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For this month’s Q&A, NASTT’s Trenchless Today sat down with Dr. Kim Staheli, incoming NASTT chair to chat about her career in the trenchless industry and her continuous leadership roles with NASTT over the years.

12 In the Trenches
By Andrew Farr
Frank Firsching, Dave Krywiak and Jason Lueke are three valuable members of NASTT whose hard work has not only helped to shape the association, but also the trenchless industry as a whole. Check out this month’s In the Trenches to find out how their career paths have led them to the forefront of many of NASTT’s initiatives.

16 NASTT’s 2014 Membership Directory
This year marks the fourth time we’ve published NASTT’s Membership Directory in the fall issue of NASTT’s Trenchless Today. The Directory can serve as a useful tool for locating names and contact information for contractors, manufacturers, professional service providers and municipal representatives who are NASTT members. Check out our full listing of individual, corporate and government members.

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In 2014, NASTT began implementing some of the new initiatives identified in our recent Strategic Planning Program. We recognize that our members are our most important asset, and with that in mind, we are aggressively planning for the future of the society.

The Strategic Plan findings showed that our members not only approved of the services and benefits we’ve been offering but, they also wanted to expand and develop NASTT even further. It is exciting to know that our membership and the trenchless industry as a whole look to NASTT as the premier organization for trenchless education and training. The past year has seen our society grow by leaps and bounds including the record-breaking NASTT’s 2014 No-Dig Show in Orlando. We should also mention our Good Practices training program that is wildly successful for both live training events and the continuing complementary webinar series.

With this in mind, it made sense for our staff to grow in order to continue to meet the needs of the membership. Michelle Hill and I would like to formally welcome Jenna Hale and Molly Margosian to the NASTT staff.

Jenna Hale joined the NASTT staff in June of 2013 as our first-ever Marketing Coordinator. Jenna came to NASTT with nearly a decade of trenchless industry marketing and trade show experience and has used her skills to expand our online trenchless job board and social media presence. She also heads up the newly launched NASTT blog, Talking Trenchless, and our bi-weekly e-newsletter which is full of timely Society information and industry news. All of these outlets serve to communicate with not only NASTT members, but the industry at large. Anything trenchless technology always makes for a great news story and we want to get the word out in as many ways as possible!

Our newest addition, Molly Margosian, recently joined the staff on July 1 in our newly created position of Membership Coordinator. Molly comes to NASTT with a professional background that includes engagement management and employer relations. Molly is here to facilitate NASTT member interaction as well as to offer support to our Regional and Student Chapters. NASTT offers so many benefits to all our members and we want to make sure you are able to take full advantage of them. Molly is here for you. Please feel free to reach out to her with your questions or ideas.

We have so much planned for the future of NASTT and we are well equipped with a dedicated and professional staff to continue to grow and offer valuable benefits to our membership. Please join me in welcoming Jenna and Molly to the NASTT family!

Thoughts and comments from our members are always welcomed.

Sincerely,

Michael Willmets
NASTT Executive Director
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As the Chair of NASTT for the last two years I have had the privilege of seeing some wonderful growth in both the Society and the trenchless industry as a whole. My term as NASTT Chair comes to an end in December, so I would like to take this opportunity to look back at what we have accomplished together.

Training Initiatives
Training and education are core values for NASTT. In 2013, NASTT’s trenchless webinar series entered its second year, and we saw record attendance at each of the three online training events. Thousands of attendees logged on to these webinars to learn about pipe bursting, directional drilling and cured-in-place pipe (CIPP) for the gas industry as well as slippining and sewer laterals for the municipal industry.

The 2014 webinar lineup is proving to be equally impressive. In July, we featured NASTT’s Carbon Calculator and in early September, we focused on cured-in-place pipe (CIPP). Be sure to tune in on Nov. 6 to learn more about condition assessment for water mains. All of NASTT’s webinars offer training from top experts in the field. Attendees receive education from the convenience of their home or office, yet are able to actively participate using a Q&A platform. The webinars are a great tool for access to the latest in trenchless technology and NASTT is proud to offer them completely free of charge as a service to the trenchless industry.

NASTT’s live training events have also continued to grow. We are indebted to our many Good Practices course instructors who are experts in their fields and volunteer their time to educate the trenchless industry. In 2013, we offered 23 live training sessions across North America where we trained 850 trenchless professionals. In 2014, we already have 21 live training sessions scheduled and more are added each month. If you are interested in attending a live training event, you can view the up-to-date schedule at nastt.org/training.

Carbon Calculator
This year, we’ve seen the exciting launch of NASTT’s Carbon Calculator. We believe this will be a substantial benefit for NASTT members while building upon the “green” initiatives of trenchless technology. The Carbon Calculator is web-based so it can be used in your office or on the jobsite. We are thrilled to be able to offer this valuable tool as a complementary benefit to NASTT members.

Strategic Plan
One of the endeavors I am most proud of during my time as NASTT Chair is our Strategic Plan. In order to continue to grow and serve the trenchless industry, NASTT embarked on a three-year Strategic Plan last summer. We began with a survey of our membership and an in-depth study into the Society and how we can best meet our members’ needs. We were very excited for this opportunity to hear from our members and grow our Society and industry. In the fall, the Strategic Plan Committee reviewed the findings and began to strategize for the coming years. The results of the study have helped us to shape our plan and focus our efforts.

Each year we will implement initiatives and programs based on our Strategic Plan and build on the foundation we have set up in 2014. In order to adequately implement these initiatives, it was important that NASTT have the required resources on hand. With that in mind, NASTT expanded its staff by hiring a dedicated Membership Coordinator this summer. Molly Margosian joined the team to grow our outreach to our Regional and Student Chapters and to be a main point of contact for our members. This development will allow our existing staff to focus on additional Strategic Plan goals including training, education and expanding NASTT’s No-Dig Show.

The last two years have been a wonderful experience for me, and I thank you for allowing me the opportunity to serve you as NASTT’s Chair. But my term is not yet over, and we still have a lot to do before the end of the year!
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They Tried To Make Me Go To Rehab

Trenchless professionals know the benefits of rehab — trenchless rehabilitation, that is.

For instance, folks came out in droves to the rehab tracks this year at NASTT’s 2014 No-Dig Show. The presentations in Track 3, which focused on both sewer and water rehab, were the highest-attended sessions on Monday morning, Monday afternoon and Tuesday morning. We had a tie for our highest-attended track presentations in rehabilitation: “Design Recommendations for Performance Limits for Cured-in-Place Liner in Cast Iron Water Pipe,” by Michael Brown, Ian Moore and Amir Fam from Queen’s University, and “CIPP Pressure Pipe: How Do You Know What You Bought Is What You Wanted?” by Mike Davison, Sanexen/Aqua-Pipe. We also had a great turnout for our CIPP Roundtable which was presented during the second session on Tuesday morning. These presentations and many others had more than 100 people in attendance.

We certainly can’t overlook the importance of new installations in our industry. Track 2 hosting the HDD presentations dominated Tuesday afternoon and Wednesday morning. Our top-attended new installation presentation came out of the microtunneling track: “Salvaging the Lessons Learned from a Difficult Microtunneling Project,” by Dr. Kimberlie Staheli and Dylan Davidson, Staheli Trenchless Consultants Inc.; Peter K. Robertson, Gregg Drilling and Testing Inc.; and Paul Vadnais, Vadnais Corp. Case studies like this presentation are a crowd favorite at NASTT’s No-Dig Show, and are undoubtedly a valuable tool for our industry.

If you weren’t able to make it to NASTT’s No-Dig Show this year you still have an opportunity to get educated. Each paper that was presented at NASTT’s 2014 No-Dig Show, and all other shows dating back to 1991, can be found in NASTT’s online paper library. We have made many enhancements to this tool in the last year to make it even easier to find valuable case studies and research. You can search by using our topic drop down menu, by typing in the year the paper was presented or by entering search terms. It’s that easy! Members can download as many papers as they want for free and non-members just pay a small fee for access. This incredible tool is at your fingertips at nastt.org/technicalpapers.

So don’t listen to Amy Winehouse. Take the time to go to a rehab training event or download a technical paper. Your projects will thank you for it.
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When did your involvement in trenchless methods begin?

