

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of an Investigation into)	
City Utilities of Springfield Plastic Pipe)	
Failures and the Adequacy of its Leak)	<u>Case No. GS-2004-0257</u>
Survey Procedures, Installation)	
Procedures and Replacement Criteria)	

**STAFF'S STATUS REPORT REGARDING CITY UTILITIES OF
SPRINGFIELD'S PLASTIC PIPE REPLACEMENT PROGRAM**

COMES NOW the Staff of the Missouri Public Service Commission, by and through counsel, and files its report discussing its investigation into plastic pipe leaks caused by rock impingement and City Utilities of Springfield's ("City Utilities") plastic pipe replacement program. Staff recommends City Utilities continue the current replacement program and leak survey schedule (based upon the replacement criteria for calendar year 2010 and beyond listed in the attached report). In support, Staff states:

1. On May 18, 2010, Staff and City Utilities filed a *Joint Recommendation Concerning Pipeline Replacement Schedule* ("Joint Recommendation"). The Joint Recommendation listed the parameters that Staff and City Utilities agreed to follow for year 2010 and beyond. On May 28, 2010, the Commission issued an *Order Adopting Joint Recommendation and Ordering Compliance with Pipeline Replacement Schedule*.

2. Attached is Staff's Status Report in which it discusses Staff's on-going investigation into plastic pipe leaks caused by rock impingement and City Utilities' plastic pipe replacement program.

3. City Utilities continues focusing its efforts on replacing plastic pipe that has experienced or could have failures due to rock impingement. City Utilities has been concentrating efforts on replacing piping from City Utilities' "Plastic Pipe Failure-Rock/Dirt Mix Master List" as the other replacements are completed. Staff agrees with this approach, as set forth in the attached status report.

4. The attached status report discusses Staff's on-going monitoring and evaluation of the replacement of plastic pipe in City Utilities' system and City Utilities' leak survey techniques and results.

5. Staff has been and will continue to monitor the effectiveness of City Utilities' plastic main and service line replacement program and leak surveys.

6. If at any time, Staff determines that the program requirements should be enhanced, it will immediately bring its concerns and recommendations to the Commission. Staff proposes filing another Status Report on April 1, 2015, covering calendar year 2014.

WHEREFORE, Staff requests the Commission accept Staff's Status Report attached hereto.

Respectfully submitted,

/s/ Jeffrey A. Keevil

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CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing have been mailed, hand-delivered, or transmitted by facsimile or electronic mail to all counsel of record this 15th day of April, 2014.

/s/ Jeffrey A. Keevil

STAFF'S STATUS REPORT

Case No. GS-2004-0257

City Utilities of Springfield

April 15, 2014

**BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI**

In the Matter of an Investigation into City Utilities of)
Springfield Plastic Pipe Failures and the Adequacy of)
its Leak Survey Procedures, Installation Procedures)
and Replacement Criteria.)

Case No. GS-2004-0257

AFFIDAVIT OF RICHARD A. FENNEL

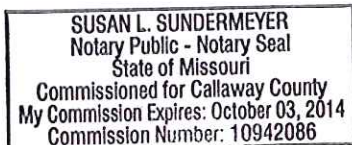
STATE OF MISSOURI)
)
COUNTY OF COLE)

Richard A. Fennel, Utility Technical Specialist II in the Commission's Energy – Safety/Engineering Department, of lawful age, on oath states: that he participated in the preparation of the foregoing Status Report, to be presented in the above case; that the information in the Status Report was provided to him by City Utilities of Springfield; that he has true knowledge of the matters set forth in such Status Report; and that such matters are true to the best of his knowledge and belief.



Richard A. Fennel

Subscribed and sworn to before me this 14th day of April, 2014.





NOTARY PUBLIC

EXHIBIT A

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STAFF'S STATUS REPORT

CASE No. GS-2004-0257

EXECUTIVE SUMMARY:

This is Staff's fourth status report concerning the schedule and recommendations in the *Joint Recommendation Concerning Pipeline Replacement Schedule* ("Joint Recommendation") filed on May 18, 2010, and approved by the Commission on May 28, 2010. This status report discusses Staff's on-going investigation into plastic pipe leaks caused by rock impingement and City Utilities' plastic pipe replacement program. This status report summarizes data obtained from City Utilities' semi-annual reporting since the adoption of the May 18, 2010, Joint Recommendation, as well as data obtained during Staff's ongoing monitoring and evaluation of the replacement of plastic pipe in City Utilities' system and City Utilities' leak survey techniques and results.

