The Path Forward for Pipe Bursting Asbestos Cement Pipe

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1. Abstract

The city of Casselberry completed its $10.3 million asbestos cement (AC) pre-chlorinated potable water main pipe bursting project in April of 2014, which replaced approximately 35 miles of AC pipe. City staff has worked closely with the contractor, engineers, and regulators from the local to federal government to fully understand the applicability of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) to pipe bursting of asbestos cement pipe. The Environmental Protection Agency (EPA) and industry representatives have recognized the need to understand the potential environmental impacts of AC pipe rehabilitation and commissioned a study to determine those impacts. The environmental impacts of pipe bursting AC pipe have been analyzed with the Casselberry Water Quality Improvement Project as its pilot project. Results of the study indicate that bursting AC pipe is environmentally friendly while providing the option to rehabilitate the existing pipeline in place. This paper will present the results of impact study of pipe bursting AC pipe while clearly describing how to burst AC pipelines and meet all existing regulations. This paper will also describe the challenges and successes of implementing a pipe bursting project, from field application of pipe bursting technology to working directly with regulators and right-of-way controllers who may be skeptical about pipe bursting AC pipe. A potential path forward through submission of a potential Administrator Approved Alternate to EPA that accepts a streamlined AC pipe bursting process will also be presented.

2. Introduction

The City of Casselberry started its major asbestos cement (AC) pipe bursting project in 2009 in response to the American Recovery and Reinvestment Act’s call for Shovel Ready projects. The project started as a $3 million project and grew to $10.3 million as the success of the project continued. The city of Casselberry, its contractor Killebrew, Inc., and construction inspection engineer, CPH Engineers, Inc. worked very closely with regulators from the local and federal governments as well scientific agencies, such as the Water Research Foundation and Battelle Memorial Institute, to fully understand the applicability of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) to pipe bursting of asbestos cement pipe. Understanding how the Clean Air Act that was written in the early 1970’s applied to pipe bursting was not an easy task. Many regulators and other people not familiar with pipe bursting envisioned the airborne release of asbestos particles during the pipe bursting process. This is simply not what happens while the pipe bursting work is occurring and the project team worked diligently to dispel the myths.

The project team understood the importance of successfully implementing what would become the largest AC pipe bursting project in North America and working closely with all regulatory agencies to meet every aspect of regulations that controlled the work. The project was federally funded and would be required to stand up to scrutiny through a comprehensive audit at the close of the project. The project could also serve as a guideline to other projects that could build on the progress made by the project team fully understanding the complicated regulations and applying them to pipe bursting of AC pipe. The project team consistently volunteered the project for scientific
study and analysis and routinely spoke about the project. Environmental Protection Agency officials have recognized the need for additional research into the environmental impacts of AC pipe rehabilitation methods. They tasked the Water Research Foundation and the Battelle Memorial Institute through WRF Project #4465 to analyze the available methods of AC pipe rehabilitation and their environmental impacts. The project team quickly volunteered the Casselberry project as a pilot project for the Battelle Memorial Institute’s study and the pilot project began.

The Battelle Memorial Institute in conjunction with the project team, planned a week of on site field research to witness rehabilitation of a 775-ft section of AC pipe and to collect air, soil and water samples during the process. The Battelle Memorial Institute followed key EPA sampling guidelines, such as ISO Method 10312, EPA Method 600/R-93/116 and EPA Method 100.2, during the pilot study sampling activities. Air sampling limits for asbestos fibers came back well under the established Occupational Safety and Health Administration’s (OSHA) established limits for permissible asbestos fiber limits. The result in soil sampling pre and post levels show almost no change in presence of asbestos fibers in the soil after pipe bursting. Post pipe bursting water samples showed no levels of asbestos fibers that exceeded EPA MCL’s in the water although one pre pipe bursting sample exceeded the EPA MCL but the sample appeared to be faulty. In general, the Battelle Memorial Institute’s work summarized that there is no evidence to support that the bursting of AC pipe has any negative impacts on the environment or the workers performing the work.

