditions, MWPCA was well represented at the 2015 NEWEA Annual Conference in Boston. All the MWPCA senior officers as well as the executive director attended numerous committee meetings and volunteered time to help NEWEA staff and event coordinators. As the storm paralyzed travel, operator's day was not as well attended as in previous years, but a handful of operators were able to break away from the mayhem that was sure to be occurring at the facilities they operate, and brave the weather to make the trip into the city the night before. The NEWEA Awards Ceremony was held on the final day of the conference, and MWPCA is proud to recognize the following professionals who received awards this year:

2015 Award Winners

- Linda Schick – Operator Award
- James Barsanti – Alfred E. Peloquin Award
- David Press – Committee Service Award
- Joseph Shepherd – WEF Life Membership Award
- Russell Adams – WEF Life Membership Award
- James Pappas – WEF Life Membership Award
- Roger Janson – WEF Life Membership Award
- John Sullivan – James J. Courchaine Collection Systems Award
- John Donovan – the first-ever Biosolids Management Award
- Jennifer Lachmayr – WEF Service/Delegate Award
- Veolia Water/Plymouth, MA WWTP – Energy Management Achievement Award

Upcoming Events

On March 5 the annual **MWPCA legislative event** was held at the familiar Omni Parker House in Boston. The keynote speaker, Matthew Beaton, recently appointed secretary of the Office of Energy and Environmental Affairs, joined Thomas Hoyer, the mayor of Taunton, and Mark Young, executive director of the City of Lowell Wastewater Treatment Utility, in addressing the group with discussion related to infrastructure and water quality compliance issues facing our communities.

MWPCA quarterly membership meeting was held on March 18 at the Devens Common Center in Devens, and the June 17 meeting will be held at the Log Cabin in Holyoke. The meeting format will be the typical half-day technical session, immediately followed by an optional lunch available to all registered attendees and speakers.

The **Annual MWPCA Golf Tournament** in honor of Mike Ackerman will be on June 22 at the Shaker Hills Country Club in Harvard. Those interested in participating or helping to coordinate the event can contact Bob Mack, Golf Committee chair, or Lynn Foisy, MWPCA executive director.

The MWPCA 50th year celebration will culminate with special festivities at the annual **trade show**, scheduled at the Wachusett Mountain ski area in September, almost 50 years to the day from the time of the first organizational meeting.

Please mark your calendar with these events and keep your eyes open for future events on the MWPCA website, mwpca.org, Facebook, facebook/mwpca, or Twitter, @MWPCA.

Collaboration

MWPCA continues to reach out to other professional organizations to collaborate on training, legislative, membership outreach, and related efforts. The association partnered with NEWEA and the New England Interstate Water Pollution



MWPCA December meeting at Bristol Community College

Control Commission on the legislative event that was held on March 5. MWPCA plans to continue to work with Bristol Community College, New Bedford Vocational Technical High School, and other regional institutions to encourage students to explore career pathways as water quality professionals. MWPCA is continuing to combine forces with the Massachusetts Association of Onsite Wastewater Professionals to promote the advancement of decentralized wastewater treatment professionals. The association continues to seek opportunities to partner with the Massachusetts Water Works Association on issues important to both organizations, and it is also reaching out to the Cape Cod Commission and the Buzzards Bay Coalition.

Professional Training

Several new training sessions have been posted on the MWPCA website, including Writing an Effective Standard Operating Procedure that was held on March 11 and a Pipeline Assessment and Certification Program training course starting in early April. MWPCA continues to seek opportunities to work with established trainers to bring the membership training opportunities that will enhance their careers as well as provide training contact hours required for licensure.

If you have any questions regarding MWPCA/NEWEA and/or have any issues or ideas you wish to share, please feel free to contact me. I can be reached at 508-989-2744 or mikem@wwtsinc.com.



Vermont State Director Report

by Nathan Lavalley
nvallee@town.milton.vt.us



It is with great pride and enthusiasm that I accept the honor of serving as a director in the NEWEA Executive Committee on behalf of the more than 550 municipal and industrial operators, superintendents, engineers, vendors, students, regulatory officials, and consultants who are Green Mountain Water Environment Association (GMWEA) members. I thank Bob Fischer for all he has done for NEWEA and GMWEA. After serving (as he says) “4 years of his 3-year term,” he has left big shoes to fill as Vermont state director. Though I have never been a fisheries biologist, I still have a lot that I hope to contribute as well. Many exciting things happened at GMWEA in 2014, and now in 2015. We have been busy on many water and wastewater fronts. We had a successful Spring Meeting and Fall Trade Show, and attendance at both annual events continues to grow.

Fall Meeting

The GMWEA Fall Trade Show took place in Burlington on November 6, 2014. There were almost 400 participants at this event, including members, guests, speakers, vendors, and the board of directors. This year we were pleased that Senator Bernie Sanders joined us, and we appreciate his thanks for our service and his dedication to funding for infrastructure.

In November, Vermont exchanged operators with Maine during the NEWEA Operator Exchange. Mike Tibbetts from the York, Maine facility toured seven Vermont facilities and then attended the GMWEA Fall Trade Show.

NEWEA Annual Conference

I participated in the NEWEA Annual Conference in Boston, attending numerous meetings and technical sessions. GMWEA members took several awards:

- Water Resources Recovery Facility, Montpelier Wastewater Utility Award
- Kevin McLaughlin, City of South Burlington Plant Operator Award
- Robert Fischer, City of Montpelier Alfred E. Peloquin Award
- Nevil Desai, Burlington Vermont Stockholm Junior Water Prize
- Andrew Fish, Vermont Department of Environmental Conservation Public Educator Award



U.S. Senator Bernie Sanders addresses the GMWEA Fall Trade Show

Government Affairs

The GMWEA Government Affairs Committee has once again been active. On January 25 the committee set up the GMWEA booth across from the cafeteria in the state capitol and interacted with many politicians over coffee and bagels. This first of two coffee meet and greets was followed by another on February 13, and then by a legislative lunch at the Capital Plaza on March 12. The legislative lunch was our fourth annual legislative meal and our most successful yet.

Three bills in the state legislature are being watched closely:

- The Microbeads Bill H.4 would prohibit the manufacture and sale of personal care products and over-the-counter drugs that contain synthetic plastic microbeads. This bill was passed unanimously on the House side and will be presented to the Senate side.
- The TMDL Bill H.35 would adopt multiple provisions related to the remediation and preservation of the waters of the state. In general, new programs will require stormwater permits for highways and roads as well as for developed lands. More municipalities will be designated as Municipal Separate Storm Sewer System (MS4) communities. This is a hot topic and there have been and will continue to be several testimonies by members. GMWEA intends to issue formal comments in response to these public meetings, and we welcome your feedback.
- The Dig Safe Bill H.58 would make miscellaneous amendments to Vermont’s public utility underground facility damage prevention system. This bill could place water and wastewater utilities under the jurisdiction of the Public Service Board should the board determine a good cause to do so. This would also require water and wastewater utilities to become members of Dig Safe. This is also a hot topic that the GMWEA Government Affairs Committee is working on. The Vermont Department of Environmental Conservation has released its fiscal year 2016 fee proposals as well. There are significant fee increases across the board as well as new fees, most of which will fund the department’s share of implementing the state’s Clean Water Initiative, including restoration of Lake Champlain.

Upcoming Events

- On March 28, GMWEA board members will judge students’ work for the **Stockholm Junior Water Prize** and select the Vermont finalists and winner at Norwich University during the Vermont State Science and Math Fair.
- **Vermont Lake Monsters** baseball game is back by popular demand this summer at Centennial Field in Burlington.
- Save the Date! **George Dow Memorial Golf Tournament** will be on Friday, August 21, at Cedar Knoll Country Club in Hinesburg.
- The second annual Visit your Wastewater Facility Day will be held in May.
- The **GMWEA Spring Meeting** will be at Killington resort on May 21. This includes the annual business meeting, where awards will be given out and association officers elected for the coming year.

For further information regarding GMWEA/NEWEA activities and events, contact Vermont director Nathan Lavalley at nvallee@town.milton.vt.us or visit our website at gmwea.org



Vermont exchange operator Brian Line of Winooski with Mike Tibbetts (right) from the York, Maine facility, who toured seven Vermont facilities and then attended the GMWEA Fall Trade Show

NEWEA 2014 Award Winners



1



2



3

1. Alfred E. Peloquin Award recipient Bob Fischer
2. Operator Award recipient Kevin McLaughlin
3. Public Educator Award recipient Andy Fish



Maine State Director Report

by Peter Goodwin
goodwinp11@gmail.com



I would like to commend the 2014 Executive Committee for the Maine Water Environment Association (MEWEA) that was led by Aubrey Strause, president of the association. MEWEA was extremely active in 2014, and the leadership and passion of the Executive Committee was outstanding and continued to build and strengthen the mission of the association. Some of our key successes include:

- The successful collaboration and development of the innovative “Baby Wipes Pilot Program” that received national attention
- Finalization of the successful legislation that will provide a sustainable State Revolving Fund resource through the state Liquor Bill in collaboration with Maine Water Utilities Association
- A successful partnership with a cross section of environmental advocacy groups for the successful Bond Article 6 campaign that will provide interim funding for the SRF program
- Leadership in developing legislation in 2015 to address gas line expansion to protect public health and the environment while supporting economic growth in the state

2015 MEWEA OFFICERS

At the fall 2014 conference, a new slate of officers for 2015 was elected, including:

- President – Tom Connolly, Yarmouth Water Pollution Control Facility
- Vice President – Scott Firmin, Portland Water District
- Second Vice President – Matt Timberlake, Ted Berry Company
- Secretary/Treasurer – Al Jellison, retired from City of Bangor

This leadership Team is supported by committee chairs and members from more than 15 active committees, and also by Joan Kiszely and her support team at Maine Municipal Association.

2015 NEWEA Annual Conference

MEWEA membership was well represented at the 2015 NEWEA Annual Conference in Boston again this year. At the conference, which will largely be remembered for an epic snowstorm, our own Brad Moore from Bangor wrapped up his role as president for the more than 2,100 NEWEA members. Registrations for the 2015 conference were record-setting, although the weather and travel ban affected actual attendance.

A large contingent of MEWEA members were recognized at the 2014 Awards Luncheon, including:

- Travis Peaslee of LAWPCA
NEWEA Alfred E. Peloquin Award
- Mike Tibbetts of the York Sewer District
NEWEA Operator of the Year
- Aubrey Strause of Verdant Water
NEWEA E. Sherman Chase Award
- Dustin Price of South Berwick
NEWEA Young Professional Award
- Steve Sloan of Portland Water District –
WEF William D. Hatfield Award
- Steve Freedman of AECOM
WEF Arthur Sidney Bedell Award
- Tim Baker of Woodard & Curran
WEF Quarter Century Operator Award
- Phyllis Arnold Rand of Greater Augusta Utility District – WEF Quarter Century Operator Award
- Gregory Thulen of Brunswick
WEF Quarter Century Operator Award
- FORCE MAINE – WEFTEC 2014 Operations Challenge Division II Process Control 1st Place
- John Hart of Saco – WEF Fellow
- Mary Butler of Bangor High School –
Stockholm Junior Water Prize for Maine

Public Education Initiatives

This year promises to be another active one for MEWEA's Public Relations Committee led by Matt Timberlake from the Ted Berry Company. Our Annual Clean Water Week Poster Contest is under way. If the participation meets or exceeds that of 2014, the Executive Committee and membership will have another challenging time reviewing hundreds of outstanding posters and deciding on winners in four categories, including Grades 1 to 3, Grades 4 to 6, Grades 7 to 8, and Grades 9 to 12. Winners will be invited to a reception at the governor's Blaine House in Augusta during Clean Water Week in June.

Our Young Professionals (YP) Committee has been active with a consistent social media presence on Facebook and Twitter along with participation in many events, including Portland's Urban Runoff 5k, the Paddle After Hours event in Lewiston-Auburn, and a successful booth presence at the first annual Portland Greenfest Festival. Dustin Price from South Berwick Sewerage District is leading the YP Committee in 2015 and has promised to continue the tradition of being active in engaging and recruiting young professionals.

Fall Conference 2015

Mark your calendars for the Annual Fall Conference to be held at Sunday River in Newry, Maine, from September 16 to 18. The conference will kick off on Wednesday September 16, 2015 with a golf scramble on the challenging Sunday River golf course. The Professional Advancement Committee led by Mike Stein will be hard at work over the next few months developing the 30 hours of diverse training, seminars, and case studies that will be presented at the conference.