Based upon its review and observations, Staff recommends continuing the current replacement program and leak survey schedule (based upon the replacement criteria for calendar year 2010 and beyond listed in this report). City Utilities of Springfield (City Utilities) implemented all of Staff's Recommendations in calendar year 2010 and has continued to follow the Recommendations through this reporting period.

City Utilities continues focusing its replacement efforts on replacing plastic pipe that has experienced or could have failures due to rock impingement. City Utilities has been

concentrating efforts on replacing piping from City Utilities “Plastic Pipe Failure-Rock/Dirt Mix Master List” (Master List)¹ as the other replacements are completed. Staff agrees with this approach because the level of replacements of pipe to date has generally lowered the number of rock-impingement leaks since 2007 on City Utilities’ pre-1985 pipe operating at high pressure that is in a rock-dirt mix backfill.

BACKGROUND:

On April 30, 2009, Staff filed *Staff’s Response to Commission Order Directing Filing of Status Report* (“Report”) outlining the progress City Utilities had made in the replacement of pre-1985 “high-pressure” DuPont ALDYL[®] “A” polyethylene (PE) piping that was ordered in the November 1, 2007 *Order Adopting Joint Recommendation*. In its Report, Staff indicated that it would focus on development of a program for calendar year 2010 and beyond. In addition, Staff indicated that City Utilities should at least continue the program as currently established, with replacements continuing to at least the current rate, until a new program is approved by the Commission. The Commission’s June 18, 2009 *Order Adopting Status Report* ordered Staff to file additional status reports or recommendations as needed, but no later than June 30, 2010.

On May 18, 2010, Staff and City Utilities filed a *Joint Recommendation Concerning Pipeline Replacement Schedule* (“Joint Recommendation”). The Joint

¹ The “Master List” lists pipe segments that need to be replaced, scheduled for replacement, and that have been replaced based upon rock impingement leaks, piping segments in a rock-dirt mix backfill, and other criteria as listed in recommendation 4.

Recommendation listed the parameters that Staff and City Utilities agreed to follow for year 2010 and beyond. On May 28, 2010, the Commission issued an *Order Adopting Joint Recommendation and Ordering Compliance with Pipeline Replacement Schedule*, in which it ordered Staff to file additional status reports or recommendations as needed, but no later than July 1, 2011.

On July 14, 2011, Staff filed *Staff's Notice to the Commission and Request to Late File Status Report*. Staff reported that it was completing discussions with City Utilities and would file its status report no later than July 25, 2011. The Commission granted the *Request to Late File Status Report* on July 14, 2011, and ordered Staff to file its status report no later than July 25, 2011.

On July 25, 2011, Staff filed a status report detailing City Utilities' plastic pipe monitoring, evaluation and replacement program for the 18-month period January 1, 2010, through June 30, 2011. The report further indicated that City Utilities had complied with the new replacement schedule as listed in the *Joint Recommendation* adopted by the Commission on May 28, 2010.

On July 23, 2012, Staff filed a status report detailing City Utilities' plastic pipe monitoring, evaluation and replacement program. The report further indicated that City Utilities had complied with the replacement program schedule as listed in the *Joint*

Recommendation adopted by the Commission on May 28, 2010. In this Status Report, Staff indicated it would file “another Status Report on or before July 31, 2013”.

On July 31, 2013, Staff filed a Status Report detailing City Utilities’ plastic pipe monitoring, evaluation and replacement program for the time period of January 1, 2012, through December 31, 2012.

In the July 31, 2013 Status Report, Staff proposed filing another Status Report covering the progress and status of the program for calendar year 2013. This filing is to report on the program for calendar year 2013.

STATUS REPORT:

During the time period January 1, 2013, through December 31, 2013, City Utilities experienced eleven leaks due to rock impingement, of which seven were on high-pressure piping (60 psig), three were on intermediate pressure piping (5-35 psig) and one was on low pressure piping (0-5 psig). The leaking service lines were replaced main-to-meter at the time of discovery. The mains where leaks were found were repaired and those main segments were added to the Master List for replacement at a future date.