3. Project History

The City of Casselberry is a medium size town in sub-urban Orlando that is considered to be 95% developed. Much of the development occurred between 1950 and 1980. This time frame occurs with the increased popularity of installing AC water mains within the United States. There are widely varying estimates as to the amount of AC pipe installed within the United States and Canada but some estimates conclude there could be as much as 630,000 miles installed (Von Aspern, 2009). Almost 50% of the potable water distribution network within the City of Casselberry was AC pipe prior to the start of the Water Quality Improvement Project. The majority of this pipe is smaller diameter AC pipe (under 12”) that displays higher rates of failure than the larger diameter AC pipe (AWWA, 2012). Prior to 2009, the City was appropriating $300,000 per year to replace existing potable water mains throughout the City. The City owns and maintains 215 miles of potable water main in its distribution network. The $300,000 previously appropriated replaced approximately one mile per year and this replacement schedule would require 215 years to replace the potable water distribution network. The anticipated fifty year service life of the existing asbestos cement pipe was almost over as the pipe was already forty years old and the current replacement schedule was not sustainable (Ambler, et. Al, 2014). Funding for replacing the AC pipe did not generate a new source of revenue for the city of Casselberry, which further complicated replacement of the existing AC pipe. Luckily, the City applied for and received grant and loan funding through the Florida Department of Environmental Protection (FDEP) State Revolving Loan Fund (SRF) program and the American Recovery and Reinvestment Act (ARRA) to support the project. In development of the project, the City identified the locations of AC pipe within their network that suffered significant pipe failures and were nearing the end of their predicted service life and the City then designed the comprehensive Casselberry Water Quality Improvement Projects.

The American Reinvestment and Recovery Act (ARRA) was adopted as law on February 17, 2009. ARRA provided $816.3 Billion in Federal funds for economic stimulus of which $103 Billion was aimed at providing infrastructure investment (transportation, infrastructure, and energy/environment) to generate economic growth and reinvest in the nations’ infrastructure (http://www.recovery.gov.) Initially, ARRA funds were set aside for projects that were considered Shovel Ready or immediately ready for construction. Many government agencies (such as FDEP SRF) that were tasked with implementing the ARRA funds were frantically searching for projects that were ready to go to construction. The Casselberry Water Quality Improvement Projects was a pipe bursting project that did not require a permit from FDEP and typically no right-of-way acquisition, which made it Shovel Ready. To date, the project has received a total of $10.3 million in construction, engineering and administrative costs, of which $6.55 million was considered as principle forgiveness, or grant money (Ambler, et. Al, 2014.)

City staff utilized the City’s extensive geographical information system (GIS) files to identify the distribution pipes that were nearing the end of their service life. City staff also compared these areas with historical failure rates to prioritize pipe replacement areas. The AC pipe within the distribution system was nearing the end of its service life.

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and suffered higher failure rates so the City implemented a comprehensive program targeting the AC pipe. The City selected pipe bursting as the most rapid and effective trenchless technology pipe rehabilitation method with the least environmental and social impacts. The City also realized significant economic benefits by minimizing construction schedule, resident/customer impacts and environmental impacts. Unfortunately, pipe bursting of AC pipe has not been widely accepted throughout the United States. This is primarily due to existing regulations that do not accommodate technological development, dramatic variation of the application of these regulations and ignorance and fear of the actual hazards of asbestos (Ambler, et al., 2014).

4. NESHAP Synopsis and How to Meet Regulations While Bursting Pipe

Much of the confusion surrounding regulatory control of pipe bursting of AC pipe is the pipe bursting work is not addressed by the Drinking Water Act (DWA) but rather the Clean Air Act (CAA). Many people would not correlate the CAA with governing rehabilitation work on a buried pipeline. However, EPA has determined that demolition of the existing AC pipe during the process of pipe bursting triggers the National Emissions Standards for Hazardous Air Pollutants (NESHAP). NESHAP is a sub section of the CAA that is aimed at controlling release of hazardous industrial chemicals into the air or work environments. Asbestos was one of the first industrial chemicals as regulated by NESHAP. Asbestos was considered to be a “magic” mineral during the first part of the 20th century due to its flexible, non-destructible and heat resistant nature. This perception changed dramatically as the adverse health effects of occupational asbestos exposure started being known (Ambler, 2014).

EPA defines two categories of non-friable asbestos containing material (ACM), Category I and Category II non-friable ACM. Category I non-friable ACM is any asbestos-containing packing, gasket, resilient floor covering or asphalt roofing product that contains more than 1% asbestos as determined using polarized light microscopy (PLM) according to 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% asbestos as determined using PLM according to the methods 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) (Ambler, et al., 2012.)

In 1990, EPA issued clarification that AC pipe that has undergone pipe bursting (see Figure 1) is considered regulated asbestos containing material (RACM) and is governed by NESHAP. RACM is directly defined as friable asbestos material or non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading or has crumbled, pulverized or reduced to powder in the course of demolition or renovation operations (www.epa.gov). It is arguable that AC pipe that has undergone the pipe bursting process cannot be further crushed by hand to release asbestos fibers (Ambler, et al., 2014).