When I graduated from Rensselaer Polytechnic Institute with a bachelor’s degree in mechanical engineering, I was hired by Hydro Group in the Ranney Division. This division constructed raw water intakes and Ranney Collector wells. At the time of my hire, the Ranney Division had just purchased a microtunneling machine – the third machine sold in the U.S. They were looking for an engineer to assist in the preparation of bids, prepare microtunneling submittals and to serve as the field engineer on microtunneling projects. This was my first introduction to trenchless technology and I began to acquire hands-on experience in microtunneling.

Briefly, can you tell us about how you formed Staheli Trenchless Consultants?

In 1995, I teamed with David Bennett and formed a consulting firm called Bennett-Staheli Engineers specializing in the design and construction inspection of new trenchless installation techniques. At that time, David and I worked for the U.S. Army Corps of Engineers at the Waterways Experiment Station where we were performing trenchless research in support of the military and civilians. The business was founded in Mississippi and later moved to the West Coast. In 2007, Dave and I decided to split the firm for a variety of reasons and I formed Staheli Trenchless Consultants (STC). Today, STC specializes in the design and construction management of trenchless technologies with an emphasis on minimizing trenchless risk.

Briefly, what types of projects is your core focus with STC?

Our core focus is the design and construction management of new pipelines using trenchless techniques. For example, we would perform a feasibility study where we would determine the right trenchless method for a project based on the level of risk that each method presented and the owner’s risk tolerance level. We would then provide recommendations for geotechnical investigations that would support our findings in the preliminary feasibility study. Based on the geotechnical information, we would write a Geotechnical Baseline Report (GBR) depending on the level of complexity of the project, the trenchless method specified and the owner’s risk sharing philosophy. We would then prepare plans and specifications for the project as they pertain to the trenchless installations.

During construction, we would provide inspection services by a highly qualified trenchless engineer where records would reveal a time-in-motion study that would track all of the contractor’s movements, installation times, down-time activities, etc. These documents would allow thorough evaluation should a differing site condition claim be filed.

Tell us about when you first got involved with NASTT.

My first involvement in NASTT was attending NASTT’s 1995 No-Dig Show in Dallas. I attended that show while working for a microtunneling contractor and prior to joining the Corps of Engineers to perform trenchless research. I continued to attend NASTT’s No-Dig Shows annually. In 1997 I joined the Program Committee for the No-Dig Show and have served on the program committee since.

During your time with NASTT, describe the growth you’ve seen in the organization.

NASTT has experienced significant growth over the time that I have been a member. Not only has the No-Dig Show and the membership grown, but the quality of the show and the number of active volunteers has also grown dramatically. There have also been significant changes in the way NASTT has been managed. The society has made great strides in forming committees that produce quality products. There are many publications that are currently produced by NASTT and a number of courses that are taught yearly throughout the United States and Canada. Another significant growth area has been our regional chapters. The regional chapters have continued to grow and new chapters have been formed. Many of these chapters are very active and countless volunteers give their time to planning symposiums, short courses, educational luncheons, etc. NASTT also offers student scholarships, training sessions to municipalities, the municipal and utility owners’ scholarship to attend NASTT’s No-Dig Show and targeted webinars.

As your term begins in the next couple months, what are you looking to achieve during your time as NASTT Chair?

NASTT recently went through a structured process where we developed a strategic plan that included a number of goals and initiatives. During my time as Chair, my goals include moving forward with initiatives that were recently developed by the Strategic Planning Committee. Some of these initiatives include ensuring that all Board activities are fair and transparent and that the membership is informed about decisions made at the Board level as well as informed about the amount of quality information available to them. Having seen great success with the Municipal and Utility Owners Scholarship Program, I want to continue to find innovative ways to bring trenchless education to people who may not be able to travel to an event like NASTT’s No-Dig Show so that we might be able to spread the word about trenchless to the Engineers and Owners who might need the technologies on their projects. The webinar series that was started two years ago has been wildly successful.

At the present, I am fortunate to work with a very strong Board that has a number of very bright, innovative people. I hope to be able to foster open communication between the Board members and encourage active discussions so that we can capitalize on the brain trust and make good decisions for the membership as we move forward.
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For this month’s *In the Trenches*, we decided to reach out to Frank Firsching, Dave Krywiak and Dr. Jason Lueke. Each of these three individuals has had fascinating career paths which have led them to success in the trenchless industry. All three of them are also current NASTT Board members and it’s intriguing to find out how they are able to devote so much time to giving back to the industry through their contributions to NASTT. We hope you enjoy reading about these three stand-out members of our organization.

**Frank Firsching**
**Underground Solutions, Inc.**

Running a multi-million dollar business is something Frank Firsching knows a thing or two about. Firsching has held a number of executive management roles with several companies throughout his career, and since 2006, has drawn on that experience to help build a major market presence for Underground Solutions, Inc., in the trenchless industry.

Today, as the executive vice president for UGSI, Firsching oversees the company’s regional sales managers and coordinates all domestic and international sales activities. Although his interest in school was initially in mechanical engineering – obtaining a bachelor’s in mechanical engineering from the University of Virginia – Firsching said he’s always gravitated more towards the manufacturing and construction side of engineering, rather than the design side, and became interested in running his own business at a young age.

In the early part of his career, Firsching worked for various companies such as General Electric and Deloitte & Touche doing management consulting. In 1992, he received a phone call from a friend from business school who was working at USFilter, a relatively new company that supplied large-scale filtration equipment for the municipal and industrial water industry. Firsching, who also has an MBA from the Wharton School of Business, was soon asked to join the executive team at USFilter, saying it was an opportunity he couldn’t pass up.

“I though, this is exactly what I want to do, and ‘where else am I going to get this opportunity?’” he said. “Literally six months later I was the general manager running a $25 million business, which was at times both terrifying and incredibly thrilling and exciting.”
By 1999, USFilter had grown into a $6 billion dollar public company and was bought by Veolia Water. Firsching continued to spend his time at USFilter running various facets of the business until late 2005, including executive vice president of the Process Water Group and president of the Water and Wastewater Systems Group, which was later bought by Siemens Water Technologies.

By late 2005, Firsching decided he wanted to get back to his entrepreneurial roots and eventually joined Underground Solutions, a company which, at the time, was struggling. Since then, Firsching has been an integral part of UGSi’s growth, particularly in helping the company discover niche markets in trenchless construction.

“We discovered that one of the real great niches for [fusible PVC pipe] is in long HDD projects, whereas before that, the option was steel pipe which can present challenges such as bend radius, layout and corrosion over time,” he said. “We’ve also realized we have another great fit in the water pipe bursting market. It became apparent that utility managers really like PVC, and we discovered it was going to be a growth market for us.

“The third market trend emerging that we’re realizing we fit well into is the HDD market for installing casings and conduits to carry high voltage power cables. For many reasons, [electric utilities] prefer plastic products to minimize amperage loss from high voltage power lines. Those are the three really neat markets that we’ve broken into.”

Firsching has been involved with NASTT throughout much of his time with Underground Solutions. He joined the Board of Directors after being approached by Chris Brahler of TT Technologies, who encouraged his involvement in the Board and No-Dig Show. This year, Underground Solutions became a platinum sponsor of the No-Dig Show and will again be a platinum sponsor for the 2015 show in Denver.

“Chris is really the main reason I discovered NASTT beyond just going to the No-Dig Show,” Firsching said. “I’ve also ended up on a ton of committees throughout my time on the Board. It’s a great way to learn about the organization and contribute on things ranging from by-laws to finances to strategic planning, Hall of Fame selection committee and the student scholarship committee. That’s really been the fun part of NASTT for me is a lot of the different committee work.”
leadership have done a great job to get the society to the level today is very stable and that the NASTT staff and Chapter Chair.

Board for a number of terms, including a term as the inaugurated in 1997. Krywiak went on to serve on the Northwest Chapter of NASTT, which was formally Prentice, a NASTT Board member at the time – founded along with a small group of engineers – including Rick some early No-Dig Shows. Shortly after that, Krywiak, joined the association in the mid-1990s after attending serving on the national Board of Directors, but initially working in urban areas.

minimal disturbances trenchless methods provide when projects on aging infrastructure while also considering the have gained a significant market presence due to need Krywiak, some methods such as HDD and CIPP have trenchless technology in recent years. According to western Canada has been proactive in embracing crossing the Athabasca River in Fort McMurray, Alberta. of Edmonton, as well as some prominent HDD projects 1 microtunneling project with Michels Canada for the City of Edmonton, such as the St. Albert Sanitary Trunk Sewer Phase 1 microtunneling project with Michels Canada for the City of Edmonton, as well as some prominent HDD projects crossing the Athabasca River in Fort McMurray, Alberta. Working mainly with the public sector, Krywiak says western Canada has been proactive in embracing trenchless technology in recent years. According to Krywiak, some methods such as HDD and CIPP have taken time to gain acceptance with the public sector but have gained a significant market presence due to need projects on aging infrastructure while also considering the minimal disturbances trenchless methods provide when working in urban areas.

