

# Potholing water lines – locating utilities safely

Short of winning the lottery, the one item that could make anyone wealthy would be to be able to invent and perfect the operation of a device that would locate PVC pipelines. Yes, I know, there will be claims that these technologies exist – from ground penetrating radar to polished bronze rods, but none of these really work everywhere. Most public water systems in Kansas, particularly the rural water districts with the hundreds and hundreds of miles of pipeline, resort to using what maps are available, a probe, a shovel and a backhoe. Underground utility infrastructures are becoming more and more congested and complicated. In many locations,

there is limited space for installations. No one wants to cut a water line that is providing essential services to patrons on a sweltering summer day.

Numerous gas and phone companies are upgrading their systems in many parts of Kansas. I

know of some rural water districts that are spending what seems an inordinate amount of time just chasing the locate requests. The inability to accurately locate pipelines has been the subject of numerous articles in prior issues of *The Kansas Lifeline* magazine.

Generally the original city or RWD systems were installed without tracer wire – and the problem is

further compounded by having been provided inaccurate and incomplete as-built maps in many cases. So where do you begin in locating pipelines when there's no

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assurance that the map even has it on the correct side of the road?

It's not just PVC pipelines that are difficult to locate. Even metallic pipe is sometimes impossible to locate with modern line locators; cast iron mains often lose the signal in just a few feet

first alternative which is to call a contractor with a backhoe and start digging and risk damage.

## Experience at Russell RWD 3

Over the last two years, Russell County RWD 3 has had two contractors installing fiber



*Doug Guenther*  
Tech Assistant



*In the picture above a Vermeer potholer factory representative (left) observes Russell RWD 3 Manager Ron Nuss as he directs the power gun while KRWA Tech Doug Guenther runs the vacuum boom. They are working to expose and locate a water main to be crossed by a fiber optic cable crew working in the RWD territory.*

optic cable. Another project has crossed the entire water district installing a high-pressure gas main. The district's as-built maps were very inaccurate; the district has all PVC pipeline and no tracer wire. At the request of the district, I have helped manager/operator Ron Nuss repair many cuts made to district lines. The worst experience was one contractor who cut a line 12 times in one day before he would stop.

**Bring on the potholer!**

Earlier this year, when the contractor began installing the high-pressure gas main, he brought along a large vacuum truck with ability to pothole and spot existing utilities. Potholers can be of several designs. A potholer is basically a vacuum excavator, similar to that used to clean septic tanks and car wash pits. Contractors have learned to use the technology to help locate utilities to cleaning valve boxes.

Pressurized water or air is used to displace soil and create a dry or wet spoil. The displaced dry or wet spoil is removed from the area through a hose using high-velocity suction. The

many places I observed the trench being 12 feet wide by 5 feet deep to facilitate the welders connecting the joints.

Potholers are not very available and especially so for

**Pressurized water or air is used to displace soil and create a dry or wet spoil. The displaced dry or wet spoil is removed from the area through a hose using high-velocity suction and stored in a holding tank.**

material is then stored in a holding tank. The vacuum excavators are either trailer or truck-mounted and generally are in size from 100 to 1,200 gallons of capacity.

The use of the potholer in Russell RWD 3 was very helpful. It reduced damages immensely as the trench required for the new gas main was immense compared to phone and fiber installations. In

small water districts and cities. Only a few contractors and larger cities have them. I had the opportunity to assist a small city with an interconnection with a water district. The contractor had a home-made potholer that he had fabricated with a vacuum pump and tank used to clean septic systems and a gas powered pressure washer. This was mounted on a trailer with a water

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## Potholing water lines . . .

supply tank. The city needed to expose an area to repair known leakage. However, because of phone and gas lines in the immediate area, the potholer was a tremendous asset in removing soil around the main to locate the phone and gas line. The main was pressured up and the leak was in a tapping saddle on the main and very easy to see. Enough soil was removed to repair this leak and a backhoe was not needed.

When assisting Russell RWD 3 in locating a main line (which was on the opposite side of the road where the map indicated it was), I suggested they contact that contractor who had the homemade potholer. I suggested the district might use it to make accurate locates for additional gps mapping points.

The water district contacted a utility implement dealer who supplied a small trailer potholer that could be moved with a pickup. Water district operator

Nuss called me the day it arrived; we used the potholer to locate a main that hadn't been seen since it was installed. With witching rods, we spotted two trench lines. In less than 15 minutes we exposed

**We also used the potholer to excavate a valve box and relocate it to better access the valve also in about 15 minutes. Both jobs were completed using about 250 gallons of water and couple gallons of gas. That was a lot more economical than hiring a backhoe.**

the line with a hole five feet deep and 1.5 feet in diameter. We also used the potholer to excavate a valve box and relocate it to better access the valve also in about 15 minutes. Both jobs were completed using about 250 gallons of water and a couple of gallons of gasoline. That was a lot more economical than hiring a backhoe.

If your system has a utility project ahead and the location of the mains is something of a mystery, a potholer may be something to consider to reduce the time required to make locates

and potential damage to utilities. The units come in a variety of sizes and options and it is important to have the right unit for the project.



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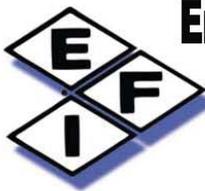
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