Many engineers, contractors and utility providers strongly disagree that pipe bursting AC pipe coverts the previously non-RACM AC pipe into friable RACM. EPA maintains that pipe bursting AC pipe does convert the AC pipe into friable RACM. However, 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 described below (Ambler, et al., 2012.):

- File a Notice to EPA or Its Designee (61.145(b))
  NESHAP specifies salient information that must be included on the notice. FDEP has an available form 62-257.900(1) that requires this information. The form is a 1-page form that has to be signed only by the utility owner (see Figure 2.) (Ambler, et. Al, 2012.)
• 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 accomplished because the AC pipe is wetted within any excavation, and non-power saw tools are used to cut the pipe (chain cutter, handsaw) (Ambler, et. Al, 2012).

• Comply with Inactive / Active Waste Disposal Site Requirements (61.151 / 61.154) 
NESHAP provides for disposing of RACM on the site of the demolition/renovation work or at a waste disposal site. Currently regulators interpret NESHAP such that the work site is considered a waste disposal site for pipe bursting projects. 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 most all buried AC pipeline maintain greater than 2’ depth of cover (Ambler, et. Al, 2012).

• 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. The notation is to contain the following information (Ambler, et. Al, 2012):

1. The land has been used for the disposal of asbestos-containing waste material;
2. The survey plot and record of the location and quantity of asbestos-containing waste disposed of within the disposal site required in Sec. 61.154(f) have been filed with the Administrator; and
3. The site is subject to 40 CFR part 61, subpart M (Ambler, et. Al, 2012.)

Most of the buried AC pipeline infrastructure owned by the majority of utility providers within the United States lies within public right-of-ways. However, public right-of-ways do not maintain a property deed where the restrictions NESHAP references can be directly met. This conflict brought many industry members and the contractor for the Casselberry Water Quality Improvement projects to Washington D.C. to meet with top EPA staff to discuss pipe bursting and the applicability of NESHAP to pipe burst AC pipe. EPA officials embraced the environmental, social and economic benefits of pipe bursting AC pipe and understood the risks of asbestos exposure due to pipe bursting AC pipe would be mitigated over traditional pipe removal methods. While pipe bursting was met with a positive response, modification of the existing NESHAP regulations would require an Act of Congress to complete. EPA officials recommended industry representatives present the EPA Administrator with an “Administrator Approved Alternate” process that can cover AC pipe bursting. To date, there has never been an “Administrator Approved Alternate” process approved to supersede NESHAP nor has any guidance been given to prepare the Administrator Approved Alternate. Industry representatives are currently working through the Administrator Approved Alternate Task Force to develop a suitable document to submit to EPA (Ambler, et al., 2012).

5. EPA’s Study of Environmental Impact of Asbestos Cement (AC) Pipe Renewal Technologies 

The Water Research Foundation (WaterRF) and U.S. Environmental Protection Agency (U.S. EPA) Office of Research Development (ORD) recently funded a study of the environmental impact of various AC pipe renewal technologies, including pipe bursting among others. The results of the study are set to be published in the Fall of 2015 via a WaterRF project report and 1 to 3 peer-reviewed journal articles, which will be valuable when preparing the Administrator Approved Alternate. One AC pipe bursting demonstration was completed with air, water, and soil samples being collected. The water and soil samples were collected prior to the demonstration and post-pipe bursting samples will be collected for comparison to determine the impacts of the project on water quality and soil contamination. Initial results show no adverse impacts to either the soil or water. (Ambler, et al., 2014).

As part of Phase 2 (i.e., Technology Demonstration and Evaluation) of Water Research Foundation (WaterRF) Project No. 4465, Environmental Impact of Asbestos Cement (AC) Pipe Renewal Technologies, the City of Casselberry was identified as one of the only municipalities in the United States actively performing pipe bursting on AC pipe. For this reason the City of Casselberry was selected as a site where the technology of pipe bursting could be adequately demonstrated and its impacts on the environment could be properly evaluated.

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In the summer of 2013, Battelle was onsite in Casselberry, FL to observe the renewal of a 775-ft section of AC pipe (ca. 1972) and to collect air, soil, and water samples during of the process. Over the course of a week, five (5) bursting runs ranging from 125 to 190-ft in length were performed to replace 450-ft of 8-in and 325-ft of 12-in AC pipe. The AC pipe was replaced with 12-in high-density polyethylene (HDPE) pipe.

