

New Water Alone Is Not Enough

The solution to Flint's water crisis requires more than simply returning to the former, non-corrosive water. The damage done to the piping will linger for years.

The slides that follow offer a good representation of what the inside of those pipes most likely looks like. It gives a graphic representation of what has to be resolved. The vital issues cannot be overlooked.

- The “topography” of scale compared to water channel is infinitely variable along the lengths of pipes. No cross section can deliver an accurate prediction of future water quality.
- The remaining, partially-dissolved scale contains trapped, dangerous metals. Since there is a constant exchange of ions in any salt deposit, metals will be released from this layer for decades.
- Wide variations inside the pipes also render any water analysis undependable for predicting future water quality. Samples will vary widely based on many factors, including location, and changing topography.



FLINT MUST BE GIVEN AN ENTIRELY NEW PIPING NETWORK

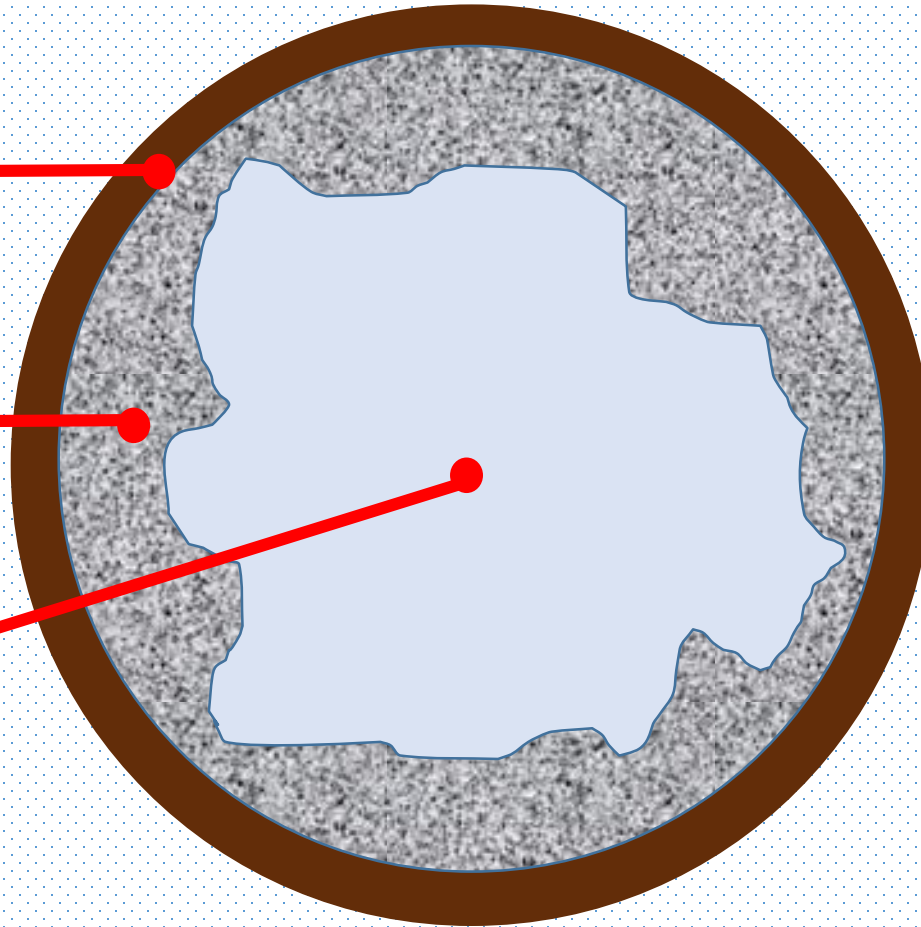


Healthy Water Pipe

Metal Pipe – Undamaged

Protective Scale Layer

Water Channel



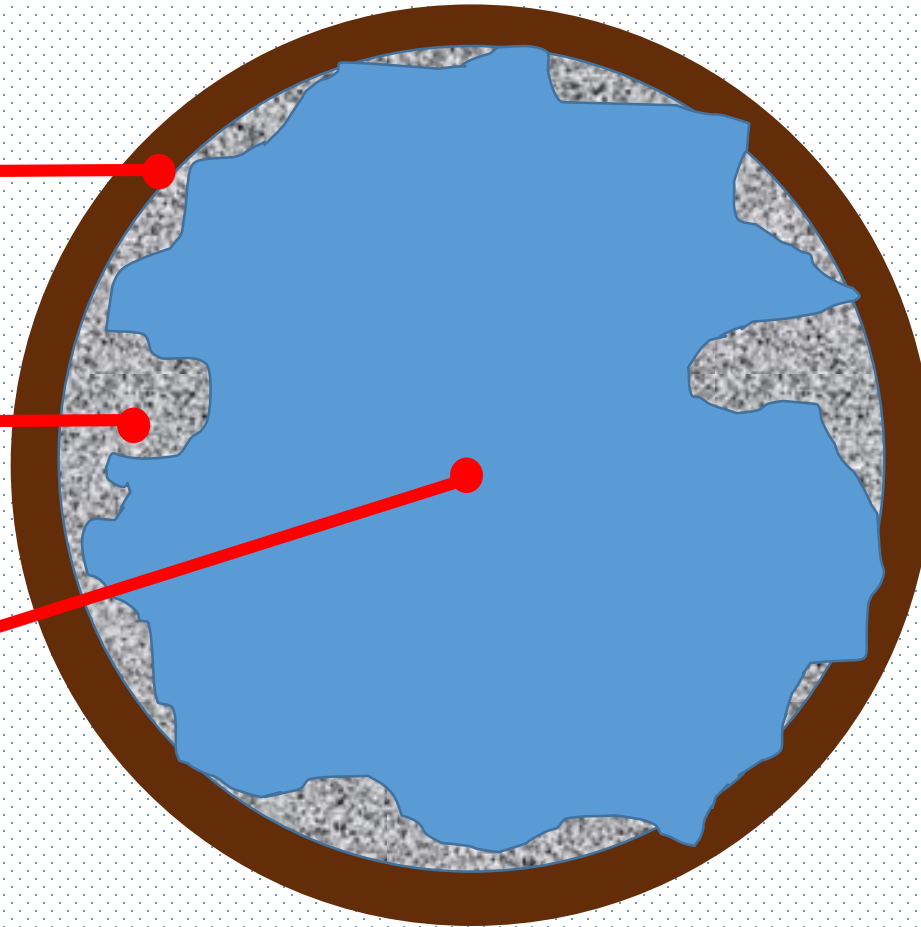
