

## **Caveland Environmental Authority Installs First All-Polyethylene Water System in Kentucky**

*Caveland, Kentucky*

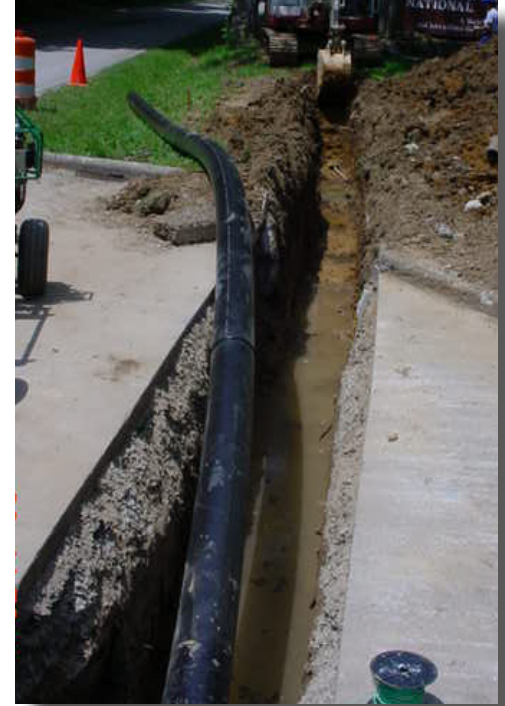
Mammoth Cave National Park, located in central Kentucky, was established to accomplish one goal: to preserve the intricate cave system, which includes Mammoth Cave and the surrounding Green and Nolin rivers. It is the most extensive cave system in the world and consists of over 350 miles of mapped and surveyed passageways. People have been touring Mammoth Cave since 1816; it is the most-visited tourist destination in Kentucky today. Nearly 600,000 people visit Mammoth Cave every year.

### **Background**

Caveland Environmental Authority, based in nearby Cave City, Kentucky, owns and operates the water system for Mammoth Cave National Park. The original system, which had been in place since 1948 and was made of cast iron pipe, was extremely corroded and in dire need of replacement. The park was experiencing extreme amounts of unaccounted water with this old system—approximately 60-70 percent line loss.

One of David Peterson's, CEO of Caveland Environmental Authority, main goals was to install a leak-free system. Having worked with ISCO on other projects before, Peterson knew HDPE would be the best solution to his problems. In 1988 ISCO supplied Caveland Environmental Authority with pipe for a nine-mile sewer force main. This project was such a success, Peterson was anxious to use HDPE again. Since HDPE pipe is fused together, there are no joints to fail and would provide him with a complete leak-free system and give him a solution to his line-loss problem. Together, ISCO salesman Rick Hart and Peterson worked together to design the most efficient and effective water system for the park.

In addition to the severe water loss problem the park was experiencing, the Federal Park System will not allow selective backfill around the pipelines inside the park. Again being familiar with HDPE pipe, Peterson knew it was the best solution to his problem. By using HDPE he was able to eliminate the bell joint and replace it with the fully restrained fuse joint. The flexibility of the pipe and the ductile properties of HDPE also made it perfect for this application.



*Water main in Mammoth Park with no selective back fill.*



*Caveland employees joining HDPE pipe using the butt-fusion method.*



*Final installation of a fire hydrant on the large water main next to the 6" main for drinking water.*



*Long runs of HDPE pipe before installation which helped with traffic disruption.*

## The ISCO Solution

There were two water lines installed on this project, a 12-inch and a six-inch. The 12-inch was required to provide adequate flow for the fire protection system. Due to the low seasonal demand for potable water in the winter months, the low flow in the 12-inch could have created some water-quality problems. Therefore, a second smaller six-inch line was added for the potable water requirement. This line was critical to the daily functions of the park; this water went to the visitor's center, the park's hotel, permanent homes in the areas, the science and research center and also seasonal quarters. Without this system, the park would be inoperable.

One unusual part of this project was also supplying potable water to the "Crystal Dining Room," a restaurant inside the cave. Caveland installed 380 feet of pipe down into the cave 160 feet. Throughout the installation process, special steps were taken to ensure the integrity of the cave was never jeopardized.

Since Mammoth Cave is such a popular tourist destination, installing the system proved to be quite an ordeal. The system was installed over the course of a year and was in full swing during the summer months—the busiest time of year for the park. Since HDPE pipe can be fused in long lengths and then pulled into place, Caveland was able to break the installation into sections, expediting the installation process and disrupting traffic the least.

Caveland successfully dealt with hundreds of cars each day and Mammoth Cave's new water system was installed without a hitch.

Once the system was completed, Senator Mitch McConnell had this to say at the ribbon-cutting ceremony, "Preserving the water quality for not only the people who live here, but also for the cave itself is absolutely essential in protecting one of the great wonders of the world. We're going to continue to work on upgrading the sewer systems around here and try to improve the water quality in the cave."

ISCO is proud to supply the first all-polyethylene water system in Kentucky and to give Mammoth Cave, which has such a rich history in the state, a leak-free system that will last them into the next century.