Intra-State Operator Exchange Update

Scott Firmin from Portland Water District and Andre Brousseau from Sanford Sewerage District are developing the proposed Intra-State Operator Exchange program. This concept was developed during the 2013 NEWEA annual planning retreat that was held in Portsmouth, N.H. Based on the success of the Inter-State Operator Exchange program, the idea is to expand the program to make it more available for all operators within their home states throughout the year.

The program will require operators to document the exchange that would occur in a reasonable geographic range from the home facility. The exchange is geared to one day, and the program will pursue approval from each state's licensing entity to ensure operator training credit hours are earned for participation. Once the program is finalized, other state associations will be provided the information to expand it throughout New England.



1



2



3



4



5

1. Alfred E. Peloquin Award recipient Travis Peaslee
2. WEF William D. Hatfield Award recipient Steve Sloan
3. E. Sherman Chase Award recipient Aubrey Strause
4. Young Professional Award recipient Dustin Price
5. (L to R) Rick Warner, WEF vice president; Steve Freedman, WEF Arthur Sidney Bedell Award recipient and WEF Life Member; Ed McCormick, WEF president

Essays by the 2015 NEWEA Student Scholarship Winners



Kira Arnott
Mount Holyoke College, **Non-Environmental Student Scholarship**

Essay Question: *Please discuss how human waste management (or mismanagement) in the future might affect the field in which you expect to be working within the next ten years, and make suggestions based on your chosen field as to what you can do to ensure that the effects of waste and water management remain positive.*

My career goal is to work in the office of a member of the Commonwealth of Massachusetts state legislature. I want to strengthen and improve the state on a local and community level with a focus on environmental justice issues. As Chief of Staff to a state legislator I would make sure that I am aware of environmental regulations, changes in environmental regulations and improvements that the state should make in order to protect the environmental health of our constituents. It would be my job to do research on issues reflecting the state's interests with regard to water and wastewater management, to protect the public's health and safety, and then draft legislation accordingly. I would work to find other legislators who would also co-sponsor the bills and work with local interest groups such as watershed associations and organizations such as New England Water Environment Association. Public outreach would be important. I would sponsor forums for my legislator to meet with public interest groups and invite the public, scientists, professors, and students to learn more about issues and to gather their input. It would also be beneficial



Joanna Lewis
University of New Hampshire, **Under-graduate Scholarship**

Essay Question: *In a changing world, the practice of handling wastewater through large, centralized systems is increasingly being challenged by innovative concepts and emerging technologies involving more localized, "on site" and compartmentalized, sometimes simplified, treatment options. Briefly discuss your ideas with regard to the future of centralized versus individualized waste handling, and how a transition from, or balancing of, today's centralized urban systems to more localized disposal/recovery options might play out.*

Most Americans pay little attention to the ultimate fate of their wastewater once it leaves home or office facilities; pipes hidden within walls and underground do well at providing the complete out-of-sight, out-of-mind experience. However, wastewater treatment in the United States is increasingly becoming an area of debate and has a great potential for change. In 2004, over 75 percent of Americans were served by centralized wastewater treatment centers (EPA, 2004), but recent developments in individualized treatment systems are challenging large treatment center norms. As emerging technologies and new research surface regarding local wastewater treatment, the engineers and community planners of the nation will have to weigh the potential benefits and drawbacks of increasing the numbers of small wastewater treatment systems in communities.

Gone are times when having an on-site wastewater treatment facility meant installing a traditional septic system, which requires ample land and appropriate soil types. For situations without these necessary conditions, new treatment options are becoming readily available. Manufactured composting toilets can produce



Nicholas Tooker
Northeastern University, **Graduate Student Scholarship**

Both centralized and decentralized systems will play critical roles in our future water infrastructure, though it is difficult to know if a dramatic world-wide shift will occur in the proportion of wastewater treated through either method. While the number of new centralized facilities in the U.S. is unlikely to increase significantly, places like China, India, and parts of Africa could see more centralized treatment as their urban populations grow. Technology utilized for individualized treatment systems will likely shift more dramatically than for centralized systems, and individualized systems will play an increasingly important role in resource recovery. Increased reliance on decentralized systems will not be without problems however, and addressing issues related to system operation and regulation will be critical. Ultimately, long-term environmental sustainability will require that water professionals collaborate to solve these issues.

Future technologies and treatment methods employed by centralized systems are likely to experience minor changes from today's systems, with a tendency toward increasing complexity. On the other hand, more rapid and significant changes in technology

Kira Arnott (continued) to include industry representatives and entrepreneurs in this effort to find partnerships.

I would have to make sure that enough funding was allocated to communities so that they could effectively and safely treat their solid waste, wastewater and drinking water. I would also need to lobby the federal government to make sure we had enough funding, through grants like the Water Infrastructure Finance and Innovation Authority and the Clean Water and Drinking Water State Revolving Funds. We might need to expand our own state agencies to ensure that we would have enough state employees to regulate and make sure these laws are being enforced. This would then create good green jobs. With these new funds, we as a state could try things like recycling waste water, recycling minerals and heat from waste water, and turning food wastes into biogas and fertilizer at more decentralized levels. With climate change

Joanna Lewis (continued) finished compost with little environmental impact from processing. Residential wastewater treatment systems function like their larger, centralized counterparts and clean wastewater thoroughly, allowing the effluent to be disposed of in less restrictive ways. Incinerators reduce waste to a hygienic ash that can be disposed of easily. These localized treatment options reduce overhead costs of running a centralized system, reduce piping that transports the wastewater, and can produce valuable products in return.

However, centralized wastewater treatment centers offer quality control monitoring at a level that could never be met with localized systems. The trained monitoring personnel present at a centralized facility will not be present in localized systems, so malfunctions in small systems may not be noticed until they become much larger issues.

Location also matters when debating centralized and individualized wastewater treatment. Septic systems or similar technologies are not feasible for urban areas because of the lack of open space. Likewise, composting facilities in urban areas pose public health risks. Yet these small facilities may

Nicholas Tooker (continued) employed by individualized treatment systems are likely. Some systems will become more complex while others will be engineered to provide high levels of treatment using "low-tech" solutions. An example of a system that utilizes both sophisticated and low-tech components comes from research by Caitlyn Butler's group at UMass-Amherst on a system with fuel cell technology in a latrine to generate electricity. This system offers a simple method for waste treatment and disposal while providing critical and efficient energy to parts of the developing world.

In developed countries, new decentralized systems will be far more sophisticated than the septic tanks of previous generations; generally, increased levels of treatment will be required. Because of this, resource recovery of high quality biosolids, energy, and clean water produced by individualized systems will become more prevalent. An example of this type of system that is already operational is the Battery Park development in New York City where treatment systems in residential buildings are used to produce water for toilet flushing and irrigation.

approaching, many Massachusetts cities and town are under threat from sea level rise. We will need to work on making sure our stormwater, sewer systems, water treatment plants, and pipelines are raised high enough that they would not be flooded or leak contaminated wastewater into our communities, and into clean drinking water pipelines.

The protection of the environment is one of the most important responsibilities for a member of a state legislature, especially in the next ten years, as there are serious repercussions from climate change and an aging infrastructure system, if not taken seriously. I hope that I can be an effective part of changing this to ensure that Massachusetts is at the forefront of solving and preventing problems of water and waste management. We need to ensure that these vital services are still functioning for generations to come.

be phenomenal options for rural communities that would otherwise have to pump wastewater for miles to a centralized location.

The best solution for wastewater treatment will certainly be determined solely on a case-by-case basis. But as more technologies are available for use, the best solution may become an alternative localized system for an increasing number of scenarios.

America presently stands at a crossroads in the midst of innovations in wastewater treatment. If there ever was an optimal time to act on these emerging treatment options, the next several years are it; the American Society of Civil Engineers, who graded the entirety of America's infrastructure in 2013, rated wastewater infrastructure with a "D." Repairing these centralized wastewater treatment centers has cost the United States 15 billion dollars in recent years, and will continue to strain its budgets. As America attempts to upgrade its wastewater treatment systems, it will have to navigate a new balance between centralized and alternative local systems by reevaluating the scenarios in which new treatment options are feasible.

One challenging aspect of increased numbers of localized treatment systems is proper operation and routine maintenance of these systems. As water professionals, we will need to ensure that the systems are capable of producing high-quality products for reuse or discharge, and that they are robust enough to withstand imperfections in routine maintenance and operation. Remote monitoring of individualized systems that include significant online instrumentation through central clearinghouses could become common.

Finally, modifications to environmental regulations and enforcement will be required to keep up with the changing technologies. Of particular importance will be ensuring public health and safety, given an increase in resource recovery and reuse. Along with the new regulations, water professionals will need to mount public relations campaigns to convince the general population that resources produced by individualized systems are safe, and that reuse of water resources is necessary for the future health of the planet. Many other challenges will arise, but by working together I am confident that we are up for the task.



2015 Annual Conference & Exhibit

Boston Marriott Copley Place
Boston, MA • January 25–28

PROCEEDINGS

The 2015 NEWEA Annual Conference convened with a meeting of the full Executive Committee on Sunday, January 25, 2015. A total of over 1,989 people registered for the conference. The 3-day event featured 209 exhibits booths and 35 technical sessions.

The Annual Business Meeting was held on Monday, January 26, 2015. Nominating Committee chair Roger Janson presented the slate of officers for 2015 as follows:

- *Vice President*, James Barsanti
- *Treasurer*, Frank Occhipinti (3rd year)
- *Secretary*, Gerald Potamis (2nd year)
- *Council Director, Communications*, Jennifer Lachmayr (1st year)
- *Council Director—Meeting Management*, Meg Tabacsko (3rd year)
- *Council Director—Collection Systems & Water Resources*, Virgil Lloyd (2nd year)
- *Council Director—Outreach*, Jonathan Kunay (1/15-1/18)
- *Director—Rhode Island*, Michael Spring (1/15-1/18)
- *Director—Vermont*, Nathan Lavallee (1/15-1/18)
- *WEF Delegate*, Susan Sullivan (10/15-10/18)

There being no further nominations, on motion duly made and seconded the slate was accepted and the executive director was authorized to cast one ballot in favor of the slate as presented.

In accordance with the provisions of Article 9.3.2 of the NEWEA Constitution and Bylaws, these officers will advance to the following positions:

- *President* – Matthew Formica
- *President-Elect* – Raymond Willis
- *Past-President* – Bradley Moore

The remaining incumbents will continue to fulfill unexpired terms:

- *WEF Delegate*, Howard Carter (exp. 10/15)
- *WEF Delegate*, Michael Wilson (exp. 10/16)
- *WEF Delegate*, Daniel Bisson (exp. 10/17)
- *Council Director—Treatment, Systems Operations, and Management*, Priscilla Bloomfield (exp. 1/16)
- *Maine Director*, Peter Goodwin (exp. 1/16)
- *Massachusetts Director*, Michael Moreau (exp. 1/17)
- *New Hampshire Director*, Fred McNeill (exp. 1/16)
- *Connecticut Director*, Jay Sheehan (exp. 1/17)

All nominees have indicated their willingness to serve. Respectfully submitted by the NEWEA Nominating Committee: Roger Janson (chair), Daniel Bisson, Priscilla Bloomfield, Mike Bonomo, Meg Tabacsko.

The first blizzard of 2015 hit Boston on Tuesday, Operator Day, the central day of the conference. Sessions were held as scheduled with a few cancellations, and with some accommodated electronically by Skype and other applications. While the exhibit floor was rather quiet, the Tuesday sessions were surprisingly well-attended by largely snow-captured audiences. The proceedings were, for the most part, carried out as presented herein.



