

Phillipsburg Successfully Pigs Transmission Line

This photo shows the rusty deposit inside a segment of the 8-inch pipeline connecting some of the wells owned by the city of Phillipsburg. Notice the finger marks in the deposit.

Scott Robertson, Public Works Director at Phillipsburg, contacted me in 2010 to explain that the pumping efficiency on the East Glade well field had been changing, requiring longer operating times to fill the city's reservoir. He provided pumping rates and pressure readings from the prior year.

After visiting with Randie Shea, Public Works Foreman, and Kent Footh, Water Treatment Plant Foreman, we verified that head pressure on the system was in excess of 80 psi when the well pumps were operating – and production was reduced by nearly half of what it was in the prior year. Operating pressure had typically been in the 40 psi range; the city's reservoir is at nearly the same elevation as the well field. The city operated up to five wells to meet peak demands to fill their 'East Reservoir.'

I suggested that given the increased operating pressure and reduced pumping rate, that a pigging of the mainline might be in order. In the past when this pipeline had been opened for various reasons, workers had noticed excessive buildup of iron inside the pipe.

Phillipsburg's East Glade Well Field is located in the North Fork of the Solomon River and consists of six wells that are normally used. These wells are located in a diagonal pattern with more than five miles of 8-inch C-900 and steel pipeline. This main also crosses the river.

Let's pig?

It was decided that the main be opened at these five well locations and that we pig the mainline from well to well, and then to the reservoir. I was nervous to try to pig any more distance because the actual location of the main is not known. In the past, pigging projects I have worked on have encountered complications such as reductions in pipe size, pipelines with very heavy deposits, half-closed valves and elbows – all that can impede or stop a pig. It is no treat to be involved in a pigging project to have a pig be caught up somewhere in a pipeline and not know where it is located. Several cattle water taps along this line however would provide locations where the pressure could be monitored in case of a “stuck pig”; those pressure readings would help us trace down the problem.

I suggested that we start each run with a poly swab. We would monitor the pressure from the well pump and the changes after the pig would exit. The first run was a straight line; it would involve one river crossing with just a little more than one mile of pipeline. After opening the pipe, we found about 3/8-inch of rusty deposit, coating the pipe all around; it was soft and easy to remove by just wiping a finger through it. So we decided to begin with the most aggressive pig that we had; we used a poly bear style pig. The bear was difficult to insert into the pipeline. We removed a three-foot section of pipeline, got the pig inserted and reconnected the line using mechanical joint couplers. Phillipsburg has and maintains a swimming pool, the city has powdered calcium hypochlorite on hand. I suggested we add about a pound per run of each pig to help with the removal of the iron buildup. We ran the poly bear through three times; the greatest amount of material was removed on the first run. With the pumping rate of only thirty to forty gallons per minute, the process took several hours. The highest pressure reached was 80 psi. When the well field was test run no improvement was noted.

At the second segment, we started with a swab and it exited fairly uneventful; there was an increased flow rate. We moved up to the next segment of the well field, repeating the pigging process. Much additional rusty settlement was removed from the pipeline. After the line was pigged from Well #3, the

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The exit of the first pig is always an exciting time. In this case, a great amount of iron deposit was removed.

operating pressure showed a notable reduction. After a sixth run of a pig through the pipeline, water production was back to 100 percent of the original.

The pigging project at Phillipsburg required three workers five days to complete. The production rate was increased from 200 gpm to close to 600 gpm; the operating pressure is only slightly more than 40 psi, depending on the number of wells

operating at the same time.

As mentioned earlier, there was only 3/8-inch of buildup inside the pipeline, however, I suspect that greater amounts had settled in the low lying areas of the pipeline. The well field is now on line and supplying Phillipsburg with water at an adequate rate.. The pigging project can be conducted again in the future if needed. Even the same pigs can be used as they were not damaged with this first use.

The Kansas Rural Water Association appreciated the opportunity to work with the crew at Phillipsburg. The benefit to the city is two-fold: adequate water and reduced

energy costs for pumping. I encourage you to contact KRWA if you wish to have a discussion about a public water supply issue; KRWA staff have a variety of experience that likely can be of help.



Public Works Foreman Randie Shea and Water Treatment Plant Foreman Kent Footh pose for this photo of the pipeline pigs used to clean transmission lines at the city of Phillipsburg.

Doug Guenther has worked as Technical Assistant for KRWA for 11 years. Doug worked for the City of Oakley in the Water and

Electric Department for 8 years. He has also worked several years for an industry supplier. He is a Class II Certified Water Operator.