Krywiak is the current treasurer of NASTT, currently serving on the national Board of Directors, but initially joined the association in the mid-1990s after attending some early No-Dig Shows. Shortly after that, Krywiak, along with a small group of engineers – including Rick Prentice, a NASTT Board member at the time – founded the Northwest Chapter of NASTT, which was formally inaugurated in 1997. Krywiak went on to serve on the Board for a number of terms, including a term as the Chapter Chair.

Krywiak says the Board of Directors at the national level today is very stable and that the NASTT staff and leadership have done a great job to get the society to the point where growth is consistent.

"I think one of the strong points of the society is representation across the board rather than being an engineering-focused society, or just owners or contractors," he says. "In keeping it broad-based across all areas, I think we’ve kept a broad focus rather than becoming very narrow.

"Certainly the Northwest Chapter and also at the national level, when the groups get together, I think we seem to leave our competitive hats outside the door and work towards a common goal. I think we’re a growth society and we’ve got a strong future."

Jason Lueke, Ph.D., P.Eng.
Associated Engineering

At NASTT, we talk a lot about the benefits of education and the many opportunities available to young, aspiring trenchless engineers. Of course, it’s up to the students to put in the time and hard work necessary to take full advantage of those benefits. Numerous opportunities exist, and Dr. Jason Lueke will be the first to tell you that they pay off.

"Everything I’ve done in my career, and every place I’ve gone to has been through the contacts I’ve made from being involved with NASTT," says Lueke, who is currently the National Practice Leader for Trenchless Services with Associated Engineering, an employee-owned, Canadian consulting firm providing services in planning, engineering, environmental science and landscape architecture.

Lueke got his start in the trenchless industry after finishing his civil engineering undergraduate degree in 1997. After doing some work for a geotechnical firm, he entered a master’s program at the University of Alberta, where he met his graduate advisor, Dr. Sam Ariaratnam.

Lueke recalls Ariaratnam asking him at the time if he had ever heard of pipe bursting, to which he replied, “No.”

Since then, Lueke has certainly come a long way, as he currently serves on the NASTT Board of Directors; is an instructor for its Horizontal Directional Drilling, Lateral Sewer Rehabilitation, and Pipe Bursting Best Practices Courses; and has published more than 60 papers for journals and conferences on trenchless design, construction and research.

At the University of Alberta, Lueke focused his research on various trenchless practices, namely pipe bursting. At the time, he and Ariaratnam were involved in the Millstone Sanitary Truck Sewer for the City of Nanaimo, British Columbia. There, they did research on ground movements associated with pipe bursting. The Millstone project was later awarded the 1999 Trenchless Technology Project of the Year award for Rehabilitation.

After completing his master’s program, Lueke decided to pursue a Ph.D. focusing on horizontal directional drilling.
In an agreement to fund his Ph.D., he went to work for a trenchless utility contractor, eventually landing a job at Associated Engineering a few years later.

During his first tenure with Associated Engineering, Lueke was an infrastructure engineer and trenchless discipline lead in the company’s Edmonton office. He coordinated, designed, and managed various trenchless projects, including performing construction feasibility assessments and facilitating value engineering workshops, performing conceptual design studies, conducting preliminary and detailed designs, and supporting other offices with various trenchless-specific projects.

In 2009, while looking for a change of pace, Lueke accepted a position as an Assistant Professor and Senior Sustainability Scientist in the Del E. Webb School of Construction at Arizona State University. There, he spent three-and-a-half years teaching soil mechanics and researching trenchless methods, infrastructure utility design, and buried infrastructure management.

Rejoining Associated Engineering in 2012, Lueke now has 16 years of experience in consulting, construction, education, and research focusing specifically on trenchless engineering and construction. He has presented at numerous conferences and trade shows across North America and internationally, and co-authored the NASTT Good Practices Manual for trenchless rehabilitation of lateral sewers.

Lueke has also been significantly involved in both the Northwest and Western regional chapters of NASTT. He was instrumental in bringing together the first conference the Northwest Chapter held in Calgary while completing his Ph.D. at the University of Alberta; and later served as the chair of the Western chapter while teaching at Arizona State University.

“The education component of NASTT is huge,” he said. “[Owners] have become much more educated to the point where they request trenchless solutions. It is now less about selling the technology – and more about implementing designs that incorporate trenchless methods.”

Lueke’s impact on the trenchless industry in North America was recognized in 2010, when he was selected by NASTT as the inaugural recipient of the Trent Ralston Award for Early Career Achievement in the field of trenchless technology.

Andrew Farr is the associate editor of NASTT’s Trenchless Today.
In the trenchless industry, change is constant and innovation is continuous. The goals and initiatives of NASTT echo that change as the Society is always looking for new ways to promote the practice of trenchless methods and the use of trenchless technology. With that, we take great pride in ensuring our members can take full advantage of the opportunities we provide.

This year marks the fourth time we’ve published NASTT’s Membership Directory in the fall issue of NASTT’s Trenchless Today. The Directory can serve as a useful tool for locating names and contact information for contractors, manufacturers, professional service providers and municipal representatives who are NASTT members.

As with everything we do, our goal is to bring you the most accurate information we can. If you would like to update your listing, please contact NASTT’s Membership Coordinator, Molly Margosian, at mmargosian@nastt.org and we can update your information online.

We hope you find what you need in NASTT’s 2014 Membership Directory.

Sincerely,

NASTT staff
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<th>Name</th>
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AMERICAN Cast Iron Pipe Co.
Pasco County, Florida – HDD

Pasco County Utilities recently tied a record for the longest pullback — or length of pipeline pulled underground — on an installation with AMERICAN Ductile Iron Pipe’s 36-in. Flex-Ring pipe. That installation, which went under wetlands, was 1,640 ft in length. The record-tying HDD installation in Pasco County was one of three executed under more than 4,000 ft of wetlands during construction of the North Central Reclaimed Water Transmission Main. The other two HDD installations also used AMERICAN Flex-Ring 36-in. ductile iron pipe and saw pullbacks of 1,140 ft and 1,340 ft.

Pasco County is a longtime user of AMERICAN ductile iron pipe and has used it several times on previous HDD pipeline construction jobs. The utility gained experience by initially doing shorter HDD jobs with smaller diameter pipe before taking on larger HDD installations involving 36-in. diameter pipe. One of those was in 2006 in which the pullback was 940 ft.

Miller Pipeline Corp.
City of Sarasota, Florida – CIPP

Miller Pipeline was recently contracted by the City of Sarasota to line approximately 1,500 ft of 30-in. sewer mainline using CIPP liner. The liner was 15 mm in thickness. With that thickness of liner, the “dimples” which are usually visible to delineate the service laterals when using thinner liners were not very noticeable if even visible at all. Knowing the CIPP process is all temperature based, it was decided to use a city-owned thermography gun to see if it would pick up the difference in temperatures between the liner and where the laterals were located. The contractor had a second man go in the pipe to scan the pipe surface. The thermography worked perfectly and greatly reduced the amount of time it took the contractor to locate the laterals.

Plastics Pipe Institute
York County, South Carolina – HDD

To plan for future population growth, York County, S.C., decided to install a new, large diameter, six-mile long water main, part of which was run under the Catawba River. The project included a 913-ft run of HDPE pipe 30 ft below the river bed, entry and exit angles of 12 degrees, and a single, 24 degree sag bend at a radius of 1,500 ft. The design provided a minimum depth of cover of 30 ft from top of bank to top of bank using an assumed depth of the river bed. Steel pipe was also considered for its high tensile strength and operating pressure capability, but was ruled out due to high cost of corrosion protection and longer installation requirements due to the higher bending radius. The PE 4710 pipe provided flexibility for the HDD operation plus corrosion resistance and the 200 psi rating to meet the water pressure requirements.