1. 4th floor exhibit hall ribbon cutting: Exhibits chair Amy Anderson, President Brad Moore, WEF's Linda Kelly, WEF VP Rick Warner, WEF delegate Howard Carter. **2.** Wednesday Registration—Kate Biedron checks in award winners Don Pottle and Harry Stewart. **3.** Volunteer's view—Conference attendees being served at the registration booth counter

35 Technical Sessions

SESSION 1

HOT TOPIC—Sustainable Nutrient Removal

Moderators:

- James Barsanti, Town of Framingham, MA
- Geraldine Ciardelli, City of Nashua, NH

Protecting Our Estuaries—Application of Permeable Reactive Barriers for Sustainable Nitrate Removal

- Edward Sanderson, CDM Smith
- Cannon Silver, CDM Smith
- David Young, CDM Smith
- Jerry Potamis, Town of Falmouth, MA

The DEMON® Process: Resource Savings Through Sidestream Centrate Treatment

- Andrea Nifong, World Water Works
- Extractive Nutrient Recovery as a Sustainable Nutrient Control Alternative
- Wendell Khunjar, Hazen and Sawyer
- Sam Jeyanayagam, CH2M HILL
- Ron Latimer, Hazen and Sawyer

Redefining Being Green: Upper Blackstone Pilots Advanced Biological Nutrient Recovery with Algae

- Alexandra Doody, CDM Smith
- Jane Madden, CDM Smith
- Mark Johnson, Upper Blackstone WPAD
- Karla Sangrey, Upper Blackstone WPAD
- Rick Johnson, Clearas Water Recovery

SESSION 2

REUSE/INDUSTRIAL WASTEWATER/ MICROCONSTITUENTS Tackling the Next Generation of Treatment Challenges

Moderators:

- Brian Braginton-Smith, Lewis Bay Research Center
- Meredith Zona, Fay, Spofford & Thorndike

Cost-Effective Industrial Water Reuse Yields Significant Reduction in Wastewater Discharge at a Manufacturing Plant in Peabody, MA

- Carl Wilcox, Woodard & Curran
- Dan Watnick, City of Peabody, MA

Ozonation of Tris-2-Chloroethyl Phosphate (TCEP) in Water

- Michael Votruba, Tighe & Bond
- John Bergendahl, Worcester Polytechnic Institute

Wet Testing and the Perils of Polymer

- Hugh Tozer, Woodard & Curran

An Overview of Perfluorinated and Polyfluorinated Alkyl Substances (PFAS): Chemistry, Fate, Behavior, and Regulatory Decisions

- Laurel Royer, Exponent

SESSION 3

CSO I—Innovative Approaches in Addressing Regulatory Wet Weather Requirements

Moderators:

- James Drake, CDM Smith
- Melissa Recos, BETA Group



1. Attendees at Sunday's Executive Committee meeting pose for the traditional post-meeting group photo 2. Outgoing Safety Committee Chair Shannon Eyer receives a certificate of appreciation from Howard Carter 3. President Brad Moore convenes the NEWEA Annual Business Meeting



1. Members in attendance at the NEWEA Annual Business Meeting—Jonathan Kunay, Jay Sheehan, Michael Spring, Ray Willis, Michael Moreau 2. Past President Dan Bisson admires the 2013 World Series ring on loan from Red Sox and NEWEA Conference photographer Cindy Loo

Re-Evaluation of CSO Abatement Approach Saves Small Maine Community over \$2 Million

- Steven Freedman, AECOM
- Eric Lemont, AECOM
- Daniel Marks, Hoyle, Tanner & Associates
- Doug Clark, City of Gardiner, ME

Blending and Wet Weather Developments—How to Address Wet Weather Flows to Eliminate CSOs and SSOs: Implementing the Iowa League Decision

- John Hall, Hall & Associates
- Gary Cohen, Hall & Associates
- Phil Rosenman, Hall & Associates

Mining the Flow Data for System Optimization

- Dingfang Liu, CH2M HILL
- Vinta Varghese, CH2M HILL
- Thomas Sgroi, Greater New Haven WPCA
- Bruce Kirkland, Greater New Haven WPCA

Successful Integration of CMOM and Modeling Identifies a Hartford Capacity Restriction

- Brian Pitta, CDM Smith
- Michael O'Brien, The MDC

SESSION 4 ENERGY—Positive Energy—from Optimization to New Technology Moderators:

- Cynthia Castellon, Tighe & Bond
- David Van Hoven, MWH Global

Heating and Cooling Energy from Wastewater

- Chris Hubbard, Huber Technology, Inc.

The Real Efficiency of Your Pumps

- Jennifer Muir, JK Muir
- Jessica Dzwonkoski, JK Muir

Saving Energy and Space with Turbo Blowers—Lessons from Two Projects

- Julia Gass, Black & Veatch
- Peter Thomson, Black & Veatch
- Mario Francucci, Black & Veatch
- Michael Hanna, Black & Veatch

Sustainable BNR Process Aeration Design and Optimization

- Caitlin Hunt, NYC DEP
- Jiren He, MWH Global
- Alex Lopez, NYC DEP
- Natalia Perez, NYC DEP

SESSION 5 SUSTAINABILITY I Sustainability is Everywhere Moderators:

- Helen Gordon, Woodard & Curran
- J. Kenneth Maltese, Maltese & Associates

Regulatory and Permitting Frameworks for Source Separated Organics to Energy Facilities

- Steven Torres, Pannone Lopes Devereaux & West LLC
- Teno West, Pannone Lopes Devereaux & West LLC

Energy Markets, Procurement, Green and Sustainability Strategic Planning

- Jon Sorenson, Competitive Energy Services
- #### A Fractal Approach to Reviewing Sustainable Infrastructure Projects
- Wayne Bates, Capaccio Environmental Engineering

SESSION 6 STORMWATER I Stormwater Topics Du Jour—MS4s and Climate Change Impacts Moderators:

- Laurie Perkins, Wright-Pierce
- Kerry Reed, Town of Framingham, MA

Moving Watershed Management into the Watershed

- Rahul Verma, Verma Engineering

MS-Four! Stormwater Management Retrofit Projects Provide Multiple Stakeholder Benefits at a Golf Course and Two Schools in Putnam County, NY in Addition to Watershed Protection

- Joseph Zongol, Weston & Sampson
- Carl Stone, Weston & Sampson

Lake Auburn—The Effect of Climate Drivers on Lake Water Quality

- Zachary Eichenwald, CDM Smith
- Mary Jane Dillingham, Auburn Water District/Lewiston Water Division
- Kenneth Wagner, Water Resource Services
- Bernadette Kolb, CDM Smith

MS4 Compliance: Common Threads (and opportunities) in New England Permits

- Aubrey Strause, Fuss & O'Neill, Inc.
- Erik Mas, Fuss & O'Neill, Inc.

SESSION 7 HOT TOPIC—Emerging Technologies Moderators:

- Shelagh Connelly, RMI
- Nick Tooker, Northeastern University

Heterogeneous Photocatalysis for the Degradation of Contaminants of Emerging Concern in Water

- Jose Ricardo Alvarez Corena, Worcester Polytechnic Institute
- John Bergendahl, Worcester Polytechnic Institute
- Fred Hart, Worcester Polytechnic Institute
- Robert Emerick, Stantec

The Future of BNR—Aerobic Granular Activated Sludge

- James Barnard, Black & Veatch
- Mark Steichen, Black & Veatch
- Ed Kobylinski, Black & Veatch
- Roland Jezek, Black & Veatch

Tapping Into That Dirty Water—Opportunities in Wastewater Energy Recovery (WWER)

- Anastasia Rudenko, GHD
- Marc Drainville, GHD

Ultrafiltration Membranes for Water Reuse Applications

- Kevin Phillips, Koch

SESSION 8 Breaking News from the Regulatory Community Moderators:

- Jessica Cajigas, Comprehensive Environmental Inc.
- Alan Slater, MassDEP

Massachusetts Regulatory Reform—O&M and I/I Updates

- David Ferris, MassDEP
- Kevin Brander, MassDEP

NH's New Standards of Design and Construction for Sewerage and Wastewater Treatment Facilities

- Sharon Rivard, NH Department of Environmental Services



1. Senator William “Mo” Cowan delivers the Keynote address at the opening session 2. The crowded gallery at Monday’s Opening Session 3. Public Awareness Committee meeting: Jim Barsanti, Linda Kelly, Stephanie Oleksyk, Janine Burke, and Executive Director Mary Barry 4. Incoming Water for People Chair Anastasia Rudenko converses with outgoing chair Jonathan Kunay

1. Microconstituents Committee vice chair Justin Irving listens as chair Andrew Braginton-Smith reports to the Executive Committee 2. Public Awareness vice chair Clary Coutu speaks before the Executive Committee as Dan Roop and Tom Schwartz check their notes 3. Nominating Committee Chair Roger Janson shows off his NEWEA Ambassador ribbon

Updates on Innovative Nutrient Management Strategies in Connecticut

- Rowland Denny, CT Department of Energy and Environmental Protection

Updates and Initiatives of the EPA Region 1 NPDES Program

- David Webster, EPA Region 1, Water Permit Branch Chief

SESSION 9 RESIDUALS I—Biosolids A to Z Moderators:

- Jonathan Keaney, Brown and Caldwell
- Elaine Sistaire, CDM Smith

Impacts of New SSI Emissions Standard on Matabassett District’s New FBI Design

- Melissa Hamkins, Wright-Pierce
- Brian Armet, The Matabassett District

Operational Challenges of Regional (Merchant) Residuals Processing Facilities

- Jeff McBurnie, Casella Organics

Mixing it Up at the MWRA’s Clinton, MA Wastewater Treatment Plant - Anaerobic Digester System

- Denise Moberg, Fay, Spofford & Thorndike
- Bob Gorham, MWRA
- Peter DeFronzo, Fay, Spofford & Thorndike

Innovative Sludge Dewatering System Saves the City “Time, Money and Headaches!”

- Andy Morrill, Wright-Pierce
- John Adie, City of Nashua, NH

SESSION 10 STORMWATER II Balancing the Grey and the Green Moderators:

- Aubrey Strause, Fuss & O’Neill, Inc.
- Glenn Haas, Brown and Caldwell

Stormwater Management Performance and Maintenance of a Permeable Interlocking Concrete Pavement System

- James Houle, University of New Hampshire
- Joseph Persechino, Tighe & Bond

Norfolk Street Drainage Improvements in Walpole, MA

- Dianne Velardocchia, CDM Smith
- Margaret Walker, Town of Walpole, MA

Assessing Performance of Advanced Rainwater Harvesting and Permeable Friction Course (PFC) Asphalt Overlay at two Firehouses in DC for Water Quality Enhancement and Mitigation

- Andrea Braga, Geosyntec Consultants
- Erica Tillinghast, Geosyntec Consultants
- Marcus Quigley, Geosyntec Consultants
- Rebecca Stack, District Department of the Environment

Threading a Pipe Through a Needle: Finding the Right Path for a New Drain along Retreat Ave

- Shawn Lavoie, CDM Smith
- Jason Waterbury, The MDC
- James Drake, CDM Smith

SESSION 11 SMALL COMMUNITIES Regulatory Issues and Various Ways to Approach Them Moderators:

- Jeff Gregg, GHD
- Mark Drainville, GHD

Tools to Assist Cape Cod Communities Reach Sustainable Nitrogen Reduction Goals—Technologies Matrix and Adaptive Management Practices

- Mark Owen, AECOM
- Betsy Shreve, AECOM
- Thomas Parece, AECOM
- Paul Niedzwiecki, Cape Cod Commission
- Kristy Sentori, Cape Cod Commission
- Erin Perry, Cape Cod Commission
- Scott Horsley, Horsley Witten Group

You Want to Put What? Where?—Old Saybrook’s Decentralized Hybrid Approach for Their Shorefront Community

- Kurt Mailman, Fuss & O’Neill, Inc.
- Stephen Mongillo, Town of Old Saybrook, CT

Downsizing a School’s Wastewater Treatment Facility to a More Cost Effective On-Site Recirculating Sand Filter Septic System

- Michael Paulin, Weston & Sampson

Planning for Resilient Infrastructure to Adapt to Climate Change—A Coastal Island Massachusetts Community Case Study

- Karen Wong, GHD
- Marc Drainville, GHD

SESSION 12 ASSET MANAGEMENT I What’s Hot in Asset Management Moderators:

- Gary Arthur, FRPI
- John Jackman, Hoyle, Tanner & Associates

Proven and Defensible Approach to Pump Station Condition Assessment helps BWSC Prioritize Expenditures

- Mark Richards, Brown and Caldwell
- Patrick Greeley, Boston Water and Sewer Commission
- Robert Winn, Brown and Caldwell

Planning for the Worst: Expanding the Risk Spectrum to Develop a Comprehensive Asset Management Plan

- Laura Robinson, Kleinfelder

Asset Management and Mobile GIS Data Collection Best Practices using iPads and Tablet Computers

- Robert Musci, CDM Smith
- Eric Pescatore, CDM Smith

A Comprehensive Approach to Prioritizing Stormwater Infrastructure Improvements

- Alan Davis, Hazen and Sawyer
- Troy McPherson, Hazen and Sawyer
- Will Von Ohlen, City of Virginia Beach, VA

