

Waters Engineering, Inc.

Civil Engineering & Land Surveying

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July 17, 2019

Mr. Mark Basler
Lake Forest Estates

RE: Wastewater Improvements

Dear Mr. Basler:

In reference to the e-mail that you sent me, there are alternative forms of repair for gravity sewer lines such as CIPP (Cured-in-Place Pipe).

We've designed thousands of feet of CIPP repair and while this is typically a cheaper method, there are specifically required site conditions that our system doesn't meet.

While CIPP can be done without digging up and replacing the pipe, it is limited to 600 or 700 feet lengths maximum. It also requires access at both ends of the pipe being lined. The process involves going into one manhole (access point) and blowing a fiberglass liner from that point all the way to the other manhole (access point). After it is blown in, it is typically filled with steam to cure. After curing, another machine will be inserted and the liner will be cut away at all taps. Both ends will also be trimmed and sealed. This method will work for those sections of line that are outside of the lake boundaries.

Since we don't have manholes as access points in the lines under the lake, the contractor would have to excavate and cut away the existing pipe for the required access points. This is difficult to do when the pipe is underwater.

There are also other methods of repair such as slip lining, pipe bursting, joint grouting, etc. We've designed projects that have included all of these but as with CIPP, all of these methods require access to both ends of the pipe and some require access at all service taps as well.

Here is a link that explains some of the various repair methods. There are contractors in the area for most of them. <https://rehabzone.org/pipe-rehabilitation/mainline/>

As far as the dredging, my understanding is that the board wanted to include this work because the area near the marina is silting full and causing problems for the boats that utilize the marina. Removing the silt will require dredging (not lowering the water level) or excavating (lowering the water level) to remove. I don't know of any grant/low interest loan that is available for this work; but, excavation of the sewer in this area is required so it is included in the project.

Our firm always looks to find cost effective methods to make the needed improvements. While we have used these alternative methods before, we have also discussed this project with several contractors (including those around St. Louis) to see if there might be any new technology they have which could help reduce the cost. There is no silver bullet that will make repair to the collection system cheap. We wish there were.

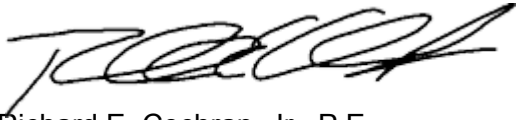
If we weren't trying to look at inexpensive options, we would be recommending all new concrete construction at the treatment plant which could add a couple million to the cost.

We'd be happy to discuss any of this with the board or residents again if it will help.

If you have any questions or comments, please contact me.

Sincerely,

WATERS ENGINEERING, INC.

A handwritten signature in black ink, appearing to read 'R. Cochran, Jr.', with a stylized, cursive script.

Richard E. Cochran, Jr., P.E.
Senior Engineer