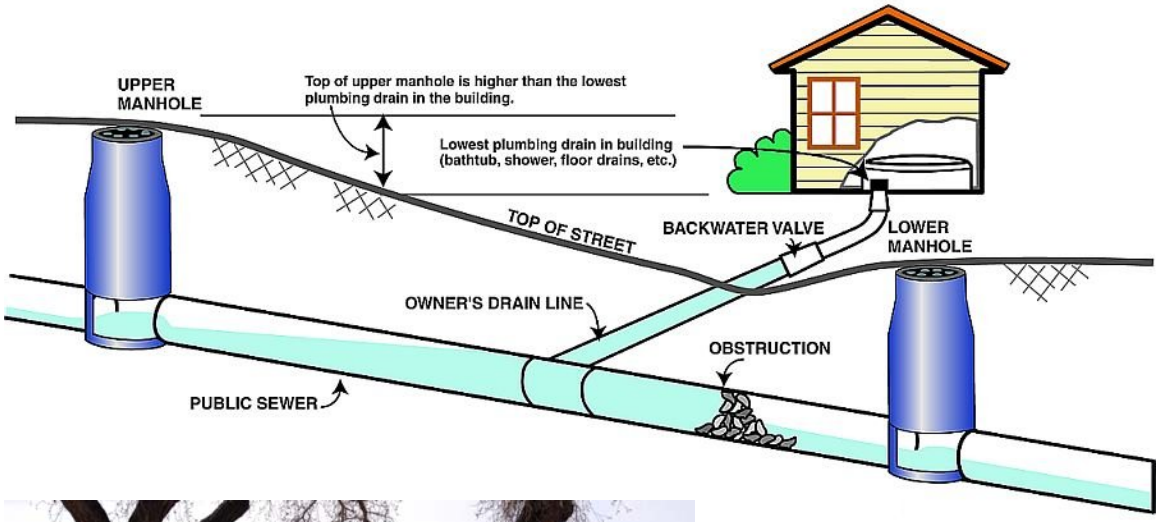
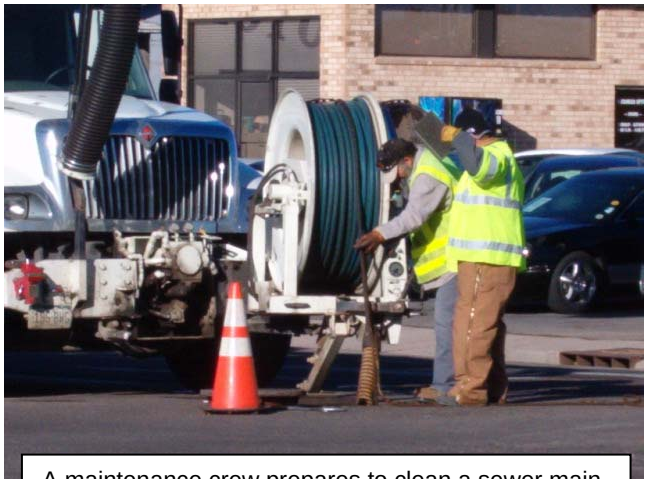
Sewer Main Cleaning and Maintenance

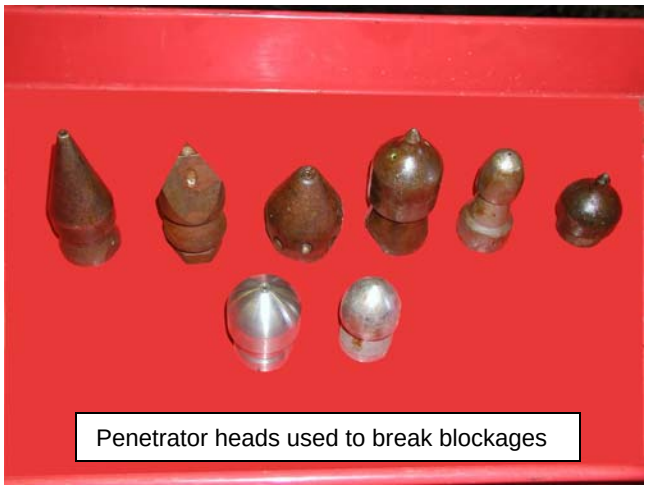
The Collection Division cleans a different section of sanitary sewer mains every day. Wastewater flows by gravity from its point of origin to the Water Reclamation Facility. Wastewater from residences contains solid materials that are heavy enough to settle out if the wastewater does not flow swiftly. Some areas of Pueblo are flat. When the slope of a sewer main is flat rather than steep, the water flow slows down and solids can fall to the bottom of the pipe where they begin to accumulate. Over time this can lead to a blockage of the sewer main, and wastewater will either overflow from a manhole or back up into a building.



Sewer maintenance is performed using trucks that provide high-pressure water to scour materials attached to the walls of the sewer main and to remove heavier solids that settle to the bottom of the sewer main.