To determine the impact to the environmental as a result of pipe bursting AC pipe, air, soil, and water samples were collected while onsite. Six (6) air samples were collected during all major activities using two SKC AirChek® XR5000 personal air sampling pumps with approximate flow rates of two (2) liters per min (LPM). Six (6) soil samples were collected from the side walls of access pits following excavation of the pit but prior to any pipe related activities. Six (6) post-renewal soil samples were collected from the same pit wall locations months after the completion of the renewal work and compared to the pre-renewal soil samples. A total of four (4) water samples were collected – two (2) pre-renewal and two (2) post-renewal – from a residential water service line and fire hydrant. A summary of the sampling results is presented in Table 1. Note that all samples were only analyzed for asbestos and no other contaminants.

Table 1. Summary of Asbestos Sampling Results for Air, Soil, and Water

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>No. of Samples</th>
<th>Analytical Sensitivity Range</th>
<th>Sample Result Range</th>
<th>Analytical Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>6</td>
<td>0.0036 - 0.0042 s/cc</td>
<td>BAS</td>
<td>ISO Method 10312</td>
</tr>
<tr>
<td>Soil (Pre-renewal)</td>
<td>6</td>
<td>NA</td>
<td>ND - Trace (&lt;0.25% visual estimate)</td>
<td>EPA Method 600/R-93/116</td>
</tr>
<tr>
<td>Soil (Post-renewal)</td>
<td>6</td>
<td>NA</td>
<td>ND - Trace (&lt;0.25% visual estimate)</td>
<td>EPA Method 600/R-93/116</td>
</tr>
<tr>
<td>Water (Pre-renewal)</td>
<td>2</td>
<td>0.17 - 0.35 million structure/L</td>
<td>0.87 - 20.07 million structure/L</td>
<td>EPA Method 100.2</td>
</tr>
<tr>
<td>Water (Post-renewal)</td>
<td>2</td>
<td>0.08 - 0.09 million structure/L</td>
<td>0.09 - 0.94 million structure/L</td>
<td>EPA Method 100.2</td>
</tr>
</tbody>
</table>

s/cc = structure per cubic centimeter (mL)
BAS = below analytical sensitivity
NA = not applicable

The asbestos concentration of each air sample (see Table 1) is below the analytical sensitivity. The analytical sensitivity of each sample is below the 8-hr time-weighted average (TWA) permissible exposure limit (PEL) of 0.1 s/cc set by the Occupational Health and Safety Administration (OSHA). This indicates the workers were not exposed to dangerous levels of airborne asbestos throughout the duration of the project.

The results from the pre- and post-renewal soil samples (see Table 1) show essentially no change in asbestos levels within the soil. Although some locations saw an increase of asbestos by trace amounts, other locations saw a decrease in asbestos concentration by trace amounts or saw no change at all. With no significant change in the asbestos concentration between the pre- and post-renewal samples, there is no evidence of upward migration of the asbestos fibers within the soil column.

Water sample results for the pre-renewal samples show one (1) sample with an asbestos concentration of approximately 20 million structures/L, which is almost three times the USEPA maximum contaminate level (MCL) for asbestos in drinking water (i.e., 7 million structure/L). The sample was collected from a fire hydrant prior to any pipe related activities and is believed to have been inadequately flushed prior to collection. The post-renewal water samples show a dramatic decrease in asbestos concentration, especially the sample from the hydrant, which saw a reduction in asbestos of nearly 90%. Both post-renewal samples were below the EPA MCL, therefore, posing no health risk to consumers. Note that the new HDPE line is still connected to AC lines at three locations and the presence of asbestos in the drinking water is likely to continue, albeit at lower concentrations than before.
Based upon the results from the air, soil, and water samples collected from the Casselberry site there is no evidence to support that the bursting of AC pipe has any negative impacts on the environment or the workers performing the work.

6. Field Observations

The Casselberry Water Quality Improvement Projects lasted well over four years and installed almost 35 miles of HDPE through pipe bursting. Key construction engineering inspection field staff executing the day to day operations has made significant key observations. The original project documents as bid required a Bursting Plan be submitted prior to mobilizing to the new project area and starting bursting operations. A Bursting Plan is a modification of the original plan sheets. Similar to the original plans, a Bursting Plan should be based on the GIS information supplied by the owner or client of the project, available survey information, as-built information and/or field verified information. These plans should depict all entrance and exit pits, service connection pits, fire hydrants, blow-off connections and any other miscellaneous appurtenances that are proposed to be replaced or added. Each section of pipe or Burst Section should be labeled with the approximate length, size of existing pipe, size of proposed pipe that will be used to replace the existing pipe and the associated pipe materials. The plan should indicate all existing isolation points such as valves and dead end lines and any existing infrastructure that may have been installed on the system, such as line stop sleeves, abandoned valves, fittings, repair clamps, concrete restraints, etc. Other important information that should be noted on the Bursting Plan should be the approved pipe bursting procedures for the project, all of the standard project information such as general project area locations, street names, etc.