PICA Corp.
Mount Pleasant, South Carolina – Condition Assessment

Mount Pleasant Waterworks (MPW), the water and wastewater service provider of Mount Pleasant, S.C., was presented with a complicated problem: underground force mains in unknown conditions.

The HDD installation beneath the Catawba River was completed in April 2013. The HDD contractor worked a schedule of 10 hours per day seven days a week for the first three weeks and then shifted to a 24-hour schedule. The contractor operated an HDD rig with a pull-back capacity of 500,000 lbs, a torque capacity of 48,000 ft-lbs, and a footprint of 100 x 50 ft. The pilot hole was successful and stayed within the required design tolerances. The pilot hole was performed with a 12-in. drill bit and exited three feet short and two feet to the left of the designed exit point. Reaming passes were made with 24-, 28-, 32-, 40- and 48-in. reamers. The pull back of the pipe was made in approximately eight hours with no issues.
consisted of 4,200 ft of cement lined, ductile iron pipe, starting near a local pump station and ending a few thousand feet short of a treatment plant. Ultimately, MPW, Brown & Caldwell and PICA decided to divide the pipeline into two sections and inspect each by using winches to pull PICA’s 16-in. SeeSnake tool through the line. The fieldwork took place in spring 2012 and the results were a bit surprising to everyone.

Based on the SeeSnake data, MPW was able to forgo the replacement of any of the downstream 3,700 ft of pipe that recorded little corrosion. MPW estimates savings of $2 million based on deferred pipe replacement and proactive condition assessment.

Rain for Rent
Alabama – Bypass Pumping

Rain for Rent was called in to provide bypass pumping services on a rehabilitation project in Alabama that included relining 750 ft of trunk sewer with a cured-in-place liner that ran the complete length of the pipe. The main bypass required 2.7 million gallons a day (MGD) for peak dry flows and 11 MGD for peak wet weather conditions. A second bypass was necessary for a 12-in. force main that entered the trunk line in the section that was to be rehabilitated. It handled flows of 0.5 MGD for normal conditions and 3.5 MGD for wet conditions. The 1,200-ft bypass included six intersection crossings during the quick one week project.

Rain for Rent has a long, successful history of working on dozens of pumping projects over the past several years. A nationwide company with locations supporting all 50 U.S. states and Canada, Rain for Rent has worked in Alabama since 2003, specializing in bypass pumping, filtration projects and liquid storage.

North American Specialty Products; TT Technologies; Digital Control, Inc.
Moorhead, Minnesota – Static Pipe Bursting

Last year, Moorhead Public Service, the water utility of Moorhead, Minn., opted to replace a 360-ft section of aging 6-in. cast iron water main that had experienced several breaks over the past few years. Due to high traffic and limited workspace in the busy retail area in which the water main was located, it was agreed that static pipe bursting with its minimal disturbance would be the best way to complete the main replacement. The region’s corrosive soils and previous problems with cast iron and ductile iron pipe mandated the specification of a thermoplastic pipe for corrosion resistance. A TT Technologies GrundoBurst 800G static pipe bursting system was used.

Upon the recommendation of pipe distributor DCMC Sales Inc., the project team agreed to try a new product from North American Specialty Products LLC (NASP) — Certa-Lok C900/RJIB Restrained Joint Integral Bell PVC Pipe.

NASP also offered onsite support services for the installation and recommended using a TensiTrak Pullback and Pressure Monitoring System from Digital Control, Inc. A device that is connected to the drill-head and the new pipe, TensiTrak is used during the pullback process to measure the pull force and annular mud pressure on the pipe to help identify any problems before they occur.

HammerHead Trenchless Equipment
Jacksonville, Florida – Pneumatic Piercing

D&D Gas, based in Jacksonville, Fla., recently began researching new pneumatic piercing tools, studying how easily the tools could be taken apart for maintenance and repair. According to the city, a HammerHead Mole from Ditch Witch of Northern Florida was chosen for its serviceability and ease of use.

D&D Gas typically installs ¾-in. polyethylene (PE) gas pipe and occasionally 1 ¼-in. PE. The company sometimes must install the line through a sleeve of 2-in. casing. So Ditch Witch’s Travis Bullard set D&D Gas up with a 2 ½-in. HammerHead Replaceable Head Power Port Mole.

Of the more than 250 service installations the companies perform in a year, as many as 50 will have site conditions that require the Mole. In the ground conditions D&D Gas typically works in, aiming is not a problem. D&D says it has encountered no issues at all since buying the Mole, adding that in addition to its durability, they “get a lot of confidence” from both Ditch Witch’s and HammerHead’s product support.

WANT TO SEE YOUR PROJECT HERE?
Please send a 100-word write-up and high-resolution photo to associate editor Andrew Farr at afarr@benjaminmedia.com or NASTT Communications and Training Manager Michelle Hill at mhill@nastt.org with the subject line “Eye on the Industry.”
NASTT CHAPTER NEWS

British Columbia

The British Columbia Chapter has developed an online carbon calculator to identify the reduction in greenhouse gases that can be realized using trenchless technology. The Carbon Calculator developed by the BC Chapter is the basis for a more sophisticated calculator being developed in conjunction with NYSEARCH, the research and development arm of several dozen gas companies across North America. Broad estimates of emission reductions by using trenchless technologies are provided based on industry averages. Upgrades included increasing the number of project activities to 11 trenchless methods, allowing registered users to store scenarios enabling them to rework and share their calculations, and preparing summary reports that can be shared with colleagues and funders. For more information on chapter events and activities, please visit www.nastt-bc.org.

Great Lakes, St. Lawrence & Atlantic

The Great Lakes, St. Lawrence & Atlantic Chapter of NASTT encourages and facilitates the science and practice of trenchless technology for the public benefit. The Chapter achieves this by fostering education and research and acting as a catalyst for technological and process change. For more information on GLSLA upcoming events and training sessions, please visit the website at www.glsla.ca.

Mid Atlantic

The Mid Atlantic Chapter had its Annual Membership and Board of Directors meeting at NASTT’s No-Dig Show in Orlando, Fla., on April 13. At the meeting, the new Board Members were installed and Chapter Officers were elected.

MASTT conducted the “Trenchless Technology, SSES and Buried Asset Management” seminar on May 21-22 at the Treasure Island Resort & Casino in Red Wing, Minn. (Minneapolis-St. Paul). The guest presenter was Rex Huttes, P.E., Principal Engineer of Metropolitan Council Environmental Services (MCES), Eagan, Minn. The seminar was successful with an attendance of local contractors, engineers and municipal employees who networked and learned about trenchless technology. The seminar offered 12 PDHs with a certificate for attendance completion.

In September, MSTT plans to publish and distribute the annual issue of the Midwest Journal of Trenchless Technology 2014. This will be the second issue and the Journal will have numerous Midwest project articles, messages and advertisements. After the mail out, the Journal can be seen online at www.mstt.org.

The MSTT seminar “Trenchless Technology, SSES and Buried Asset Management” that is planned for Louisville, Ky., in September will be moved to October due to conflicts with other shows and events recently scheduled. Please go to www.mstt.org/proposed_seminar.html to view MSTT’s 2014 Proposed Seminar Schedule. Seminar locations and dates will be updated as the seminar dates, venues and programs are finalized. To participate in any MASTT seminars, please go to www.mastt.org for more information.

Pacific Northwest

Congratulations to our Past Chair, Laura Wetter, for receiving NASTT’s Trent Ralston Award for Young Trenchless Achievement. Laura was recognized at the 2014 No-Dig Show for her valuable contributions to the trenchless technology industry. Her accomplishments are a direct result of steadfast dedication to excellence and service to our industry. Laura’s work will once again be apparent with the publication of our annual trenchless magazine at the end of the year featuring regional design and construction projects.

The PNW Chapter is currently planning the 2015 PNW Trenchless Symposium. Efforts are spearheaded by Chris Sivesind for our biennial...
symposium which continues to grow in attendance and scope. Keep abreast of current plans and updates by visiting our PNW Chapter website at www.pnwnastt.org.

Laura Wetter receives NASTT’s Trent Ralston Award for Young Trenchless Achievement at the 2014 No-Dig Show in April.