SESSION 13 HOT TOPIC—Revolutionizing Training Moderators:

- David Van Hoven, MWH Global
- Jaclyn Harrison, NEIWPCC

Planning for the Future—Success Stories from New England Wastewater Management Programs (1 Hour)

- Thomas Groves, NEIWPCC
- William Patenaude, RI DEM
- Leeann Hanson, JETCC

Hands on State Point Training Illuminates Clarifier Operation

- Paul Dombrowski, Woodard & Curran



1. Marc Buchwald presents at the Instrumentation and Automation session 2. Poster presenter Dennis Hallahan 3. Peter Garvey introduces the Tuesday afternoon Collection Systems session 4. Conference Arrangements chair Ron Tiberi checks the schedule with council director Priscilla Bloomfield 5. Program Committee chair Susan Guswa listens to the Opening Session keynote address

1. Long-time participant Ed Quann proudly signs up employee Mollie Calri as a NEWEA Young Professional member 2. In spite of the threatening weather, the exhibit hall receptions were well-attended

The Development of Operational Tools for City-Wide Implementation of BNR in New York City

- Michael Lynch, Hazen and Sawyer
- Sarah Galst, Hazen and Sawyer
- Paul Pitt, Hazen and Sawyer
- Keith Mahoney, NYC DEP

SESSION 14

Water for People

Session was canceled due to weather

Moderators:

- Jonathan Kunay, CDM Smith
- Mary White, MWRA

The "Puro" Project- Bolivia

- Kelli Lynch, Northeastern University
- Ian McLarney, Northeastern University
- Sofia Sotelo Ortiz, Northeastern University

Upgrading Informal Settlements in Flamingo Crescent, South Africa

- Sarah Antolick, Worcester Polytechnic Institute

UConn Engineering in Ethiopia, Engineers Without Borders

- Kelsey Reeves, University of Connecticut

Global and Domestic Issues Affecting the Health and Security of Drinking Water

- Maureen McClelland, EPA Region 1

SESSION 15

INSTRUMENTATION AND AUTOMATION— Expanding the World of Instrumentation, Automation and IT Moderators:

- John Trofatter, Duperon Corporation
- James Spitzer, CDM Smith

Dynamic Pump Optimization and On Demand Condition Assessment

- Marc Buchwald, Schneider Electric
- Jeff Miller, Schneider Electric
- Sam Lauffenburger, Specific Energy

Real-time Control—The Next Generation of "Smart" Green Infrastructure

- Andrea Braga, Geosyntec Consultants, Inc.
- Marcus Quigley, Geosyntec Consultants, Inc.

Using Statistical Process Control (SPC) for Improved Utility Management

- Scott Dorner, Hach

Automating Impervious Surface Mapping for Stormwater Utilities—From Pixels to Pavement

- Jared Newell, CDM Smith
- Ajay Jadhav, CDM Smith
- Scott McClelland, CDM Smith

SESSION 16

PLANT OPERATIONS I Balancing Phosphorus Removal with Sustainability Moderators:

- Tom Hazlett, Woodard and Curran
- Ed Rushbrook, Process Analysts

Meeting North Attleborough, MA's 0.1 mg/L Phosphorus Limit with Bio-P and Cloth Media Filters—From Pilot Testing through the First Year of Operation

- Susan Guswa, Tighe & Bond
- Merrill Hastings, Town of North Attleborough, MA

Optimizing the A2/O Process to Push the Limit of Technology at Upper Blackstone

- Maureen Neville, CDM Smith
- Karla Sangrey, Upper Blackstone WPAD

Tertiary Treatment Upgrade using Ballasted Flocculation for Zinc and Phosphorus Removal in Smithfield, RI—A First in Rhode Island, Pilot and Full-scale operation

- Bryan Weiner, Wright-Pierce
- David Bowen, Wright-Pierce
- Kevin Cleary, Town of Smithfield, RI

The Road to Meeting NPDES Permit Limits in Greenville, NH

- Erik Osborn, Woodard & Curran

SESSION 17

COLLECTION SYSTEMS I Leaky System? Put a Cork in It! Moderators:

- Stacey DePasquale, Stacey DePasquale Engineering
- Charles Tripp, Tighe & Bond

Implementation of SSES Recommendations and SSES Pilot Study Program

- Katelyn Biedron, CDM Smith
- Jason Waterbury, The MDC
- John Harper, CDM Smith

I/I Removal—Cost or Benefit

- Paul Brinkman, Wright-Pierce

Flow Monitoring Saves Avon, CT Big Money

- Matthew Jermaine, Fuss & O'Neill, Inc.

A Customized Approach to Sewer System Rehabilitation Program—Lateral Lining in Westwood, MA

- Jeffrey Bina, Town of Westwood, MA
- Marina Fernandes, CDM Smith
- Todd Korchin, Town of Westwood, MA
- Richard Barry, Town of Westwood, MA

SESSION 18

STORMWATER III—Stormwater Management—Views from the Top and Bottom of the Charles Moderators:

- Virginia Roach, CDM Smith
- Angela Blanchette, City of Saco, ME

One RDA—Two Approaches

- Vonnie Reis, Town of Milford, MA
- Robert "Brutus" Cantoreggi, Town of Franklin, MA

Building the Lower Charles River Basin Hydrologic and Hydraulic Model for Long-term Planning in Cambridge, MA

- David Bedoya, MWH Global

- William Pisano, MWH Global
- Owen O'Riordan, City of Cambridge, MA

Boston's BMP Recommendation Plan for TMDL Compliances

- Dingfang Liu, CH2M HILL
- Nic Warrens, CH2M HILL
- Charlie Jewell, Boston Water and Sewer Commission

Development and Implementation of an Industrial Facility Stormwater Pollution Program in New England

- John Murphy, Stantec

SESSION 19

HOT TOPIC—Process Monitoring and Control Moderators:

- Patricia Passariello, Weston & Sampson
- Joseph Nerden, MassDEP

Advances in On-line Instrumentation and Enhanced Wastewater Process Control

- Justin Irving, Hazen and Sawyer



1. Caitlin Hunt of NYC DEP 2. Amy Anderson and Kate Biedron dress up for a trip to the exhibit hall photo booth 3. Public Education Committee chair Elena Proakis-Ellis 4. Nicole DeSantis of NEWIN (New England Water Innovation Network) and WEF's Rick Warner 5. Tim Vadney takes a moment to network 6. Stacy Thompson of the Force Maine team smiles through the team's First Place trophy

1. Narrator Charlie Tyler and Awards Committee stalwart Paul Dombrowski prepare awards for the photo session 2. 2014 President Bradley Moore presents the gavel to 2015 President Matthew Formica 3. Guest Program participants show off their valentine wreaths 4. Registration chair Kate Biedron mugs with Grayson Moran, who was helping to supervise registration volunteers

A Holistic Approach to Plant Control Provides Both Process Improvement and Energy Savings

- Tilo Stahl, Biochem Technology
- Steven Kestel, BioChem Technology
- Gregory Duffy, BioChem Technology

Use of Dynamic Process Control at a Long Island Sound Water Pollution Control Facility Significantly Reduces Supplemental Carbon Use While Maintaining Nitrogen Removal Permit Compliance

- Gary Johnson, Consultant
- Mark Rode, General Control Systems
- Peter Stallings, Town of Stratford, CT

Instrumentation and Methods for Monitoring and Process Control of the Biological Nutrient Removal System at the North Attleborough, MA WWTF

- Daniel Roop, Tighe & Bond
- Kaela Wiklund, Town of North Attleborough, MA

SESSION 20

UTILITY MANAGEMENT I / SUSTAINABILITY II

The Tides are Rising—Utilities Responding to Climate Change

Moderators:

- Seth Garrison, Woodard & Curran
- Ian Catlow, Tighe & Bond

NEIWPCC Storm Resiliency and Adaptation Needs for Wastewater Treatment Plants in the Northeast Update

- John Murphy, NEIWPCC

Planning for Climate Change at Your Wastewater Treatment Facility—What You Should Be Doing Now

- Jeffrey Pinnette, Wright-Pierce
- David Cockburn, Wright-Pierce

Prepare for Climate Change—How to Access FEMA Funding for Hazard Mitigation Planning and Projects

- Mary Kristin Ivanovich, Woodard & Curran
- Mary McCrann, Woodard & Curran

Flood Resilience—A Basic Guide for Water and Wastewater Utilities

- Mark Sceery, EPA Region 1

SESSION 21

PLANT OPERATIONS II

Plant Operations Potpourri

Moderators:

- Ben Levesque, Tighe & Bond
- Jon Hume, Wright Pierce

Odor Control Optimization—Extending your Carbon Life

- David Michelsen, South Essex Sewerage District (SESD)
- Eric Barber, SESD
- Rick Delacono, SESD
- Kerry Griffin, SESD
- Robert Bowker, Bowker and Associates

Chasing Wet Weather and Cost Savings All the Way to Compliance

- Dan Davis, Brown and Caldwell
- Diane Nascimento, Brown and Caldwell

Using an Old Tool to Combat Microthrix Parvicella

- Paul Dombrowski, Woodard & Curran
- Thomas Sciarino, Town of Windsor Locks, CT
- Harvey King, Woodard & Curran
- Amine Hanafi, Woodard & Curran

Optimizing Process Control for a 4-Stage Bardenpho Process using a Bioprocess Aeration Control System

- Dana Frye, Fuss & O'Neill, Inc.

SESSION 22

WATERSHED MANAGEMENT

Nutrients Rule the Day

Moderators:

- Phil Forzley, Fuss & O'Neill
- Jennifer Johnson, Nitsch Engineering

Leveraging Resources to Meet SWMI

- Sebastian Amenta, Comprehensive Environmental, Inc.
- Rebecca Balke, Comprehensive Environmental, Inc.

Town-wide Watershed Management Strategies to Protect and Restore Fresh Water Ponds

- Mark Nelson, Horsley Witten Group

Low Cost Biological Nutrient Removal for Treatment Plants in the Upper Long Island Sound Watershed

- Emily Bird, NEIWPCC
- Jeanette Brown, JJ Environmental

Peer Review of Great Bay Estuary Nutrient Approach: Simplified Methods Are Not Reliable for Imposing Stringent Nitrogen Limits

- John Hall, Hall & Associates
- Keisha Sedlacek, Hall & Associates
- William Hall, Hall & Associates
- Benjamin Kirby, Hall & Associates

SESSION 23

Operator Ingenuity

Moderators:

- Timothy Vadney, Wright-Pierce
- Ray Vermette, City of Dover, NH

Anatomy of an Effective Preventative Maintenance Program

- Mickey Nowak, United Water

Don't be Afraid to Try New Ideas!

- Ken Gagnon and Jeff Gamelli, City of Westfield, MA

Saving Money by Restoring Equipment

- Ray Vermette, City of Dover, NH

Creative Use of Online Analyzer and an Innovative Tool for Rag Removal from Pumps

- Paula Anania and Mike Baker, City of Portsmouth, NH

Field Changes to Enhance Polymer System

- Harvey King, Woodard and Curran Operations

Experimenting to Optimize Nit/Denit in an Oxidation Ditch

- Julio Segarra, United Water

Changing Chains—More Easily and Safer, Too

- Joe Crosby, Narragansett Bay Commission

SESSION 24

COLLECTION SYSTEMS II

Models, Deep Excavations and Hurricanes, Oh My!

