



## THE ELUSIVE "SILVER BULLET"

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Smoke testing can prove to be frustrating at times. Setup after setup resulting in broken cleanout caps, maybe a loose vent riser, but nothing that really explains the increase in flow during and after a rain event or snow melt. That frustration can be compounded if the homeowners have house traps installed on their laterals. Smoke won't pass by the trap, so identifying illegal connections such as sump pumps and roof drains/eaves troughs becomes almost impossible. The silver bullet if you will, that obvious storm sewer cross connection that you can point to and say "thar she blows! That explains all that extra flow!" remains elusive.

That was the case when smoke testing was conducted in the Village of Pulaski earlier in 2020. Four days of smoke testing was scheduled, two days in June and two days in July. Most of the homeowner laterals had house traps installed. The first two days in June were rather uneventful. The areas targeted were areas that saw increases in pump station run times. Several broken cleanout caps and loose vent/house trap risers were identified, and one residence had smoke coming out from the basement. After initially inquiring about what that meant, the homeowner disappeared and would not answer the door, so further investigation of the basement was not possible. All in all, those first two days were frustrating and even led to some discussion about cancelling the second round of smoke testing. Ultimately the decision was made to continue with the smoke testing.

The first day of the second round of smoke testing began in early July and yielded similar results as the first two days in June. A few broken cleanout caps, a loose vent/house trap riser here and there, nothing really noteworthy. The days smoke testing did reveal some "lost manholes" on a section of sewer main that ran through a rather thickly wooded area, so there were some positive points.

The fourth and last day of smoke testing seemed to start out as the past three. The blower was set up on the first section and smoke was introduced. Again, a broken cleanout, then another, then an eaves trough! Finally, something of significance. It was only one but, hey, it was something. The elusive silver bullet showed up on the very next setup. Almost immediately smoke began pouring out of storm sewer catch basins in a parking lot, as well as from catch basins along the side of a factory. Those catch basins were located directly in the drip line, collecting every bit of rainwater that the factory roof shed. This find truly explained the pump station overflows and elevated pump run times.

Another storm sewer cross connection was found on one of the village's side streets, as well as a severely leaking lateral before the smoke testing was wrapped up. The entire village was not smoke tested, but the information collected over the course of four days provided the engineer plenty of data to include in his report.

The elusive silver bullet was eventually found in Pulaski. But those smaller, seemingly inconsequential issues, broken cleanouts and loose vent/house trap risers should not be discounted. While a broken cleanout alone may not warrant much attention, several in an area can contribute a substantial amount of inflow and infiltration. Remember, when smoke testing, all collection system compromises matter. 💧💧