Northwest

The Northwest Chapter is continuing to actively plan events throughout the Chapter. In addition to our technical lunches in both Edmonton and Calgary that are starting up again in September, we also have two Chapter-wide events planned for the remainder of the year.

The first event will be the NASTT New Installations Good Practices Short Course held at Wanuskewin Heritage Park in Saskatoon, Saskatchewan on Oct. 7. The course instructors are Don Del Nero of Stantec and Kim Staheli of Staheli Trenchless Consultants. For further information, please visit our website at www.nastt-nw.com.

The second event is the 2014 Northwest Trenchless Conference in Edmonton, Alberta, on Nov. 13-14 at the Fantasyland Hotel. This conference will be presented in conjunction with the Tunneling Association of Canada. This will be the 18th annual presentation of this event and will include a conference and tradeshow on Nov. 13 and the NASTT Pipe Bursting Good Practices Short Course on Nov. 14. The instructors for the course are Collins Orton of TT Technologies Inc., and Dr. Jason Lueke of Associated Engineering. If you are interested in either contributing as a technical presenter, participating in the tradeshow, attending as a delegate or just wish to learn more about the conference, please visit the Northwest Trenchless Conference page on our website.

In conjunction with the conference, the Chapter will also be presenting the 2014 Northwest Trenchless Project of the Year. Applications are now being accepted. The application deadline is Aug. 29, 2014. For further information regarding the Project of the Year award, please visit our website.

The Chapter has benefited from the many events we have hosted, and from this we have been able to contribute to several programs throughout the trenchless community. So far this year we have contributed $5,000 to the sponsorship of the NASTT Municipal Scholarship Welcoming Event at No-Dig.

Rocky Mountain

The Rocky Mountain Chapter of the NASTT works to promote the education and implementation of trenchless technology for the public interest throughout the states of Colorado, Utah and Wyoming. The mission of the Chapter is to advance the goals of NASTT at the national level, increasing education and awareness of tunneling and trenchless technologies for rehabilitation of existing pipelines and construction of new pipelines. The Chapter plans to join forces with other industry organizations – AWWA, JTAC, ASCE, AEG, and CAGE – to further promote the Chapter’s goals of raising awareness of trenchless technology on a local level.

The Rocky Mountain Chapter is proud to announce that we will be hosting the 2015 NASTT No-Dig Show here in Denver! This will be an excellent opportunity to showcase the trenchless technology expertise of our members. For more information, visit the chapter website at www.mrnastt.org.

Southeast

The Southeast Chapter published the inaugural annual issue of the Southeast Journal of Trenchless Technology 2014 in March, which featured numerous articles about what is happening with trenchless technology in the Southeast including projects, designs, case studies, techniques, equipment theory and methods. Please go to www.sestt.org to view the journal.

SESTT has its Annual Membership and Board of Directors meeting at NASTT’s No-Dig Show in Orlando, Fla., on April 13. At the meeting, the new Board Members were installed and Chapter Officers were elected.

SESTT conducted the seminar “Trenchless Technology, SSES and Buried Asset Management” on March 26 at the Baton Rouge Marriott. The guest presenter was Amy Schulze, PE., of the Department of Public Works, Special Projects for the City of Baton Rouge and Parish of East Baton Rouge. The presentation was entitled “The Baton Rouge SSO Program.” The seminar was successful with an attendance of local contractors, engineers and municipal employees who networked and learned about trenchless technology. The seminar offered seven PDHs with a certificate for attendance completion.

The SESTT seminar “Trenchless Technology, SSES and Buried Asset Management” that is planned for late October 2014 in Jacksonville Fla. will be moved to December due to conflicts with other shows and events that were recently scheduled.

Please go to www.sestt.org/proposed_seminar.html to view the SESTT 2014 Proposed Seminar Schedule. Seminar locations and dates will be updated as programs are finalized. To participate in any SESTT seminar, please go to www.sestt.org for more information.

Western

The Western Chapter most recently held its annual Western Regional No-Dig Conference and Exhibition in October 2013 in Honolulu, Hawaii. More information on the chapter and upcoming events can be found on the website at www.westt.org.

NASTT’s Trenchless Today Wants To Hear From You!

If you’re involved with one of NASTT’s nine regional chapters, we want to hear about all your events and activities. Send write-ups to associate editor, Andrew Farr at afarr@benjaminmedia.com.
NASTT has a network of nine regional chapters throughout the United States and Canada. With a single NASTT membership, you’re automatically enrolled in the national organization, the international organization (ISTT) and also in your regional chapter. Regional chapters offer valuable educational and networking opportunities in your local area. Share your ideas, network with colleagues and find solutions to your everyday challenges.

**British Columbia**
The British Columbia (NASTT-BC) Chapter was established in 2005 by members in the province of British Columbia, Canada.

**Chapter Contact**
David O’Sullivan, Chair  
Phone: (604)-580-0446  
E-mail: david@pwtrenchless.com  
Website: www.nastt-bc.org

**Elected Officers**
Chair - David O’Sullivan  
Vice Chair - Rod Loewen  
Secretary - vacant  
Treasurer - Kieran Field

**Pacific Northwest**
The Pacific Northwest Chapter was established in 2009 by members in the states of Alaska, Idaho, Oregon and Washington.

**Chapter Contact**
Christopher Price, Chair  
Phone: (425)-205-4930

**Elected Officers**
Chair - Christopher Price  
Vice Chair - Chris Sivesind  
Secretary - Matthew Pease  
Treasurer - Richard Hanford

**Great Lakes, St. Lawrence & Atlantic**
The Great Lakes, St. Lawrence & Atlantic (GLSLA) Chapter was established in 1995 and represents the Eastern Canadian perspective of the trenchless technology marketplace. GLSLA members are from Ontario, Quebec and the four Atlantic provinces.

**Chapter Contact**
Kevin Bainbridge, Chair  
Phone: (905) 304-0080  
E-mail: kbainbridge@rcii.com  
Website: www.nastt-glsa.on.ca

**Elected Officers**
Chair - Kevin Bainbridge  
Vice Chair - Frank Badinski  
Secretary - Gerald Bauer  
Treasurer - Derek Potvin

**Mid Atlantic**
The Mid Atlantic (MASTT) Chapter was established in 2004 by members from the states of Delaware, Maryland, New Jersey, Pennsylvania, Virginia, West Virginia and the District of Columbia.

**Chapter Contact**
Richard Thomasson, Chair  
Phone: (703) 842-5621  
E-mail: rthomasson@picnic.com  
Website: www.mastt.org

**Elected Officers**
Chair - Richard Thomasson  
Vice Chair - Michael Delzingaro  
Secretary - Dennis Walsh  
Treasurer - Tom Wyatt

**Southeast**
The Southeast (SESTT) Chapter was established in 2001 to serve the members of NASTT from Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Puerto Rico.

**Chapter Contact**
Jerry Trevino, Chair  
Phone: (877) 462-6465  
E-mail: jerry@mechanicaljobbers.com  
Website: www.sestt.org

**Elected Officers**
Chair - Jerry Trevino  
Vice Chair - Ed Paradis  
Secretary - J. Chris Ford  
Treasurer - Kelly Derr

**Midwest**
The Midwest (MSTT) Chapter was established in 1998 to promote trenchless technology education and development for public benefit in Illinois, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, Ohio and Wisconsin.

**Chapter Contact**
Jeff Boschert, Chair  
Phone: (314) 229-3789  
E-mail: jeffboshert@yahoo.com  
Website: www.msstt.org

**Elected Officers**
Chair - Jeff Boschert  
Vice Chair - Larry Kiest, Jr.  
Secretary - Randy Fries  
Treasurer - Bill Shook

**Western**
The Western (WESTT) Chapter was established in 2003 by members from the states of Arizona, California, New Mexico, Nevada and Hawaii.

**Chapter Contact**
Craig Camp, Chair  
Phone: (619) 858-1595  
E-mail: craig.camp@hatchmott.com  
Website: www.westt.org

**Elected Officers**
Chair - Craig Camp  
Vice Chair - Cindy Preuss  
Secretary - Cory Street  
Treasurer - Matt Wallin
Cowabunga dude! It's time for NASTT's fundraising social event of the year – the 14th annual Educational Fund Auction and Reception! Since 2002, NASTT has raised over $750,000 to support our educational initiatives. Due to your awesome generosity, NASTT is able to sponsor students’ attendance at the No-Dig Show, award scholarships and provide targeted training courses to the membership at-large.