- In a healthy water pipe, years of gradual calcium scale form a protective barrier to keep water from coming into direct contact with much of the inner metal pipes.
- The scale molecules are in constant motion. New calcium molecules incorporate into the scale coat, while some old molecules will leave the scale coat and enter the water. Metals will enter the water in this manner.

Un-healthy Water Pipe

Metal Pipe – Exposed

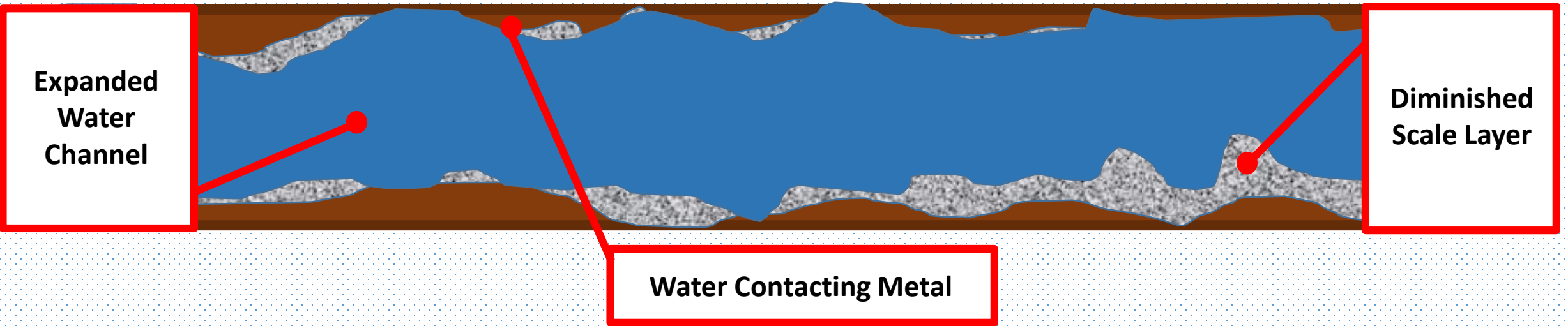
Diminished Scale Layer

Expanded Water Channel



- An un - healthy water pipe is created by sending corrosive water through it.
- Corrosive water dissolves calcium scale; softens it; and makes it more porous and soluble.
- Newly exposed pipe metal begins to leach into the drinking water.
- Much of the dissolved metals become embedded in the remaining scale

Horizontal Section – The Big Picture



The horizontal section demonstrates why the total damage to the Flint piping infrastructure cannot be assessed with simple cross section examination and random water testing.

As water travels along the now compromised pipe the dimensions and relationships of scale, water channel and exposed metal vary infinitely. No number of samples will be representative of the entire network.