



December 4, 2009

Dear Raspberry Residents:

We have completed an investigation into a copper pitting issue that many Raspberry Falls residents have experienced in their homes. This letter shares the information that was collected, along with conclusions and recommendations presented by Dr. Marc Edwards, a corrosion expert with Virginia Tech.

Background:

This past summer, a Raspberry Falls resident provided Loudoun Water a list of homes that experienced copper pipe leaks. We initiated a detailed investigation and obtained professional services from Dr. Marc Edwards, a world renowned expert in copper pipe corrosion from Virginia Tech. Pipes which experienced pinhole leaks were collected from residents, and inspected and analyzed by Dr. Edwards.

Analysis:

Of the 51 homes reporting leaks, 27 responded to our survey. It was determined from survey results that all leaks reported had occurred at piping above the water heater where the copper pipe transitions to chlorinated polyvinyl chloride (CPVC) pipe. Leaks occurred 1-5 years after the home was built, with the earliest leaks occurring in 2005 and continuing to present day. Many homes reported second or third leaks at the same location when the same fitting was used to replace the old one. There is uniform distribution of pipe leak reports throughout the community (i.e. not isolated to one section). No leaks were reported from the 25 older homes on private wells.

All the pipe samples collected showed a pinhole leak at the transition fitting between copper/CPVC. No pipe samples collected had pinhole leaks within the center of the pipe and no leaks were reported anywhere else in the house. All data collected was sent to Dr. Edwards for his analysis. His report is available at

www.loudounwater.org/Residential-Customers/Community-Systems/Raspberry-Falls/

Conclusions and Recommendations:

Dr. Edwards describes in his report that copper pinhole leaks require two factors: Initiation and Propagation. In your water system, he concluded that the initiation factor is the design of the copper/CPVC fitting because it contains a crevice that allows the pit to form. The propagation factor is the water—meaning once pits form, the water allows them to grow. The specific factors that allow a water to support pit growth is a topic of industry research. Rest assured that despite your water's tendency to allow pits that have formed to grow, your water meets all state and federal drinking water standards

and we continue to operate the water system in accordance with Department of Health requirements.

Upon receiving Dr. Edwards report, Loudoun Water met with the builder (Van Metre/Marquis) and the plumber (Peed Plumbing). At that meeting we learned that the transition fitting where these leaks occurred (on the inlet and discharge sides of the hot water heater) were also used at tubs, showers, and hose bibs, which are all located behind drywall or tile.

Path Forward:

Due to the revelation that there are several of these fittings which are designed with a crevice within the home, most of which are behind drywall or tile and not easily accessible, Dr. Edwards recommends dosing orthophosphate, a corrosion inhibitor, at the Water Treatment Facility. Information about phosphates is available at the same web page mentioned above.

While we must emphasize that Loudoun Water cannot assume responsibility for leaking plumbing fixtures and pipes located within a customer's house, we do agree that adding an orthophosphate corrosion inhibitor is the best course of action Loudoun Water can undertake to help with this corrosion issue. As a point of reference, about half of all utilities in the U.S. dose some form of phosphate corrosion inhibitors.

We are aggressively pursuing design and construction of an orthophosphate storage and feed system and we encourage residents to continue to monitor these fittings within their home.

Residents are welcome to visit our website often for information on the Raspberry Falls water system.

Thank you,



Todd Danielson
Mgr. of Community Systems



Samantha Villegas
Mgr. of Communications



Beate M. Wright
Water Quality PM

CC: Supervisor Sally Kurtz