For more information about the auction visit: nasstt.org/auction
NASST Student chapters are involved in a number of activities throughout the academic year including field trips, seminars and fundraisers. Members of student chapters also attend and participate in NASST’s No-Dig Show where they present trenchless research posters, participate in competitions and provide event support monitoring the technical paper sessions. There are many benefits for students who belong to a NASST student chapter – scholarships, networking opportunities, education and career opportunities to name a few. To learn more about NASST’s student chapters, visit www.nastt.org/student_chapters.

Arizona State University
Tempe, Arizona
Advisor: Dr. Samuel T. Ariaratnam
E-mail: samuel.ariaratnam@asu.edu

Bowling Green State University
Bowling Green, Ohio
Advisor: Dr. Alan Atalah
E-mail: aatalah@bgnet.bgsu.edu

California State Polytechnic University, Pomona
Pomona, California
Advisor: Dr. Jinsung Cho
E-mail: jinsungcho@csupomona.edu

Clemson University
Clemson, South Carolina
Advisor: Dr. Kalyan Piratla
E-mail: kpiratla@clemson.edu

Concordia University
Montreal, Quebec
Advisor: Dr. Tarek Zayed
E-mail: zayed@bcee.concordia.ca

Indiana University - Purdue University Indianapolis
Indianapolis, Indiana
Advisor: Dr. Dae-Hyun (Dan) Koo, P.E.
E-mail: dankoo@iupui.edu

Laval University
Quebec City, Quebec
Advisor: Dr. Genevieve Pelletier, ing.
E-mail: Genevieve.Pelletier@gci.ulaval.ca

McGill University
Montreal, Quebec
Advisor: Dr. Mohamad A. Meguid
E-mail: mohamed.meguid@mcgill.ca

Queen’s University
Kingston, Ontario
Advisor: Dr. Ian D. Moore
E-mail: moore@civil.queensu.ca

CUIRE/University of Texas at Arlington
Arlington, Texas
Advisor: Dr. Mo Najafi
E-mail: najafi@uta.edu

Virginia Tech University
Blacksburg, Virginia
Advisor: Dr. Sunil Sinha
E-mail: ssinha@vt.edu

University of Alberta
Edmonton, Alberta
Advisor: Dr. Alieza Bayat
E-mail: abayat@ualberta.ca

Trenchless Technology Center/Louisiana Tech University
Ruston, Louisiana
Advisor: Dr. Erez Allouche
E-mail: allouche@latech.edu

Vanderbilt University
Nashville, Tennessee
Advisor: Dr. Sanjiv Gokhale
E-mail: s.gokhale@vanderbilt.edu

University of Alberta
Edmonton, Alberta
Advisor: Dr. Alieza Bayat
E-mail: abayat@ualberta.ca
NASTT’S 2015 NO-DIG SHOW
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Apply today for complimentary registration and hotel accommodations!

NASTT’s 2015 No-Dig Show Municipal & Public Utility Scholarship Program has been established to provide education and training for North American municipalities, government agencies and utility owners who have limited or no travel funds due to economic challenges. Selected applicants will be awarded full conference registration to NASTT’s 2015 No-Dig Show in Denver, Colorado from March 16-18. One day conference registrations will also be available. Registration will include full access to all exhibits and technical paper sessions. Selected applicants will also be eligible to receive overnight accommodations.

Selection will be based on responses to the application as well as need.

Application deadline: October 31, 2014

To apply, visit nastt.org/municipalscholarship
The United States is currently facing significant deficits in Drinking Water and Clean Water infrastructure operation, maintenance and capital costs. A significant amount of the existing infrastructure is asbestos-cement (AC) pipe and rehabilitation of the pipe is restricted by regulations that are almost 30 years old and do not account for advancement in new technology. AC pipe is considered to be a Category II non-friable asbestos-containing material according to the National Emissions Standards for Hazardous Air Pollutants (NESHAP). Rehabilitating buried AC pipelines is subject to NESHAP. According to regulators, if the pipe is crumbled, pulverized or reduced to powder and the length is at least 260 linear feet (ft), it falls under NESHAP. However, NESHAP does not address pipe bursting or any other rehabilitation method other than direct removal and does not include clear requirements for rehabilitating buried AC pipelines in public rights-of-way. There has been much technological advancement since NESHAP was issued. Recently, Killebrew, Inc., arranged for industry members to travel to Washington, D.C. in order to meet with U.S. Environmental Protection Agency (EPA) staff for the purpose of discussing NESHAP and its applicability to rehabilitating buried AC pipelines using pipe bursting technology.

This paper presents: (1) The technological advancements in industry practices and NESHAP requirements for rehabilitating buried AC pipelines, (2) Recent communications with EPA and industry representatives, and (3) Plans for the development of an EPA Administrator Approved Alternate, as provided for in NESHAP that specifically addresses rehabilitating buried AC pipelines via pipe bursting.

ASBESTOS CEMENT PIPE

Asbestos, a naturally occurring mineral fiber, was used extensively in many building materials prior to the adoption of NESHAP. Its properties, such as fire and chemical resistant, flexible, high strength, long and thin fibrous shape, made it a desirable component for the manufacturing of many construction materials, including insulation, roofing shingles, floor and ceiling tiles, paper products, brake pads, gaskets and pipe. Asbestos cement (AC) pipe was manufactured using Portland cement, water, silica or silica-containing materials and asbestos fibers. AC pipe was well suited for utility systems and was widely used for drinking water, wastewater and stormwater pipelines from the 1940s through the 1960s – a time that corresponded with significant investment in utility infrastructure in the United States.

Under the Clean Air Act (CAA), the U.S. EPA developed the National Emission Standards for Hazardous Air Pollutants (NESHAP) regulations. Asbestos, considered a hazardous air pollutant, became federally regulated in 1973 when the NESHAP (40 CFR 61, Subpart M) was promulgated. NESHAP addresses milling, manufacturing and fabricating operations, demolition and renovation activities, waste disposal issues, active and inactive waste disposal sites and asbestos conversion processes. After adoption of NESHAP, asbestos fiber content in pipe was reduced from a maximum of 20 percent down to less than 0.2 percent. Manufacturing and installation of AC pipe in the U.S. ceased shortly thereafter.

While it is difficult to accurately measure how much AC pipe remains in the ground and what condition it is in, there is an estimated 630,000 miles of AC pipe in the United States and Canada. However, it is clear that much of this pipe is reaching the end of its service life and requires maintenance and replacement. The rehabilitation of AC pipe needs to be addressed immediately.

According to EPA reports, the total 20-year deficit of Clean Water and Drinking Water O&M and Capital costs could be as high as $1.168 trillion. Rehabilitation of the estimated 630,000 miles of AC pipe in the U.S. and Canada potentially could cost both countries upwards of $332 billion assuming a moderately conservative price of $100 per ft. A significant amount of the funding gap can be attributed to maintenance and replacement of AC pipe. Life cycle cost analysis illustrates that maintenance costs rise as the AC pipe ages and there is an optimal replacement time.

In 2010, the EPA published a document on Aging Water Infrastructure Research which reflected a focus to utilize Science and Innovation to breach the funding gap for Clean Water and Drinking Water. This document outlines research into key project areas, one of which is system rehabilitation. It appears the EPA has delegated administration and enforcement of asbestos regulations to many of the individual states. The states of Nevada, Arizona, New Mexico, and Florida allow pipe bursting of AC pipelines. Oregon requires all AC pipe to be removed if exposed for any reason and requires specially licensed contractors for any work on AC pipelines. California does not allow pipe bursting or any activity that will break the AC pipeline.

PIPE BURSTING

Pipe bursting is an industry proven technology for trenchless replacement of existing underground conduit systems, such as water, sewer and gas. The existing pipe is replaced in situ with a new pipe of the same size or larger. Pipe bursting is typically performed using one of two methods: pneumatic or static pull. In either case, the existing pipe
is fractured and displaced outward while the new pipe is pulled into place along the existing pipe alignment. Fracturing the existing pipe is accomplished by pulling a conical-shaped head, also called a bursting head, through the existing pipe that has a slightly larger outside diameter than the inside diameter of the existing pipe. The new pipe is attached to the back of the bursting head so that it is simultaneously installed as the bursting head is pulled through the existing pipe (ASCE, 2006).