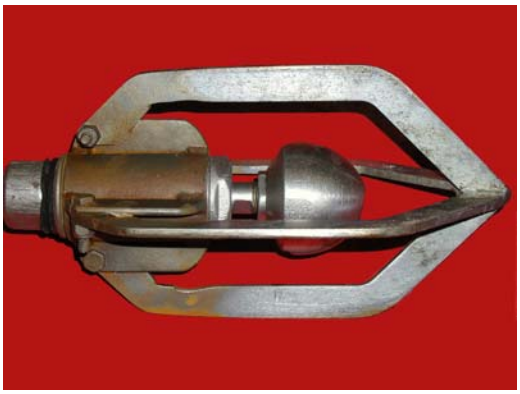


A maintenance crew prepares to clean a sewer main

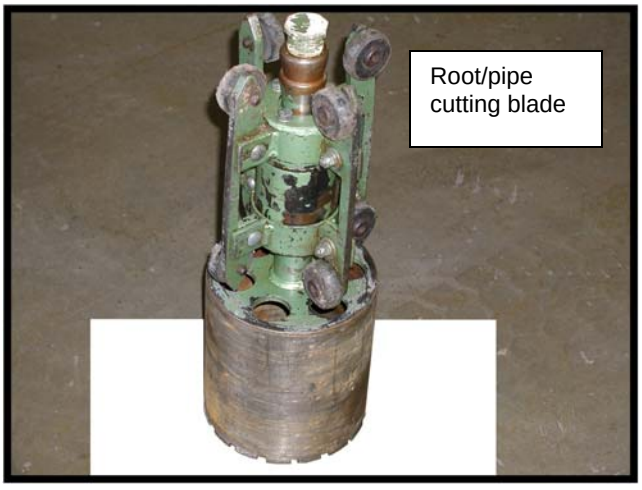


Penetrator heads used to break blockages

A variety of cleaning heads are used for special purposes. Nozzles in a cleaning head can direct a high-pressure stream of water forward to break up a blockage, to the sides to scour materials off the walls of the pipe, or toward the bottom of the pipe to move heavy debris that has settled. High-pressure water can also be used to drive blades capable of cutting through roots or intruding pipes, or chain cutters used for dislodging hard deposits like hardened grease, rust, or mineral scale. The materials that are removed during the cleaning process flow to the next downstream manhole where they are removed from the sewer main by a powerful truck-mounted vacuum. The materials removed from the sewer main are transported to the Water Reclamation Facility for disposal. Liquids are combined with raw wastewater and run through the treatment process. Solids are mixed with the grits and screened materials from the Water Reclamation Facility and landfilled.



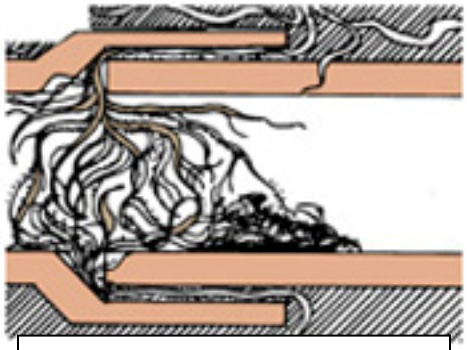
Chain cutter



Root/pipe cutting blade

ROOTS

Roots present a problem in sewer mains. Many of Pueblo's sanitary sewers were constructed with vitrified clay pipe. Clay pipe is sturdy and resists corrosion. However, until recently, clay pipe had no type of gasket to provide a tight seal between one length of pipe and the next. Roots from trees and bushes seek water, and when they are able they invade sewer mains to tap the water supply. Roots inside a sewer main create obstacles to flow. Solids carried in wastewater can become caught on roots and, over time, this leads to a blockage of the sewer main. Roots often enter the City's sewer main through service lines that connect private homes to the main.



Roots infiltrate a sewer service line through joints in clay pipe

Root ball removed from a sewer main

GREASE

Grease is another source of trouble in sanitary sewer mains. Animal fats from cooking are sticky. When poured down a sink drain, hot grease is liquid and appears to present no problem. However, grease cools quickly in the sewer main and sticks to the walls of the pipe. More grease and other materials add themselves to the mix, and a sewer main blockage can be the result. Grease and roots together are a powerful combination and can turn into a sewer blockage within only a couple of months. With over 470 miles of sewer mains to maintain, the Wastewater Department needs at least two years to clean the entire system. As a result, even small amounts of grease from households or restaurants can create major problems in the sewer system.

High-pressure cleaning head scours grease from a sewer main

FOG (fats, oil and grease) from cooking, both in homes and in restaurants, is a major source of sewer blockages nationwide. The Environmental Protection Agency and the Colorado Department of Public Health and Environment are considering regulations to require more stringent controls on sources of grease entering sanitary sewers.

Grease and root plug from a sewer main