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# *Interactive comment on* "Quantity and Quality Benefits of in-Service Invasive Cleaning of Trunk Mains" *by* Iftekhar Sunny et al.

**T. Walski (Referee)**

tom.walski@bentley.com

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This was a very nice study. It's great to see researchers out in the field working with real water systems. I just had a few questions.

The rapid increase in turbidity in the months after the cleaning indicates that there is some source of the solids causing the turbidity. Without knowing the nature of the solids, it is difficult to determine its source. What did the solids look likeâĂŤiron particles, treatment plant floc carryover, manganese solids, asbestos particles or microbial growth.

The message from this paper seems to be that if a utility cannot control the source of particles, even the best cleaning methods will only have limited success. Because the pipe was made up of asbestos cement, it is unlikely the particles responsible for



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the turbidity originated in the test section. The fact that they turbidity increased after cleaning implies that the turbidity was not due to a poor job of cleaning. If the test section was the source, then sliplining or cement mortar lining would be a good way to prevent turbidity increases with time.

It would have been great to have cut a section out of the pipe and examined it. Were solids only found on the bottom of the pipe or where they uniformly distributed around the circumference? Collecting a few pipe coupons around the circumference would have been useful if a section could not be removed.

Some minor questions and observations:

What is meant by “high contact rates worldwide”? What is a contact rate?

In North America, a 228 mm pipe would not be considered a “trunk main”. Depending on the system, that terminology is usually reserved for pipe on the order of 500 mm or larger.

The title referred to in-service cleaning, but it sounds as if no customers were being provide water along the test section from the test pipe during this work. Were there no customers on the line or where they provided water through bypass piping?

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