While pipe bursting is trenchless, it does require some excavation work. Excavations typically include: pipe insertion pit, machine pit and service connection pits. The pipe insertion pit is constructed to allow the new pipe to transition from above-ground to below-ground at the same elevation and alignment as the existing pipe to be pipe burst. The machine pit is constructed for the pipe bursting machine to be placed and/or for retrieval of the bursting head. Service connection pits are constructed to reinstate service laterals to the main after pipe bursting the main is completed.

A pneumatic pipe bursting system uses a constant tension winch and a cable to pull on the nose of the bursting head and an air-operated hammer inside the bursting head. The air-operated hammer provides forward force, (much like driving a nail with a hammer), and the constant tension winch keeps the bursting head against the existing pipe and maintains the path of the bursting operation. Air is delivered to the air-operated hammer by way of an airline that is placed inside the new pipe and also to an air compressor that is above ground near the pipe insertion pit.

A static pull pipe bursting system uses a rod string to connect to the nose of the bursting head and a hydraulically operated machine (bursting machine) to pull the rod string, bursting head and new pipe through the existing pipe alignment. Forward force is provided by the bursting machine. There is no air compressor or airline passing through the new pipe.

Pipe bursting is typically accomplished on existing pipe systems that range in size from 2-in. to 36-in. in diameter. Although larger diameter pipe bursting has been completed, it is less common. Lengths most common for a pipe burst run is typically 200 to 400 ft; however, longer and shorter lengths can be performed without problems when properly planned. Actual lengths of bursts are determined when planning and estimating a pipe bursting project. Pits are strategically planned to be located at or near manholes in gravity systems and fittings, valves, or service connections for pressure systems.

Almost any underground pipe system can be a candidate for pipe bursting; including potable water, reclaimed water, sanitary sewer, stormwater, gas or telecommunications. Existing pipe materials that are best suited for pipe bursting include vitrified clay, AC, cast iron, and non-reinforced concrete. Other materials that can be burst, but are less common, include polyvinyl chloride (PVC), ductile iron, or high density polyethylene (HDPE). The more brittle a material is, the easier it can be pipe burst. Fibrable materials like PVC, HDPE and ductile iron are cut or sliced more so than fractured. Pipes that are not recommended for pipe bursting include any corrugated material, such as corrugated metal and corrugated plastic. Corrugated pipes tend to collapse or telescope down on themselves due to not having the longitudinal strength to withstand the forces acting upon it during the pipe bursting operation.

Jobsite conditions most cost effective for pipe bursting are urban settings that contain roadways, drainage systems, and other existing utilities that would prevent or inhibit conventional open-cut installation of a new pipe system. The environmental benefits are often overlooked but are some of the benefits most recognized by the residents and customers. When planning a pipe bursting project, bypassing of flow and service interruption must be considered. This is because the existing pipe system must be taken out of service for the pipe bursting operation. In gravity systems, bypass pumping can be accomplished from manhole to manhole. In pressure systems, valves or other isolation methods (line stops or squeeze-offs) can be utilized to interrupt the flow long enough to isolate a segment of existing pipe for pipe bursting.

A very attractive attribute of pipe bursting is that it requires minimal engineering design work to be done. Record drawings or geographical information system (GIS) database drawings are the best information for designing and planning a pipe bursting project because the existing pipe route is utilized for constructing the new system.

The use of pipe bursting to replace aging AC potable water distribution pipe was recently approved by the Drinking Water State Revolving Fund Program (DWSRF) as a qualified Green Project Reserve project at the City of Casselberry in Florida. The project was provided grant funding through the American Recovery and Reinvestment Act (ARRA) and has successfully rehabilitated AC pipe using pipe bursting while meeting all NESHAP criteria. Industry representatives worked very closely with the Florida Department of Environmental Protection (FDEP) and EPA representatives to determine how NESHAP applies to pipe bursting of AC pipe and how to comply with these requirements. Much of the difficulty with applying NESHAP requirements to pipe bursting was NESHAP’s focus on above ground construction. Pipe bursting is a new technology that was not available for consideration at the time NESHAP was written.

NESHAP

The National Emissions Standards for Hazardous Air Pollutants (NESHAP) provides for the distinction of asbestos-containing material (ACM), using terms such as friable, non-friable, Category I, Category II, and Regulated Asbestos Containing Material (RACM). Friable ACM is defined as any material containing more than one percent (1 percent) asbestos as determined using the method specified in Appendix A,
Subpart F, 40 CFR Part 763, Section 1, Polarized Light Microscopy (PLM), that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. In contrast, non-friable ACM is any material containing more than 1 percent asbestos as determined using the method specified in Appendix A, Subpart F, 40 CFR Part 763 (Sec. 61.141). Category II non-friable ACM is any material, excluding Category I non-friable ACM, containing more than 1 percent asbestos as determined using PLM according to the method specified in Appendix A, Subpart F, 40 CFR Part 763 that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure (Sec. 61.141).

The EPA defines RACM to be: (A) friable asbestos material, (B) Category I non-friable ACM that has become friable, (C) Category II non-friable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or (D) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

According to an EPA 2011 guidance document prepared by Alliance Technologies, Inc., if Category II non-friable ACM has not crumbled, been pulverized or reduced to powder and will not become so during the course of demolition/renovation operations, it is considered non-friable and therefore is not subject to NESHAP. However, if during the demolition or renovation activity it becomes crumbled, pulverized or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations, it becomes RACM and is subject to the NESHAP.

NESHAP provides exemptions from its regulations based on the quantity of ACM. For AC pipe, the quantity threshold is 260 ft regardless of diameter, in one calendar year. Other exemptions from NESHAP or clarifications of its requirements for AC pipe have been provided by interpretive letters in response to questions posed to EPA. These exemptions and clarifications are representative of EPA’s opinion of the applicability of NESHAP to various types of work on buried AC pipelines.

MINIMIZED FUTURE EXPOSURE

Industry representatives maintain that the AC pipe fragments that remain after a pipe bursting project are not RACM. It is highly unlikely that these AC fragments would become friable over time. If future excavations uncover the AC fragments, they are typically caked in moist soil and the fibers are not likely to go airborne. The rehabilitated pipe alignments are typically under streets and/or in public right-of-way and are not typically disturbed except by authorized personnel working in the vicinity.

There has been much debate as to the pipe bursting process turning the existing non-friable Type I AC pipe into friable Type II RACM. All of the rehabilitation activities, except what portions of pipe are exposed at pits, occur underground. The segments of fragmented AC pipe remain within a few inches of the soil material surrounding the new pipe. Future exposure of the general public to the burst AC pipe for lengths greater than the 260 ft already stated in NESHAP will be solely limited to rehabilitation work along the new pipeline. Homeowners that wish to install new landscaping or work above the new pipeline will have minimal exposure to the burst AC pipe because they are not likely to physically expose over 260 ft of the pipe. Homeowners will also not likely be digging as deep as the typical 3 ft of cover over the pipe burst AC pipe. Other utilities that will perform work in this area will likely expose limited areas associated with only crossing the new pipe and will not expose over 260 ft of the pipe.

CURRENT NESHAP COMPLIANCE PROCEDURES

While debate continues as to the applicability of NESHAP to pipe bursting buried AC pipelines, a working procedure has been developed in Florida that regulators and industry members (municipalities, engineers and contractors) are utilizing. This procedure complies with each element of NESHAP (40 CFR part 61, subpart M (61.140-61.157)) and is briefly described below.

FILE A NOTICE TO EPA OR ITS DESIGNEE (61.145(B))

NESHAP specifies salient information that must be included on the notice. FDEP has available DEP form 62-257.000(1) that requires this information. The form is a one-page form that has to be signed only by the utility owner.

PROVIDE FOR EMISSION CONTROL DURING RENOVATION AND DISPOSAL (61.145(C) / 61.150)

There can be no visible emissions from the work [pipe bursting] per 61.150(a). With pipe bursting, this can be easily accomplished because the AC pipe is wetted within any excavation, cutting is accomplished using non-power saw tools (chain cutter, handsaw). Segments of AC pipe that are removed from an excavation are wrapped in plastic, sealed leak-tight, taped, and placed into a dumpster for shipment by an asbestos transporter.