For the time period of 1999 through December 31, 2013, records indicate 94% of rock impingement leaks have been on pre-1985 piping and 79% have been on piping operating at high-pressure (60 psig operating systems).

The recommendations in the Joint Recommendation are listed below, followed by the current status of each recommendation. City Utilities met these recommendations during the period of this status report.

Recommendations - Replacement Criteria for Calendar Year 2010 and Beyond:

1. City Utilities shall replace the remaining pre-1985 “high-pressure” DuPont ALDYL[®] “A” polyethylene (PE) piping (services lines 1¼ inches in diameter and larger and mains) at a rate of at least 6 miles annually.

During the time period of January 1, 2013 through December 31, 2013, City Utilities replaced 6.12 miles of plastic piping and 378 plastic service lines. This total includes all eligible piping as described in Recommendation 5.

2. City Utilities shall continue its practice of replacing nearby or adjacent pipe segments that are beyond the specific piping in the same work order number because the piping was installed in the same time period and could likely have been installed using the same methods and in the same environment.

City Utilities’ Supervisor Natural Gas Engineering evaluates each location for nearby and adjacent piping replacement before assigning the job to Gas Engineering personnel and these piping segments are included in the replacement program.

3. City Utilities shall continue its practice of replacing the service lines associated with the main replacements.

City Utilities has continued its practice of replacing all gas service lines associated with the main replacements.

4. The replacements shall be prioritized based on risk factors, such as Maximum Allowable Operating Pressure (MAOP), date of installation, installation in rock-dirt backfill, history of leaks due to rock impingement, continuous pavement areas, areas of high population density, areas of previous leakage, and other appropriate criteria.

City Utilities' Supervisor Natural Gas Engineering evaluates each location per the above criteria and the Master List before prioritizing and assigning the job.

5. The primary focus of the replacement program shall be on "high-pressure" DuPont ALDYL[®] "A" piping that was manufactured before 1985 (pre-1985) that was installed in a rock-dirt backfill. Replacements of "high-pressure" DuPont ALDYL[®] "A" piping installed in 1985 and after, and other lower pressure DuPont ALDYL[®] "A" piping would normally be a low priority, but can be included in the total annual mileage if the segments have experienced leaks, are in a rock-dirt backfill, or if the piping is connected to a higher priority segment that is being replaced.

City Utilities' primary focus of the replacement program has been on high-pressure DuPont ALDYL® "A" piping that was manufactured before 1985. City Utilities' Supervisor Natural Gas/Water Engineering evaluates each location and prioritizes the job assignment as contained in the recommended criteria. City Utilities has included the replacement of pre-1985 and post-1985 high pressure (60 psig), intermediate pressure (5-35 psig), and low pressure (0-5 psig) DuPont ALDYL® "A" piping in the total annual replacement mileage, which includes 2.2 miles of pre-1985 high pressure plastic main, and 3.92 miles of pre-1985 intermediate and low pressure plastic piping and post-1985 high pressure, intermediate pressure and low pressure plastic piping.

6. Staff has agreed that, depending on City Utilities' investigation into their distribution integrity management program (DIMP), the provisions of this replacement program may be adjusted, with Commission approval. The U.S. Department of Transportation-Pipeline and Hazardous Materials Safety Administration Final Rule (DIMP) took effect February 2, 2010, and operators were required to have an Integrity Management program in-place and implemented by August 2, 2011. If, at any time during the review of their DIMP program, City Utilities discovers more essential and higher priority areas on which it must concentrate its replacement efforts, such as rock impingement leaks on lower pressure PE piping and PE piping installed after 1984, City Utilities will bring these issues to Staff's attention and notify the Commission.

City Utilities has filed its Distribution Integrity Management Program (DIMP) and Staff has reviewed the plan. If, at any time the DIMP risk analysis process identifies higher priority areas than the segments of its system covered by the Joint Recommendation order, City Utilities will arrange discussions with Staff and notify the Commission of the higher priority areas.