Moderators:

- Peter Garvey, Dewberry
- George Pendleton, Martinez Couch & Associates

Big Pipe, Deep Excavation, Downtown Location; Equals Exciting Project

- Frederick McNeill, City of Manchester, NH
- Jared O'Donnell, CDM Smith

A Revolutionary City’s Multi-Faceted Emergency Repair Under the Governor’s Avenue

- Nicholas Rystrom, City of Revere, MA
- Jonathan Kunay, CDM Smith

Tackling Mother Nature’s Fury: Designing a Direct Bury and Aerial Pipeline to Withstand a Hurricane and Seismic Event

- Joshua Farmer, Hazen and Sawyer

The Final Piece of the Puzzle—Complex Sewer Replacement Across the Sudbury River and Below an Army Corps Flood Gate Foundation-Completes Six Miles of New Interceptor in Framingham, Massachusetts

- Ziad Kary, Environmental Partners
- James Barsanti, Town of Framingham, MA

SESSION 25

HOT TOPIC—Managing Stormwater Assets

Moderators:

- Matthew St. Pierre, Tata & Howard
- Katherine Goyette, Kleinfelder

CMOM in the Rain—How Portland Is Applying CMOM to Drainage System Assets

- Nancy Gallinaro, City of Portland, ME
- Barry Sheff, Woodard & Curran
- Megan McDevitt, Woodard & Curran

Doubling Down on Stormwater in Westford, MA

- Emily Scerbo, Tighe & Bond
- Paul Starratt, Town of Westford, MA

A Practical Approach to Managing Stormwater Assets and Water Quality in Newton, MA

- Jaurice Schwartz, Weston & Sampson
- David Elmer, Weston & Sampson

EPA Region 1 Stormwater Program—An Update

- Newton Tedder, EPA Region 1

SESSION 26

**UTILITY MANAGEMENT II
Utility Management Challenges and Innovation**

Moderators:

- Jay Sheehan, Woodard & Curran
- William Brink, City of Stamford, CT

Utilities Improve Performance Using Private Business Techniques

- Seth Garrison, Woodard & Curran
- Robert Ward, City of Haverhill, MA
- Brian Pena, City of Lawrence, MA

Leading People and Managing Assets for a Sustainable Future

- James Courchaine, Tata and Howard

The MFN Regional Wastewater District is Born—Three Communities Working Together to Implement Their Wastewater Management Plans

- David Young, CDM Smith
- Lee Azinheira, Town of Mansfield, MA

The Next Generation of O&M Manuals—Web-based Manuals

- Scott Firmin, Portland Water District
- Zachary Bodkin, University of Maine

SESSION 27

CSO II —From Green Infrastructure to Large Conduits—How Communities are Managing Wet Weather

Moderators:

- Steven Freedman, AECOM
- Ivonne Hall, CT DEEP

A Taste of the Green Apple

- Virginia Roach, CDM Smith
- Magdi Farag, NYC DEP
- Raymond Palmares, NYC DEP
- Margot Walker, NYC DEP

\$350K Cost Savings Achieved Through Detailed Modeling And Innovative Design for a CSO Storage Facility in Nashua, NH

- Charles Wilson, Hazen and Sawyer
- Frank Ayotte, Hazen and Sawyer
- Amy Prouty Gill, City of Nashua, NH
- Jeanne Walker, City of Nashua, NH

Voluntary CSO Flow Monitoring...what you don’t know, can hurt you (and the environment)

- Thomas Sgroi, Greater New Haven WPCA
- Bruce Kirkland, Greater New Haven WPCA
- Bruce Cohen, CSL Services, Inc.

Construction Challenges of the Seekonk Combined Sewer Overflow (CSO) Interceptor

- Roger Norton, CDM Smith
- Mohammed Reza Jafari, CDM Smith
- Robert Otoski, CDM Smith
- William Cotter, CDM Smith

SESSION 28

PLANT OPERATIONS III—Nitrogen Removal Project Case Studies

Moderators:

- David Press, Kleinfelder
- Lindsey Brough, Wright Pierce

Implementing A Wastewater Treatment Facility Upgrade/Expansion Using IFAS at West Haven, CT

- Mario Francucci, Black & Veatch
- David Banning, Black & Veatch
- Abdul Quadir, City of West Haven, CT
- William Norton, City of West Haven, CT

Achieving 5 mg/L TN with no New Tankage at Bucklin Point

- William McConnell, CDM Smith

Greenhouse Gas Emissions from Biological Nutrient Removal at Field’s Point Wastewater Treatment Plant

- Elizabeth Brannon, University of Rhode Island
- Serena Moseman-Valtierra, University of Rhode Island
- James McCaughey, Narragansett Bay Commission

Fine Tuning a BNR Process to Meet Stringent Total Nitrogen Requirements

- John Gallegos, CDM Smith

SESSION 29

PUBLIC EDUCATION—Award-Winning Public Education Successes

Moderators:

- Danielle Gallant, CDM Smith
- Deborah Mahoney, Hazen and Sawyer

Narragansett Bay Commission’s Public Outreach: Educating Youth and Engaging Stakeholders

- Pamela Reitsma, Narragansett Bay Commission
- Cynthia Morissette, Narragansett Bay Commission
- Christine Comeau, Narragansett Bay Commission

A Novel Photocatalytic Pervious Composite for Wastewater Reuse

- Deepika Kurup, Nashua High School South

NEWEA Schoolkit Demonstration and Information Session

- Leonard Young, MWRA
- Danielle Domingos, MassEEA

Water Quality Education in Billerica—A 20-Year Success Story

- Jeffrey Kalmes, Town of Billerica, MA

SESSION 30

HOT TOPIC—Infrastructure Resiliency

Moderators:

- Jeff Cantwell, Flow Assessment
- Mary White, MWRA

Microgrids to Support Critical Infrastructure

- Kenneth Geisler, Siemens

“Taking the Next Step” in Adaptation Planning and Implementation in Ogunquit, ME

- Ed Leonard, Wright-Pierce
- Phil Pickering, Town of Ogunquit, ME

Safeguarding Vital Wastewater Infrastructure: A Strategic Climate Risk & Triple Bottom Line Adaptation Framework

- Anni Luck, Hazen and Sawyer
- Laura Bendernagel, Hazen and Sawyer
- Pinar Balci, NYC DEP
- Alan Cohn, NYC DEP

BWSC Climate Change Risk Assessment, Findings and Mitigation/Adaptation Strategies for Wastewater and Storm Drainage

- William McMillin, CH2M HILL
- John Sullivan, Boston Water and Sewer Commission
- Charlie Jewell, Boston Water and Sewer Commission

SESSION 31

**ASSET MANAGEMENT II
How to Start and Continue AM**

Moderators:

- John Rogers, Consultant
- John Jackman, Hoyle, Tanner & Associates

Asset Management—Even a Journey of 10,000 Miles Starts with a Single Step

- Joseph Ridge, CDM Smith
- Jeff Claus, CDM Smith

Spring 2014 Specialty Conference White Paper Forum

- John Rogers, Consultant

SESSION 32

**RESIDUALS II/ SUSTAINABILITY III
A Sustainable Future for Biosolids**

Moderators:

- Courtney Eaton, Carollo Engineers
- Chris Muller, Brown and Caldwell

An Overview of the New WEF Publication “Moving Toward Resouce Recovery Facilities”

- Elizabeth Watson, United Water

Planning for an Uncertain Future—Biosolids Disposal in a Bold New World

- Deborah Mahoney, Hazen and Sawyer
- Matt Van Horne, Hazen and Sawyer
- Hans Tuneblom, Veolia Water
- Roger Brooks, City of Leominster, MA

Twenty Years of Biosolids Composting

- Clayton (Mac) Richardson, Lewiston-Auburn WPCA
- Michael Giggey, Wright-Pierce
- Jeffrey Pinnette, Wright-Pierce
- Mike Pelletier, Lewiston-Auburn WPCA

Does Composting Still Make Sense—An Evaluation of the Existing Agitated-Bed Composting Facilities at the Dartmouth, MA WPCF

- Kenneth Scully, Fay, Spofford & Thorndike
- Carlos Cardoso, Town of Dartmouth, MA

SESSION 33

**COLLECTION SYSTEMS III
If You Build It, the Sewer Will Come**

Moderators:

- John Murphy, Stantec
- Dennis Sullivan, National Water Main Cleaning Co.

Alternative Biotechnology Provides Enhanced Biological Nitrogen Removal Efficiency

- Andrew Newbold, In-Pipe Technology Company, Inc.

Development of the Modern, Self-cleaning Circular Wastewater Wet-well

- Robert Domkowski, Xylem, Inc. - Flygt

Force Main Ice Pigging—Middelbury, VT

- Wayne Elliott, Aldrich + Elliott, PC
- Dick Johnson, Utility Service Group
- Scott Kelley, Utility Service Group

Creating New Hydraulic Models of Old Complex Sewer Systems—The Challenges and the Pitfalls

- Nicholas Anderson, MWH Global
- Thomas Brueckner, Narragansett Bay Commission
- Kathryn Kelly, Narragansett Bay Commission
- Martha Fernandes, MWH Global

GRADUATE STUDENT SESSION 1

Moderator:

- Annalisa Onnis-Hayden, Northeastern University

Modeling Microbial Fuel Cells for Power Generation and Wastewater Treatment

- Secil Tutar, University of Connecticut

Push the Limit of Enhanced Biological Phosphorus Removal Process for More Sustainable Phosphorus Removal and Recovery

- Yueyun Li, Northeastern University
- Annalisa Onnis-Hayden, Northeastern University
- Yuqi Wang, Northeastern University
- Helen Cope, Univ. of Edinburgh, UK
- Alistair Elfick, Univ. of Edinburgh, UK
- April Z. Gu, Northeastern University

Biogas Production from Anaerobic Co-Digestion of Microalgae Chlorella Sp. and Septic Tank Sludge

- Dingnan (Matthew) Lu, UMass, Lowell
- Xiaoqi Zhang, UMass, Lowell

Changing Risk of Brominated Trihalomethanes in Drinking Water from Elevated Bromide in Source Water

- Yuxin Wang, Carnegie Mellon University
- Jeanne VanBriesen, Carnegie Mellon University

GRADUATE STUDENT SESSION 2

Moderator:

- Jerry Hopcroft, Wentworth Institute of Technology

Self-Sustained Microbial Fuel Cell-Microbial Electrolysis Cell (Mfc-Mfc) Hybrid System to Reduce Metals In Wastewater

- Yan Li, University of Connecticut

Phosphorus-Recovery from Waste Activated Sludge (WAS) In Enhanced Biological Phosphorus Removal (EBPR) Processes

- Yuqi Wang, Northeastern University
- Yueyun Li, Northeastern University
- April Z. Gu, Northeastern University
- Annalisa Onnis-Hayden, Northeastern University

Understanding the Migration Fates of Contaminants at Water/sediment Interface Using Innovative Real-time *in situ* Profiling

- Zhiheng Xu, University of Connecticut

Impact of Advanced Oxidation Processes on the Composition and Biodegradability of Soluble Organic Nutrients in Wastewater Effluents

- Nick Tooker, Northeastern University
- Michael Drinkwater, Truckee Meadows WRF, Nevada
- John Horton, North Attleborough WWTF, Massachusetts
- Karla Sangrey, Upper Blackstone Water Pollution Abatement District, MA
- April Z. Gu, Northeastern University

Due to weather, the graduate student sessions will be rescheduled for a springtime venue

POSTER BOARD DISPLAYS

Energy Usage Reduction from Enhanced Nutrient Removal Efficiency During Cold Water Temperatures

- Bulbul Ahmed, In-Pipe Technology Company, Inc.

Extended Bases—The Importance of Manhole Stabilization

- Rebecca Ducharme, Tighe & Bond

Mixing Zones and NPDES Permit Effluent Limitations

- Raymond Ferrara, Kleinfelder/Omni

Non-Destructive Evaluation & Condition Assessment of Sewer Force Mains

- Michael Funk, Pure Technologies

The Decentralized Model: A Lean and Green Future for Utilities

- Dennis Hallahan, Infiltrator Systems, Inc.

Green Infrastructure for Sustainable Wastewater Treatment: A Phyto Technology Demonstration Project

- Tabitha Harkin, Cape Cod Commission

NBC Stormwater Mitigation Program—A Comprehensive Approach to the Urban Stormwater Problem

- Stephen Lallo, Narragansett Bay Commission

Using Disk Filter Technology to Treat Primary Wastewater

- Quang Ly, Kruger Inc.

Interim Glycerol Addition at the 26th Ward WWTP

- Michael Lynch, Hazen and Sawyer

Detention/Infiltration Facilities for Partial Separation Projects, Chicopee, MA

- David Partridge, Tighe & Bond

Relocating a Wastewater Treatment Facility and Meeting the Increased Capacity Demands for a Growing Region

- Robert Polys, Woodard & Curran

Cold Temperature Nitrification of Lagoon Effluent Using Biologically Active Filter (BAF)

- Edward Quann, F.R. Mahony & Associates

Managing Growth in Nitrogen Sensitive Watersheds Can Reduce Cape Cod Wastewater Infrastructure Costs

- Carole Ridley, Ridley & Associates, Inc.
- Michael D. Giggey, Wright-Pierce

Eliminating Stormwater from Neighborhoods and Homes through Watershed-friendly Property Certifications

- Ross Saxton, Tethys Environmental

Worry-Free Chemical Phosphorus Removal

- Melody White, Hach Company

The Sewering of an Entire Town—How Chatham, MA is Planning to Gain Complete Control of their Wastewater to Protect their Drinking Water Supplies & Restore the Local Environment

- Karen Wong, GHD Inc.