A negative exposure assessment (NEA) was performed for the City of Casselberry project approved by the DWSRF program for ARRA grant funding. American Compliance Technologies determined (the) observed time weighted averages for the sampled employees performing representative work activities for pipe bursting operations along Benedict Way in Casselberry, Fla., from March 21-23, 2011 were below the OSHA PEL of 0.1 f/cc (ACT, 2011). Numerous contractors and municipalities have conducted NEAs on AC pipe bursting projects. To date, none of these assessments have shown any asbestos fiber release within a work site. The pipe bursting process minimizes risk of exposure to workers that are rehabilitating the pipe because the majority of the rehabilitation occurs underground.

COMPLY WITH INACTIVE / ACTIVE WASTE DISPOSAL SITE REQUIREMENTS (61.151 / 61.154)

NESHAP provides for disposing of RACM on the site of the demolition or renovation work, or the RACM can be disposed of at a waste disposal site. Currently, for pipe bursting projects, regulators interpret NESHAP such that the work site is considered a waste disposal site. Numerous options are provided in NESHAP to prevent asbestos exposure. These options include: no visible emissions from the site, fencing and posting signs around the site, have a natural barrier (cliffs, lakes or other large bodies of water, deep and wide ravines, and mountains) around the site, or cover the RACM with two feet of compacted non-asbestos containing material. With pipe bursting, the two feet of cover is virtually always provided because the pipe bursting is performed on a buried AC pipeline. Also, no emissions from the work have been detected on pipe bursting projects.
COMPLY WITH INACTIVE WASTE DISPOSAL SITE DEED NOTATION AND ALTERNATIVE (61.151(E))

NESHAP requires that a notation to the deed of a facility property be recorded within sixty days of a waste disposal site becoming inactive. A site is deemed inactive when disposal of RACM is completed. Applying this to pipe bursting projects, a site is deemed inactive when the project is completed.

CONFLICT BETWEEN DEED NOTATION REQUIREMENT AND PUBLIC RIGHT-OF-WAY

It appears possible the drafters of NESHAP made the presumption that the facility property will have a single deed associated with the site, that the property would be willed and that the property is transferable. In contrast, a public land right-of-way does not have a deed, can transect public and private properties and the municipality or county is not the fee title owner of right-of-way and cannot record notices directly on a fee title of right-of-way. Utility providers have installed a significant amount of AC pipe within the public right-of-way to provide utility services to the public. The deed notation and general compliance requirements have been a significant deterrent to many utility providers that would have been rehabilitating the AC pipe.

ADMINISTRATOR APPROVED ALTERNATE

In November 2010, industry representatives (including members of Killebrew, Inc.) met with EPA staff to discuss the applicability of NESHAP to pipe bursting AC pipelines and to develop a reasonable, practical solution to the deed notation issue. EPA staff acknowledged potential difficulty in applying NESHAP Deed Notation requirements to AC pipe bursting within public right-of-ways. However, when presented with a video of several physical demonstrations of pipe bursting that clearly displayed the minimal environmental impacts of pipe bursting over traditional open cut replacement methods, EPA staff expressed a positive attitude towards pipe bursting. The meeting concluded with Charlie Garlow of the EPA suggesting that Industry develop an "Administrator Approved Alternate" for all to follow.

An Administrator Approved Alternate is intended to allow the EPA Administrator and staff to approve alternate technology or practices without having to modify NESHAP which is federally codified. Industry members that have been following the pipe bursting of AC pipe issue are pleased with the opportunity to pursue an Administrator Approved Alternate and are working toward this objective. However, at this time, there does not appear to be any guidance documents or previous examples of an EPA Administrator Approved Alternate to reference. According to Garlow, an Administrator Approved Alternate has not been developed for any technology or practice to date. An AC Pipe Bursting Task Force has been assembled to develop this document.

The Administrator Approved Alternate and it is intended to provide procedures for working with buried AC pipelines. The exemptions and clarifications listed early will be included so that one, comprehensive document, specific to buried AC pipelines, will be available for use nationwide and that any type of work on buried AC pipelines will be uniformly practiced and regulated, regardless of which State the work may be located in. Collaborative efforts among industry members have been on-going since November 2010 to draft the Administrator Approved Alternate. Once the first draft is prepared, it will be submitted to EPA’s Washington, D.C. office for review and consideration. In the meantime, to satisfy the deed notation requirement, a notice is being recorded to public records that contain all required information for ongoing projects in the State of Florida.

EPA’s Office of Research and Development (ORD) has set a goal to generate the science and engineering needed to improve and evaluate promising innovative technologies and techniques that will reduce the cost and improve the effectiveness of operation, maintenance and replacement of aging and failing drinking water and wastewater treatment and conveyance systems. Existing technologies need to be applied in unconventional ways. Emerging technologies and innovative thinking will be at the forefront of creating a powerful, secure, cost-effective, and reliable water infrastructure. Industry believes application of pipe bursting for AC pipe is a prime example of an emerging technology that should be approved and utilized to mitigate the accelerating costs of AC pipe replacement.

FDEP SUPPORTS PIPE BURSTING AC PIPELINES

The Florida Department of Environmental Protection (FDEP) has provided support of the pipe bursting process and believes it is environmentally and economically superior to removing existing AC pipe. FDEP believes pipe bursting is more economically feasible than the traditional method of removing and land filling the old AC pipes. On April 27, 2011, Herschel T. Vinyard, Jr., Secretary of the FDEP, sent a letter to Gwendolyn Keyes Fleming, Regional Administrator of EPA Region 4 Office – Atlanta, Ga., requesting assistance to finalize EPA’s position and interpretation of pipe bursting AC pipelines.

CONCLUSIONS

More than 630,000 miles of buried AC pipelines remain in use across the United States and Canada. All of this underground piping has reached, or is quickly approaching, the end of its useful life. Replacement or rehabilitation is imminent. Pipe bursting is a proven technology that is environmentally, socially and economically beneficial and is approved by numerous states, including Florida. Utility providers need to be able to utilize a wide array of technologies, including pipe bursting, to be able to recapitalize their assets.

Application of pipe bursting for rehabilitation of existing AC pipe meets the goals set forth by EPA’s ORD to reduce the cost of rehabilitation and replacement of existing infrastructure through new and innovative technology. Unfortunately, application of this new and innovative technology is severely limited through rules and regulations that are almost 40 years old. It is clear these rules and regulations require updating to properly account for technology that has developed since the promulgation of the rule. Controversy still exists regarding the applicability and interpretation of NESHAP for buried underground AC pipelines. Efforts to develop the Administrator Approved Alternate will rectify these matters and develop uniform procedures for use nationwide by industry and regulators.
August

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NASTT's Pipe Bursting Good Practices Course
Hosted by Pipe Users Group (PUG)
Martinez, California
Contact Info:
Michelle Hill
Email: mhill@nastt.org
Web: nastt.org/calendar

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NASTT's CIPP Good Practices Course
Hosted by LMK Technologies
Ottawa, Illinois
Contact Info:
Michelle Hill
Email: mhill@nastt.org
Web: nastt.org/calendar

September

10
NASTT's Complimentary CIPP Webinar
Contact Info:
Vicki Losh
Phone: (330) 467-7588
Email: vlosh@benjaminmedia.com
Web: nastt.org/webinars

October

6 & 7
10th Annual Western Regional No-Dig Conference & Exhibition
Albuquerque, New Mexico
Contact Info:
Craig Camp
Email: Craig.Camp@HatchMott.com
Web: westt.org

7
NASTT's New Installations Good Practices Course
Hosted by NASTT's Northwest Chapter
Saskatoon, Saskatchewan
Contact Info:
Dan Willems
Email: dan.willems@saskatoon.ca
Web: nastt-nw.com

November

6
NASTT's Complimentary Condition Assessment Webinar
Vicki Losh
Phone: (330) 467-7588
Email: vlosh@benjaminmedia.com
Web: nastt.org/webinars

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2014 Northwest Trenchless Conference
Edmonton, Alberta
Contact Info:
Alan Miller
Email: millera@ae.ca
Web: nastt-nw.com

14
NASTT's Pipe Bursting Good Practices Course
In conjunction with the 2014 Northwest Trenchless Conference
Edmonton, Alberta
Contact Info:
Alan Miller
Email: millera@ae.ca
Web: nastt-nw.com

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Pictured above: Babs Marquis, Construction Manager, Jacobs Associates, Burlington, MA

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