Non-Replacement Criteria for Calendar Year 2010 and Beyond Recommendations:

In addition to the above replacement program, City Utilities will continue to meet the following requirements of the original agreement.

7. An annual leakage survey shall be conducted over pre-1985, 60 psig plastic piping. In addition, an annual leakage survey shall be conducted over post-1985 and/or low and medium pressure main segments that have exhibited splits or are confirmed to be in rock-dirt backfill.

City Utilities' Gas Leak Survey Department completed leak surveying pre-1985 ALDYL® "A", pre-1985 high-pressure (60 psig) plastic piping and post-1985 and/or low and medium pressure main segments that have exhibited splits or have been confirmed to be in rock/dirt backfill in December 2013. During these leak surveys, four rock impingement leaks were found. City Utilities is in the process of conducting the current annual leakage surveys (to be completed during December 2014) over pre-1985 high-pressure (60 psig)

and post-1985 and/or low and medium pressure main segments that have exhibited splits or have been confirmed to be in rock/dirt backfill. City Utilities will report these annual leak survey results to Staff in the July 1, 2014 through December 31, 2014 semi-annual report.

8. Quarterly leak surveys shall be conducted of the downtown business district.

City Utilities conducted leak surveys of the downtown business district during January, April, July and October of 2013. No rock impingement leaks on plastic piping were found.

9. Any plastic piping that is exposed will be inspected for proper backfill, and if rock-dirt mix backfill is found, the main segments or larger diameter service lines (1¼-inch diameter and larger) shall be added to the Master List.

From January 1, 2013 through December 31, 2013 City Utilities found a rock/dirt mix backfill in approximately 25% of the locations where plastic piping was exposed for various reasons. These locations were added to the Master List for annual leak surveys and replacement. Since inception of the program in 2004, City Utilities has found a rock/dirt mix backfill in approximately 19% of the locations where plastic piping was exposed for various reasons.

10. Semi-annual reports and monthly updates shall be submitted to Staff.

City Utilities continues to submit semi-annual reports to Staff covering the previous six months of the program to include the results of annual leak surveys and the status of plastic main and service line replacements to date. City Utilities submitted semi-annual reports dated July 10, 2013 (covering the reporting period of January 1, 2013 through June 31, 2013), and January 27, 2014 (covering the reporting period of July 1, through December 31, 2013), and has submitted twelve (12) monthly updates. City Utilities has committed to continuing to submit monthly updates covering rock impingement leaks. Staff will continue to review these monthly updates and semi-annual reports.

11. The mileage of pre-1985, 60 psig mains that remain in the distribution system shall be provided to Staff.

City Utilities had approximately 75.45 miles of pre-1985 high-pressure (60 psig) plastic main in the distribution system at the beginning of the replacement program. City Utilities has replaced approximately 30.23 miles of pre-1985 high-pressure (60 psig) plastic main since the beginning of the 2004 City Utilities' replacement program. To date, approximately 45.22 miles of pre-1985 high-pressure (60 psig) plastic main remain in City Utilities' distribution system.

12. Staff and City Utilities shall continue to monitor the effectiveness of the Replacement Program. If at any time, Staff determines that the program requirements should be enhanced, it will immediately bring its concerns and recommendations to the Commission.

City Utilities reports that it is closely monitoring its plastic gas piping system. Staff reviews the monthly and semi-annual reports submitted by City Utilities to monitor the effectiveness of the replacement program. As leaks due to rock impingement are identified, the leaks are repaired and these main segments are added to the Master List and annually leak surveyed until they are replaced. Factors, such as location, pressure, and number of leaks are being taken into consideration when scheduling plastic pipe replacement projects. As plastic gas mains are being renewed, City Utilities is replacing all of the plastic service lines installed prior to June 2004 along with the main. Staff will continue to review the monthly updates and semi-annual reports (see item 10 above) and, if needed, make immediate recommendations to the Commission.

SUMMARY

Staff has been and will continue to monitor the effectiveness of City Utilities' plastic main and service line replacement program and leak surveys. A review of information recently provided by City Utilities showed two rock impingement leaks have been reported in the first three months of 2014. If at any time, Staff determines that the

program requirements should be enhanced, it will immediately bring its concerns and recommendations to the Commission. Staff proposes to file another Status Report on or before April 1, 2015.