The Annual Awards and Recognitions Ceremony was held on Wednesday, January 28, 2015. This ceremony recognizes the 2014 award recipients of EPA regional awards, various Water Environment Federation awards, and annual NEWEA awards.



1



2



3

1. Professor emeritus Don Pottle and his wife proudly pose with his EPA Lifetime Achievement Award in recognition of his years of dedication to plant operations and collection systems training 2. Farzin Kiani and Melissa Mooradian of Veolia Water accept the Energy Management Achievement Award on behalf of the Plymouth, Mass. facility 3. Sharon McMillin, Nancy McAuley-Lesieur, and Kenneth Noyes receive the George W. Burke, Jr. Safety Award for the Winnepesaukee River Basin WWTP

2015 Awards & Recognitions

U.S. EPA REGION I NEW ENGLAND AWARDS

Wastewater Treatment Plant O&M Excellence Award

- Hampton, New Hampshire Wastewater Treatment Plant
- Penacook, New Hampshire Wastewater Treatment Facility
- East Providence, Rhode Island Water Pollution Control Plant
- New Shoreham, Rhode Island Water and Sewer Commission
- Medfield, Massachusetts Wastewater Treatment Plant

Wastewater Treatment Plant Operator Excellence Award

- Rick Cantu, Manchester, New Hampshire Water Pollution Control Facility

Wastewater Trainer Excellence Award

- Ray Gordon, New Hampshire Department of Environmental Services

Industrial Pretreatment Program Excellence Award

- Hanover, New Hampshire Water Reclamation Facility
- East Providence, Rhode Island Water Pollution Control Plant
- Newport, Rhode Island Water Pollution Control Plant
- Attleboro, Massachusetts Water Pollution Control Facility

Lifetime Achievement Award

- Donald Pottle

NEWEA RECOGNITIONS

Scholarship Recipients 2013

Undergraduate Student

- Joanna Lewis
University of New Hampshire

Graduate Student

- Nicholas Tooker
Northeastern University

Non-environmental Student

- Kira Arnott
Mount Holyoke College

Stockholm Junior Water Prize

- Bridget Oei
Hebron, CT
- Mary Butler
Bangor, ME
- Deepika Kurup
Nashua, NH
- Nevil Desai
Burlington, VT

NEWEA AWARDS

NEWEA Operator Award

Connecticut

- Daniel Sullivan, Jr.
Milford, CT

Maine

- Michael Tibbetts
York Beach, ME

Massachusetts

- Linda Schick
Fairhaven, MA

New Hampshire

- Kenneth Noyes
Franklin, NH

Rhode Island

- Shawn Murphy
Woonsocket, RI

Vermont

- Kevin McLaughlin
Jericho, VT

Alfred E. Peloquin Award

Connecticut

- Brian W. Armet
Cromwell, CT

Maine

- Travis Peaslee
Lewiston, ME

Massachusetts

- James Barsanti
Framingham, MA

New Hampshire

- Harry Stewart
Londonderry, NH

Rhode Island

- Janine Burke
Warwick, RI

Vermont

- Robert Fischer
Montpelier, VT

NEWEA AWARDS

Asset Management Award

- Dover WWTF, Dover, NH

Biosolids Management Award

- John F. Donovan
Cambridge, MA

Clair N. Sawyer Award

- Edward L. Rushbrook
Gilford, NH

Committee Service Award

- David Press
Framingham, MA

E. Sherman Chase Award

- Aubrey Strause
Scarborough, ME

Elizabeth A. Cutone Executive Leadership Award

- Sidney Holbrook
New Haven, CT

Energy Management Achievement Award

- Veolia Water/
Plymouth, MA WWTP

James J. Courchaine Collection Systems Award

- John Sullivan, Jr.
Boston, MA

Operator Safety Award

- Donald Dubiel
Hartford, CT

Past President's Plaque and Pin

- Michael Bonomo
Monroe, CT

Public Educator Award

- Andrew Fish
Montpelier, VT

Wastewater Utility Award

- Water Resources Recovery
Facility, Montpelier, VT

Young Professional Award

- Dustin Price
South Berwick, ME

WEF RECOGNITIONS

Operations Challenge Div. II – Process Control 1st Place*

- ME – Force Maine:
Scot Lausier, Alex Buechner,
Ian Carter, Stacy Thompson,
Daniel Laflamme (coach)

Public Education Award*

- New England Water Environment
Association

Water Quality Improvement Award*

- Narragansett Bay Commission

Operator Ingenuity Award*

- Michael Carle
Portsmouth, NH

WEF Fellows*

- John Hart
Saco, ME
- James Crook
Norwell, MA

WEF Life Membership

- Russell Adams
Tewksbury, MA
- Steven Freedman
South Portland, ME
- Roger Janson
Winchester, MA
- James Longworth
Smithtown, NY
- James Pappas
Wakefield, MA
- Joseph Shepherd
Monument Beach, MA
- Ed Sweeney
Darien, CT

*Presented at WEFTEC 2014

WEF – MA AWARDS

Quarter Century Operators' Club

- Timothy Baker
Portland, ME
- Michael Bisi
Glastonbury, CT
- Mario Leclerc
Manchester, NH
- Phyllis Arnold Rand
Augusta, ME
- Gregory Thulen
Brunswick, ME

Arthur Sidney Bedell Award

- Steven Freedman
South Portland, ME

George W. Burke, Jr. Safety Award

- Winnepesaukee River Basin
WWTP, Franklin, NH

Laboratory Analyst Excellence Award

- Mary Jersey
Greenwich, CT

William D. Hatfield Award

- Stephen Sloan
Portland, ME

WEF Service Award

- Jeanette Brown
Darien, CT
- Jennifer Lachmayr
Wakefield, MA

The following retiring NEWEA Officers and Committee Chairs were acknowledged

OFFICE

Past President Michael Bonomo
Communications Council
Director James Barsanti
WEF Delegate Jennifer Lachmayr
Director—Rhode Island Janine Burke
Director—Vermont Robert Fischer
Council Director—
Outreach Council Thomas Groves

OFFICER

COMMITTEE

Bylaws James Pappas
Information Technology
& Automation James Spitzer
Membership George Vercelli
Program Susan Guswa
Public Awareness Jennifer Lachmayr
Residuals Management Jonathan Keaney
Safety Shannon Eyler
Small Community Jeff Gregg
Stormwater Virginia Roach
Utility Management Scott Firmin
Water For People Jonathan Kunay
Website Benjamin Mosher

CHAIR

EXHIBITORS

ACF Environmental	CUES
ADS Environmental Services	D.L. Thurrott
Advanced Drainage Systems	Danfoss
Aerisa	David F. Sullivan and Associates
Aero-mod	DEZURIK
Allmax Software	DN Tanks
Amiad	Duall Division
ANUA	Duke's Root Control
AP/M CentriPipe	Duperon Corporation
APG-Neuros	Dutchland
Aqua-Aerobic	Eastern Pipe Service
Aquagen Infrastructure Systems	Ecoverde c/o BAU/HOPKINS
Aquaturbo Systems	Electroswitch Corp.
Aquionics	Enduro Composites
ARCH Chemicals	Entex Technologies
Aries Industries	Environmental Dynamics International (EDI)
ASA Analytics	Environment One
Asahi/America	Environmental Operating Solutions
Assmann Tanks/Ayer Sales	EPOXYTEC
Associated Electro-Mechanics	eRPortal Software group
Atlantic Fluid Technology	EST Associates
Autrol America c/o JWB Co	Esteem Wireless Modems c/o JWB Company
BAU/HOPKINS	ETS-UV by Neptune Benson
BDP Industries	Evoqua Water Technologies
Bilfinger Airvac Water Technologies	F.R. Mahony & Associates
Bio Organics Catalyst	F.W. Webb Co. – Process Controls Div.
BioSec Enviro	Fairfield Service Co.
BISCO Pump Systems	Fay, Spofford & Thorndike
Blake Equipment Co.	Fiber Technology Corporation
Blue Water Technologies	Fiberglass Fabricators
BMC Corporation	Flottweg Separation Technology Inc
Brentwood	Flow Assessment Services
Burt Process Equipment	FlowWorks
Butterworth	Flygt Products – A Xylem Brand
C.N. Wood Co.	Ford Hall Company
Cabot Norit Activated Carbon	Fournier Industries
Calgon Carbon UV Technologies	Franklin Miller
Carl Lueders & Company	G.L. Lyons Associates
Carlsen Systems	Gabriel Novac & Associates
Carter Pump	Gardner Denver Nash
Carus Chemical	GE Water & Process Technologies
Casella Organics	Geomembrane Technologies
Cerlic Controls NE (CCNE)	Godwin Pumps of America – A Xylem Brand
Chester Engineers	Grande Water Management Systems
Claro Global	Green Mountain Pipeline Services
ClearStream Environmental	
Continental Carbon Group	
Coyne Chemical Environmental Svcs.	
Cretex Specialty Products	

Grundfos Pumps Corporation
Hach Company
Hach Flow c/o BAU/HOPKINS & JWB Company
Hanna Instruments
Hayes Pump
Hazen and Sawyer
High Tide Technologies
HOBAS Pipe USA
Holland Company
Hydro-Dyne
Hydro Logic
Hydromatic Pump--Pentair
ICS Healy-Ruff c/o BAU/HOPKINS
IDModeling
Infrastructure Technologies
Innovyze
Innovair
IPEX USA
IPM Systems
J.D.V. Equipment Corp.
J&R Sales and Service
JCS Industries
Jesco-Lutz Pump Corp.
JWB Company
Kemira Water Solutions
Kruger
Kusters Water, a Div. of Kusters Zima Corporation
KWS Manufacturing Co. Ltd., Environmental Division
Lakeside Equipment Corporation
Lane Enterprises
Lightnin/SPX
LOBEPRO Rotary Pumps
M.A. Selmon Company
The MAHER Corporation
Maltz Sales Company
Manning Environmental c/o JWB Company
Martinez Couch & Associaties
McIntosh Controls Corp./SmartCover
Mechanical Solutions
Methuen Construction Co.
MGD
Mixtec
MJK
National Filter Media/Filter Belts
National Oilwell Varco (NOV)
National Water Main Cleaning Co.

Neptune Chemical Pump Company
Netsch c/o BAU/HOPKINS
New England Environmental Equipment
Noxon c/o BAU/HOPKINS
Oakson
OCV
Opti Float/Cox Research c/o JWB Company
OSS
Ovivo
Parkson Corporation
Pavers by Ideal
Penn Valley Pump
Perma-Liner Industries
Philadelphia Mixing Solutions c/o BAU/HOPKINS
PhilAerator
PINNACLE OZONE SOLUTIONS
POND Technical Sales
Precision Systems
PRIMEX Controls
Prominent Fluid Controls
Process Wastewater Technologies
PULSCO
Pump Systems
Purafil
QCEC Wastewater Samplers
R.H. White Construction Co.
RACO Manufacturing & Engineering Co. c/o JWB Company
Rain for Rent
Red Valve/Tideflex
Resource Management
Rexa
R.I. Analytical Laboratories
RITEC Environmental
Robuschi USA
Rockwell Automation
RootX
Ross Valve Mfg. Co.
Rotork Controls
Russell Resources
SAF-T-FLO c/o BAU/HOPKINS
Sanitaire - Xylem Water Solutions USA
Scavin Equipment Co.
Schreiber c/o BAU/HOPKINS
Schulz Group, A Timken Brand
Scott Safety c/o BAU/HOPKINS & JWB Company
Sedaru

Shelter Works
Smith & Loveless
SNF Polydyne
Spartan Tool
Spencer c/o BAU/HOPKINS
Sprayroq
Stacey DePasquale Engineering (SDE)
Statewide Aquastore
Sorensen Systems
Sustainable Generation
Swan Analytical USA
Sydex USA
Synagro Northeast
SyTech
Technology Sales Associates
Teledyne Isco
TcTech/Boyson New England
Technology Sales Associates
Ted Berry
Thirsty Duck
Trident Actuators
Triplepoint Water technologies
TrojanUV
Truax Corporation
Trumbull Industries
Turtle Plastics
UGSI Chemical Feed
Ultra-Tech
United Blower
United Concrete Products
United Water
USABlueBook
Varec-Biogas
Vari-Tech
Viking Chains Enviro Div/Connexus Industries
Vogelsang
Vulcan Industries
Walker Wellington
Wastecorp Pumps
Water & Waste Equipment
Water Resource Technologies
Watson Marlow Pumps Group
WESCOR Associates
Westech Engineering
Whipps
WhiteWater
WILO-EMU
Wind River Environmental
Winters Instruments
Woodard & Curran
Yeomans Chicago Corp.
YSI

The following companies received award of recognition of continuously exhibiting at the NEWEA Annual Conference:

- 25-Year Award**
- ADS Environmental Services
 - J&R Sales and Service
- 10-Year Award**
- AP/M Permaform
 - Environmental Operating Solutions
 - Flow Assessment

CONFERENCE SPONSORS

ADS Environmental Services
AECOM
Aqua Solutions
ARCADIS
BETA Group
Brown and Caldwell
Carlin Contracting Company
CDM Smith
CH2M HILL
David F. Sullivan & Associates
Dewberry
Duke's Root Control
Environmental Partners Group
EST Associates
F.R. Mahony & Associates
Fay, Spofford & Thorndike
Flow Assessment Services
Fuss & O'Neill
Green Mountain Pipeline Services
Hayes Pump
Hazen and Sawyer
Kleinfelder
Land Tech Consultants
Massachusetts Clean Energy Center
McMillen Jacobs Associates
MWH
NEFCO
Nitsch Engineering
STANTEC
Synagro Northeast
The MAHER Corporation
Tighe & Bond
Underwood Engineers
United Water
Weston & Sampson
Woodard & Curran
Wright-Pierce



Upcoming meetings & events

NEWEA CONGRESSIONAL BREAKFAST

April 14–15, 2015 • Rayburn House Office Building, Washington, DC

The NEWEA Congressional Briefing is the annual hallmark for the Association and its government affairs program. Mark your calendar to join us on April 14–15, 2015.