A Bursting Plan is a useful information that can be used to satisfy the regulatory requirements of NESHAP previously outlined. However, the Bursting Plan is critical for the contractor when estimating how much preparation is required within the pipe replacement project area prior to starting work within the area. The Bursting Plan allows the contractor to layout the project area with the appropriate number of burst segments with appropriate burst lengths in order to accommodate for all known isolation points, utility crossings, naturally and mechanical limitations. There are limitations as to how much pipe a work crew can reasonably install in a work day and these limitations should resonate throughout the Bursting Plan. The Bursting Plan also informs the contractor of what existing infrastructure needs to be located and tested prior to commencement of any of the pipe replacement activities. If the existing distribution system does not have enough isolation valves to meet maximum water outage limits required for the project, the contractor must provide for temporary components such as line stops, valves, services.

A Bursting Plan is used by the contractor, engineers and owner in developing a bursting schedule and tracking submittals. The bursting schedule can then be used to coordinate fusion of each of the burst sections. The replacement HDPE pipe can be staged in a long linear staging area and fused in sections to make one longer section of pipe that will be pulled into place for each Burst Section. After the final pipe is fused, hydrostatic pressure testing and bacteriological sampling can be performed on the final pipe. The bursting schedule helps minimize redundant bacteriological sampling for samples that have short expiration requirements. A 30 day expiration schedule for the bacteriological sample regulates how long a fused section remains on the staging area before the pipe is installed. These three steps are part of the pre-chlorinated potable water main pipe bursting process approved by the Florida Department of Environmental Protection (FDEP). FDEP considers this work to be rehabilitation of the existing pipeline and allows the pre-chlorinated potable water main pipe bursting work to occur without a permit for up to two pipe sizes larger than the existing pipe. Proper management of fusing, hydrostatic pressure testing and bacteriological sampling can result in direct cost savings to the contractor. A well-developed Bursting Plan is not only critical to the organization and coordination of the construction activities but critical to helping the project owner stay in compliance with the governing agencies and minimizing the costs of the project.

7. Moving Forward

It’s been over four years since industry representatives met with Washington, DC EPA staff to discuss the applicability of NESHAP to pipe bursting AC pipelines and work towards developing a reasonable and practical solution to accommodating new technological developments, such as pipe bursting, within the existing NESHAP framework. EPA staff had acknowledged the potential difficulty in applying NESHAP Deed Notation requirements to AC pipe bursting within public rights-of-way. During the meeting with EPA, a video of several physical
demonstrations of AC pipe bursting were shown that clearly indicated the minimal environmental impacts of pipe bursting and dispelled myths that AC pipe bursting released an explosion of asbestos fibers into the air. It is possible that AC pipe bursting has been given a bad reputation specifically because of the misconceptions of AC pipe bursting. EPA staff in attendance of the meeting with industry representatives expressed a positive attitude towards pipe bursting of AC pipe after being presented with video demonstrations of the process. EPA staff suggested industry representatives submit an “Administrator Approved Alternate” for the EPA Administrator considers as an alternate process to existing NESHAP regulations.

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 Mr. 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. (Ambler, et. Al, 2012.)

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. (Ambler, et. Al, 2012.) 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, DC 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. (Ambler, et. Al, 2012.)

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 (EPA Addressing the Challenge through Science and Innovation, 2010). 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. (Ambler, et al., 2012.)

Conclusion

Scientific research and testing of direct field implementation of asbestos cement pipe bursting by both utility owners and EPA commissioned scientists has clearly illustrated the asbestos cement pipe bursting is a safe and environmentally friendly method for rehabilitation asbestos cement pipe. The City of Casselberry, in conjunction with its contractor, Killebrew, Inc. has performed Negative Exposure Assessments on pipe bursting work confirming no asbestos fibers are released during rehabilitation activities above established OSHA limits for asbestos work. Water Research Foundation Project #4465 has come to the conclusion that “there is no evidence to support that the bursting of AC pipe has any negative impacts on the environment or the workers performing the work.” A safe, simple method for executing an asbestos cement pipe bursting project while meeting all existing regulations has been established by industry and the City of Casselberry. This safe, simple method for asbestos cement pipe bursting has been validated by scientists hired by EPA. There should be no hesitation by owners of asbestos cement pipe to move forward in rehabilitating their failing asbestos cement pipe via the pipe bursting method.

References
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