This is a great opportunity for our membership and elected officials to join together to discuss water, wastewater and stormwater infrastructure issues facing communities of the Northeast. We look forward to meeting with you and providing you with the latest information affecting our industry. Your involvement is critical—come to D.C. and be heard.

Attending the Briefing will allow:

- Opportunities to meet with senators, representatives and legislative staff
- Substantive discussion of federal clean water legislative initiatives and opportunity to provide feedback related to the impact that these initiatives have on our communities and the water quality industry
- A forum for presentation and discussion of the NEWEA Position statements



- Opportunities to learn about key federal regulatory initiatives
- A forum to provide comments directly to regulatory leaders from EPA's Washington, D.C. Headquarters

In addition to the Briefing Breakfast, an important part of this day is holding individual meetings with senators and representatives on the Hill. If you plan to attend the briefing, the government affairs committee will work with you to schedule these individual appointments.

EXECUTIVE COMMITTEE MEETING WITH ALL CHAIRS W/NEWWA TRADESHOW

April 1, 2015

Hilton Garden Inn, Worcester, MA

OPERATOR TRAINING DAY

April 10, 2015

Holyoke, MA

NEWEA WATER REUSE & INDUSTRIAL WASTEWATER SEMINAR

April 28, 2015

West Hartford, CT

THE NEWEA 2015 SPRING MEETING & EXHIBIT

June 7–10, 2015 • Mt. Washington Resort Bretton Woods, NH



The Spring Meeting & Exhibit offers three days of technical sessions, exhibit displays, tours, the Operations Challenge competition and a chance to network with other wastewater professionals in a relaxed setting.

AFFILIATED STATE ASSOCIATIONS AND OTHER ASSOCIATIONS

NEW ENGLAND WATER WORKS ASSOCIATION SPRING CONFERENCE

April 1–2, 2015

Conference, DCU Center, Worcester, MA

NHWPCA 2015 ANNUAL TRADESHOW

April 9, 2015

Executive Court, Manchester, NH

WEFMAX (VA)

April 15–17, 2015

Virginia Beach, VA

MEWEA SPRING CONFERENCE

April 17, 2015

Hilton Garden Inn, Auburn, ME

CWPAA 2015 ANNUAL TRADESHOW

April 23, 2015

New Life Church, Wallingford, CT

NARRAGANSETT WPCA AWARDS BANQUET

April 30, 2015

Potowomut Country Club, Warwick, RI

GMWEA SPRING & ANNUAL MEETING

May 21, 2015

Killington Grand Hotel, Killington, VT

MWPCA QUARTERLY MEETING

June 17, 2015

Log Cabin, Holyoke, MA

AWWA ANNUAL CONFERENCE

June 7–10, 2015

Anaheim, CA

NEAPWA SUMMER MEETING

June 10–12, 2015

Lighthouse Inn, West Dennis, MA

MWPCA GOLF TOURNAMENT

June 22, 2015

Shaker Hills, Harvard, MA

NWPCA GOLF TOURNAMENT

June 29, 2015

Potowomut Golf Club, East Greenwich, RI

This is a partial list. Please visit the state association websites and NEWEA.org for complete and current listings.

THE MAHER CORPORATION

WATER & WASTEWATER PROCESS, PUMPING & VALVE SYSTEMS



Celebrating our 45th Anniversary

We would like to thank all of our loyal customers for your years of support.

Please visit our website to find an updated list of our manufacturers.

www.themahercorp.com

800-456-2437

DAVID F. SULLIVAN & ASSOCIATES, INC.

Manufacturers' Representatives for Water & Wastewater Applications

www.davidfsullivan.com

ME, EASTERN MA, NH, VT

Phone: 603-474-2484

E-mail: info@davidfsullivan.com

CT, RI, WESTERN MA

Phone: 203-373-9261

E-mail: timbezler@att.net

listen.think.deliver.®

*For more than 65 years,
CDM Smith has proudly helped
New England communities manage
their water and infrastructure needs.*

**CDM
Smith**
cdmsmith.com

617-452-6000

Thank you

TO ALL OUR 2015
ANNUAL SPONSOR
PROGRAM PARTICIPANTS:

Gold

AECOM
Aqua Solutions
ARCADIS
CDM Smith
EST Associates
Flow Assessment Services
Green Mountain Pipeline Services
Kleinfelder
The MAHER Corporation
Weston & Sampson

Silver

Brown and Caldwell
CH2M HILL
Environmental Partners Group
Fuss & O'Neill
Hazen and Sawyer
Synagro Northeast
Tighe & Bond
United Water
Wright-Pierce

Bronze

ADS Environmental Services
BETA Group
Black and Veatch
Carlin Contracting Company
David F. Sullivan & Associates
Dewberry
Duke's Root Control
Fay, Spofford & Thorndike
Hayes Pump
Land Tech Consultants
MWH
NEFCO
Woodard & Curran



Build relationships with water industry leaders *and* make a positive impact on the water environment

Join NEWEA's 2016 Annual Sponsor Program

NEWEA offers companies the opportunity to promote their products and services throughout the year by participating in multiple sponsorship activities. Annual Sponsorships include:

- NEWEA Annual Conference
- NEWEA Spring Meeting & Golf Tournament
- The Operations Challenge Golf Tournament
- A web presence on NEWEA.org's sponsorship program page
- The option to customize sponsorship levels by selecting to participate in up to eight additional unique NEWEA events plus additional activities

Sponsorship Benefits:

- Increased corporate visibility and marketing opportunities within a wide audience of water industry professionals
- Relationship-building access to key influencers involved in advancing water industry services, technology, and policy
- Recognition as an environmental leader among peers and customers

For more information contact Mary Barry:
EMAIL: mbarry@newea.org
CALL: 781-939-0908



Today's Engineering Challenges...

Bringing Integrated and Sustainable Solutions to Life!

2014 APWA Project of the Year Award
Enhancing Embayment Water Quality:
Integrating Oyster Reef Restoration & Stormwater Controls

Require a Partner with Solutions!

Providing a broad range of civil and environmental engineering services encompassing:

- Water
- Wastewater
- Stormwater
- Traffic & Transportation
- Environmental including LSP Services
- Civil including Geotechnical
- GIS Development and Mapping

Environmental Partners
GROUP
www.envpartners.com



**Superior local knowledge
backed by the deep resources and
stability of a national firm**

A national firm with a local presence
Peter Garvey, PE
617.531.0760
pgarvey@dewberry.com

ARCHITECTS ENGINEERS CONSULTANTS
www.dewberry.com



TATA & HOWARD

Unsurpassed Solutions
in the Water Environment

Providing innovative wastewater solutions
and unparalleled service to
New England utilities for over 20 years

Service. Efficiency.
Teamwork.

MA | NH | CT | ME | VT | AZ
800-366-5760 | www.tataandhoward.com

BLAKE
EQUIPMENT
The Blake Group
Solutions for Peak Performance

Lead Time Too Long?

HOMA delivers in
2 weeks or less!*

HOMA offers a comprehensive
line of dewatering, effluent and
solids handling wastewater pumps

- Wet Pit or Dry Pit
- 10 GPM to 15,000+ GPM
- 1/2 HP to 650 HP
- Multiple Voltages/
Field Changeable

*HOMA ships 85%
of all orders in
TWO WEEKS or less.



BLAKE
EQUIPMENT
The Blake Group
800-353-1100

Advertiser index

Company	page
ADS Environmental Services.....	21
AECOM.....	20
ARCADIS.....	20
Associated Electro Mechanics.....	3
Black & Veatch.....	15
Blake Equipment.....	77
CDM Smith.....	75
David F. Sullivan & Assoc., Inc.	75
Dewberry	77
DN Tanks.....	12
E.J. Prescott, Inc.....	inside front cover
Environmental Partners Group.....	77
EST Associates	43
F.R. Mahony & Associates, Inc.	inside back cover
Fay, Spofford & Thorndike	back cover
Flow Assessment Services	10
Hazen and Sawyer, PC.....	10
Aqua Solutions.....	9
Ideal Concrete Block	9
Kleinfelder	29
NE ³ – New England Environmental.....	15
Oakson, Inc.	29
R. H White Construction.....	12
Sealing Systems	13
Stantec.....	21
Statewide Aquastore, Inc.....	5
Sprayroq.....	13
Tata & Howard.....	77
Technology Sales Associates, Inc.	14
The Maher Corporation.....	75
Tighe & Bond.....	43
UMass Lowell/The New England Consortium	15
Underwood Engineers	11
Weston & Sampson.....	21
Woodard & Curran.....	11
Wright-Pierce	12

Advertise with NEWEA

Reach more than 2,100 New England water quality industry professionals each quarter in the NEWEA JOURNAL

The Summer issue advertising deadline is May 8, 2015



For rates and opportunities, contact Mary Barry

EMAIL: mbarry@newea.org

CALL: 781-939-0908



NEWEA/WEF** Membership Application 2015



Personal Information

Last name	M.I.	First Name	(jr. sr. etc)
Business Name (if applicable)			
Street or P.O. Box (☐ Business Address ☐ Home Address)			
City, State, Zip, Country			
Home Phone Number	Business Phone Number	Fax number	
Email Address			
☐ Please send me information on special offers, discounts, training, and educational events, and new product information to enhance my career ☐ by e-mail ☐ by fax			
☐ Check here if renewing, please provide current member I.D.			

**NEWEA is a member association of WEF (Water Environment Federation). By joining NEWEA, you also become a member of WEF.

Employment Information (see back page for codes)

1. ORG Code:	Other (please specify):	2. JOB Code:	Other (please specify):
3. Focus Area Codes:		Other (please specify):	
Signature (required for all new memberships)			Date

Sponsorship Information

WEF Sponsor name (optional)	Sponsor I.D. Number	ACQ. Code for WEF use only WEF 15
-----------------------------	---------------------	-------------------------------------

Membership Categories (select one only)

		Member Benefit Subscription	Dues
☐ Professional Package	Individuals involved in or interested in water quality	■ WE&T (including Operations Forum) ■ WEF Highlights Online	\$157
☐ Young Professional Package	New members or formerly student members with 5 or less years of experience in the industry and less than 35 years of age. This package is available for 3 years.	■ WE&T (including Operations Forum) ■ WEF Highlights Online	\$67
☐ Professional Wastewater Operations (PWO) Package	Individuals in the day-to-day operation of wastewater collection, treatment or laboratory facility, or for facilities with a daily flow of < 1 mgd or 40 L/sec.	■ WE&T (including Operations Forum) ■ WEF Highlights Online	\$96
☐ Academic Package	Instructors/Professors interested in subjects related to water quality.	■ WE&T (including Operations Forum) ■ WEF Highlights Online ■ Water Environment Research (Online)	\$157
☐ Student Package	Students enrolled for a minimum of six credit hours in an accredited college or university. Must provide written documentation on school letterhead verifying status, signed by an advisor or faculty member.	■ WE&T (including Operations Forum) ■ WEF Highlights Online	\$10
☐ Executive Package	Upper level managers interested in an expanded suite of WEF products/services.	■ WE&T (including Operations Forum) ■ World Water ■ Water Environment Research (Online) ■ Water Environment Regulation Watch	\$338
☐ Dual	If you are already a member of WEF and wish to join NEWEA		\$40
☐ Corporate Membership (member benefits for one person)	Companies engaged in the design, construction, operation or management of water quality systems. Designate one membership contact.	■ WE&T (including Operations Forum) ■ Water Environment Research (Print) ■ Water Environment Regulation Watch ■ WEF Highlights Online	\$393

WEF Utility Partnership Program (UPP): NEWEA participates in the WEF Utility Partnership Program (UPP) that supports utilities to join WEF and NEWEA while creating a comprehensive membership package for designated employees. As a UPP Utilities can consolidate all members within their organization onto one account and have the flexibility to tailor the appropriate value packages based on the designated employees' needs. Contact WEF for questions & enrollment (703-684-2400 x7213).

Payment

☐ Check or money order enclosed Made payable to NEWEA 10 Tower Office Park, Suite 601 Woburn, MA 01801 For more information: 781.939.0908 Fax 781.939.0907 NEWEA.org	Charge ☐ Visa ☐ American Express ☐ Master Card ☐ Discover	Card #	Security/CVC	Exp. Date	Depending upon your membership level, \$10 of your dues is allocated towards a subscription to the NEWEA Journal.
		Daytime Phone			
		Signature			
Billing Address (☐ check here if same as above)		Street/PO Box	City, State, Zip		

NEWEA/WEF** Membership Codes 2015

To help us serve you better, please complete the following:

(choose the one that most closely describes your organization and job function)

**NEWEA is a member association of WEF (Water Environment Federation). By joining NEWEA, you also become a member of WEF.



What is the nature of your ORGANIZATION?

(circle one only) (ORG)

- 1**
Municipal/district Water and Wastewater Plants and/or Systems
- 2**
Municipal/district Wastewater Only Systems and/or Plants
- 3**
Municipal/district Water Only Systems and/or Plants
- 4**
Industrial Systems/Plants (Manufacturing, Processing, Extraction)
- 5**
Consulting or Contracting Firm (e.g., Engineering, Contracting Environmental, Landscape Architecture)
- 6**
Government Agency (e.g., U.S. EPA, State Agency, etc.)
- 7**
Research or Analytical Laboratories
- 8**
Educational Institution (Colleges and Universities, libraries, and other related organizations)
- 9**
Manufacturer of Water/Wastewater Equipment or Products
- 10**
Water/Wastewater Product Distributor or Manufacturer's Rep.
- 11**
Stormwater (MS4) Program Only
- 12**
Other _____ (please specify)

What is your Primary JOB FUNCTION?

(circle one only) (JOB)

- 1**
1. Upper or Senior Management (e.g., President, Vice President, Owner, Director, Executive Director, General Manager, etc.)
- 2**
Engineering, Laboratory and Operations Management (e.g., Superintendent, Manager, Section Head, Department Head, Chief Engineer, Division Head, Landscape Architect etc.)
- 3**
Engineering and Design Staff (e.g., Consulting Engineer, Civil Engineer, Mechanical Engineer, Chemical Engineer, Planning Engineer, Landscape Architect, Environmental/Wetland Scientist etc.)
- 4**
Scientific and Research Staff (e.g., Chemist, Biologist, Analyst, Lab Technician, Environmental/Wetland Scientist etc.)
- 5**
Operations/Inspection & Maintenance (e.g., Shift Supervisor, Foreman, Plant Operator, Service Representative, Collection Systems Operator, BMP Inspector, Maintenance, etc.)
- 6**
Purchasing/Marketing/Sales (e.g., Purchasing, Sales Person, Market Representative, Market Analyst, etc.)
- 7**
Educator (e.g., Professor, Teacher, etc.)
- 8**
Student
- 9**
Elected or Appointed Public Official (Mayor, Commissioner, Board or Council Member)
- 10**
Other _____

What are your KEY FOCUS AREAS?

(circle all that apply) (FOC)

- 1**
Collection Systems
- 2**
Drinking Water
- 3**
Industrial Water/Wastewater/ Process Water
- 4**
Groundwater
- 5**
Odor/Air Emissions
- 6**
Land and Soil Systems
- 7**
Legislation (Policy, Legislation, Regulation)
- 8**
Public Education/Information
- 9**
Residuals/Sludge/Biosolids/Solid Waste
- 10**
Stormwater Management/ Floodplain Management/Wet Weather
- 11**
Toxic and Hazardous Material
- 12**
Utility Management and Environmental
- 13**
Wastewater
- 14**
Water Reuse and/or Recycle
- 15**
Watershed/Surface Water Systems
- 16**
Water/Wastewater Analysis and Health/ Safety Water Systems
- 17**
Other _____

Optional Items (OPT)

Years of industry employment? _____

- 1** (1 to 5) **2** (6 to 10) **3** (11 to 20)
4 (21 to 30) **5** (>30 years)

Year of birth? _____

Gender? _____

- 1** Female **2** Male

Education level? (ED) _____

- 1** High School **2** Technical School
3 Some College **4** Associates Degree
5 Bachelors Degree
6 Masters Degree **7** JD **8** PhD

Education/Concentration Area(s) (CON) _____

- 1** Physical Sciences (Chemistry, Physics, etc.)
2 Biological Sciences **3** Engineering Sciences
4 Liberal Arts **5** Law **6** Business



Water quality professionals, with fewer than 5 years working experience and under the age of 35, are eligible to join WEF as an Active Member, while participating in the NEWEA/WEF Young Professionals Program. This program allows up to 50% off of the Active Member dues, valid for the first three years of membership. This program is available for new member applicants and Student Members.

Too Much to Swallow?



Retrofit Your Failing Gravity Sewer with the E/One Solution

If rain events are overloading your wastewater treatment plant, E/One Sewers can insure that real wastewater will be the only thing that your facility has to deal with in the event of storms or high groundwater.

Huge resulting savings on facility upkeep, treatment and electric costs make E/One the green way to go for your next central sewer replacement or rehabilitation project.

Environment One Corporation
www.eone.com/sewer
A Precision Castparts Company



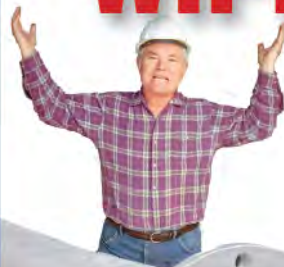
40 YEARS OF PRESSURE SEWER SOLUTIONS FOR THE NEW ENGLAND REGION

frma IS PLEASED TO
WELCOME CONNECTICUT
TO OUR PRESSURE
SEWER SALES AND
SERVICE TERRITORY

Call Eric Hess
774-402-0354



WIPE OUT!



Sanitary wipes are causing widespread ragging and downtime at plants and pump stations. Franklin Miller has a proven solution!

Our TASKMASTER® and DIMMINUTOR® grinders finely cut these problem solids down to size.

Call today to wipe out
problem solids at
your facility.
1-800-932-0599



www.franklinmiller.com

Franklin Miller Since 1918
Grinders & Screens



Celebrating 50 years - 1964 - 2014
WATER SUPPLY AND POLLUTION CONTROL EQUIPMENT SINCE 1964

273 Weymouth Street
Rockland, MA 01279
Web: www.frmahony.com
Email: info@frmahony.com

PROCESS APPLICATION ENGINEERS - WATER SUPPLY AND WASTEWATER TREATMENT
24 HOUR REPAIR SERVICE

AUTHORIZED SALES REPRESENTATIVES FOR:

FRMA Advanced Treatment Solutions:

Aquasystem®
Aquaflow™ Pumps
Caldwell™ Liquid Media
Caldwell™ Reverse Osmosis
FBC Package Plant
Sewage Lift Station
Treatment System Upgrade/Retrofit

AQUATONICS

Low Headflow UV Pipe Reactors
for WTP or WTP
Low Pressure Enclosed UV
Disinfection Systems
Medium Pressure Enclosed UV Systems
Open Channel UV Systems

ASMMANN CORP OF AMERICA

Rotational Moulded Polyethylene Storage Tanks

BAL-AST

Interlocking Ballast Systems
for E/One Grinder Pumps

E/ONE Sewer System:

Low Pressure Sewer Systems
Design, Supply & Service
Prefabricated Grinder Pump Stations
Direct Replacement Units for Failed
Centrifugal Grinder Pumps

FIBERGLASS FABRICATORS, INC.

Composite Grates - Composite Tanks
Polymer Pipe Covers
Man / Aque Covers
Bottle Wash
Through / Laminar
Warm & Baffles
Density Current Barriers
FRP Side Gates - FRP Buildings & Shelters

FRANKLIN MILLER

Disinfectant® Compostors
Spreng® Grinder Pump Systems
Turbomaster® Turbine Shaft Grinders
Triton® High Flow Global Grinders

GARDNER DENVER

Methylene and Lanthan Series Multistage
Centrifugal Blowers
Methylene® Revolutions™ Turbo Blowers
TurboTriton® Regenerative Blowers

HIGH TIDE TECHNOLOGIES

SeaLine, Cellular or Solenoid
Monitoring & Control
Grinder Pump Stations
Leak Station Monitoring

KAESER COMPRESSORS

Rotary Blower Packages
Rotary Screw Compressors
Special Application Packages

KRUEGER

ACTIFLO®
AquaCleen® IPAS
AquaCleen® MBR®
BioCrest® Dryers
BioCrest® Treatment Technologies
BIOSTYL® BAP
HydroMax® Clarifier
NEXUS® Membrane Bioreactor
Oxidation Unit Technology

KWY ENVIRONMENTAL

Belt Conveyors
Bucket Elevators
Drag Conveyors
Shaded Screen Conveyors
Shallow Screen Conveyors

LEGACY ENVIRONMENTAL PROCESS

Pulp and Paper Packaging Wastewater
Treatment Systems & Equipment

LIGHTENING MCGEE

A Unit of SPX Process Equipment
Pamula Motors
Rapid Mount & Flotation
Swirlpool Exchange Program
Clean Edge Regenerators
Surface Aeration

MGE PROCESS TECHNOLOGY

Turbomaster® Self-Assembling Aerator/Mixer

MORGAN PRODUCTS INC.

Flowing Diffusers and Coarse
Bubble Aeration
Sub-Car® XBC Aeration Systems

OR-TFC

Ball Pans & Thickening
Rocker™ Disc Screen Press
Micro Fine Screens
Screening & Compacting
Filtration Systems

ORTHOS LIQUID SYSTEMS

Fiber Media Systems
Complete Fiber Filter Solutions for
New and Retrofit

PALL

Microfiltration and Ultrafiltration
Membrane Systems
Zone & RG Systems

PINNACLE OZONE SOLUTIONS

Quadriflow® ozone generators
Energy efficient
Time based flow control 1%

PURATEL

Order Control Scrubbers
Carbon & Potassium Media
Control Room Controls Control
Emergency CIL Gas Dry Scrubbers

WALKER PROCESS EQUIP

Conditioners for Water and Wastewater
Dewatering Equipment
Grind and Screen Systems
FBC's
Rough Disinfectors

REVISED 1/14/2011

Represented in New England by:

Please contact us to request a
complete line card!

Celebrating 50 years°1964-2014

f.r. mahony & associates inc.
frma
273 Weymouth Street • Rockland MA 02370

Contact ED QUANN c.781.820.6268

edquann@frmahony.com

t.781.982.9300 f.781.982.1056

www.frmahony.com

FAY, SPOFFORD & THORNDIKE

FST – Providing Engineered Solutions to Collection System Challenges



New Gravity Sewer Construction
South Boston, MA



54-inch Storm Drain Installation – Reserved
Channel Sewer Separation Project
Boston, MA



Hampton Beach Infrastructure
Improvement Project
Hampton, NH



Springfield Water and Sewer Commission –
Infrastructure Improvements 2014
Springfield, MA



Storm Drain Lining –
Illicit Discharge Detection
and Elimination Program
Arlington, MA

5 Burlington Woods
Burlington, MA 01803

1.800.835.8666

www.fstinc.com

Twitter: @FSTinc

Additional offices in:

Boston, Quincy
and Hyannis, MA;

Bedford, NH;

South Portland, ME;

East Windsor, CT;

Melville and

New York, NY.

