



Root Control

Duke's utilizes Razorooter®, a herbicide-laden, thick foam the consistency of heavy shaving cream. Since effectively killing roots in sewer systems requires access to the entire line, Duke's crew inserts a hose from manhole to manhole. The hose releases and sprays the foam in all directions, allowing it to adhere to roots and penetrate through wye connections to kill roots even in lateral lines. The entire system is treated as the foam compresses against pipe surfaces and penetrates cracks, joints and connecting sewers. Roots are killed on contact inside and outside the pipe walls, decay naturally and slough away, with regrowth delayed for two to three years. Trees and other above ground vegetation are not harmed.

Alternative Solutions: Expensive, Disruptive & No Guarantee

Replacing or lining a pipe is another option; however, it is expensive, can be disruptive and doesn't guarantee the thirsty roots won't find their way through the pipe once again. Mechanical root removal involves physically cutting away roots, which can damage pipes and lead to thicker regrowth, often requiring more frequent cutting.

Regardless of the method used, the best root control program is one that minimizes damage and costs through regular, proactive maintenance. Duke's exclusive root control product is translocated up the roots with each application. This preventive maintenance prolongs the life of pipes, providing substantial cost savings in the long run.



“Duke's solves maintenance problems. I have worked with them directly for many years on several projects, and I've seen the exceptional results firsthand. I have personally entered manholes where we had up to 80% blockage caused by large root masses. After the Duke's application, I re-entered one year later, and the roots were completely decayed. I'm so confident in Duke's products and services that I refer them directly to my municipal clients.”

– Jim McGregor, PE
Hatch Mott McDonald



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Partnering in Asset Management

Duke's has been called in on countless consent decrees to help reduce overflows quickly and gain back much needed capacity. Our crews act as another resource in your arsenal to meet even the toughest mandates for capacity assurance and I/I abatement.

Duke's treatments are effective on the largest roots in your system, but treating smaller roots before there are issues is the key to asset management. We have clients that started treating over 40 years ago and those segments are still an asset to this day.

Case in Point: Rooting Out SSOS

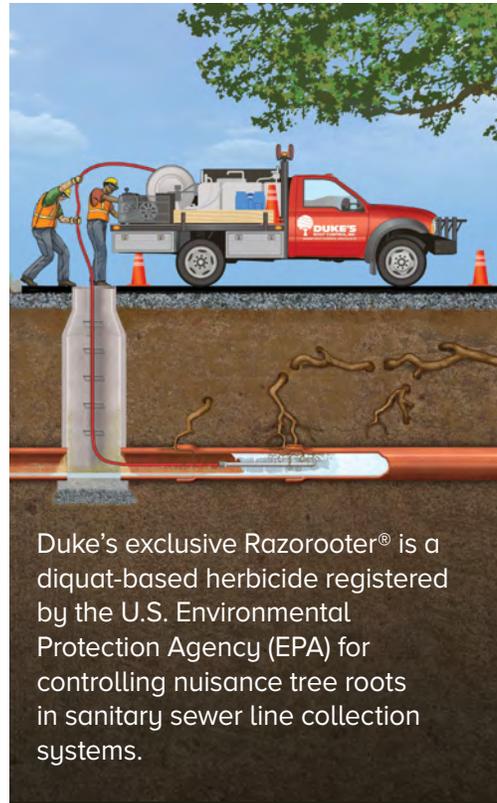
Virginia Beach Department of Public Utilities Management

400 pumping stations, 1,800 miles of gravity pipe and 190 miles of force mains

VA Beach needed a proactive Management, Operation and Maintenance (MOM) Program to determine the cause of stoppages and overflows, maintenance history, the work process and system characteristics. Inspections and thorough analysis showed that grease and roots were the No. 1 and 2 listed causes of SSOs. Duke's Razorooter pilot program was initiated.

Results:

- Instantaneous ROI via reduced frequency of SSOS after implementation of the MOM program.
- 1st year of formal root control program: the number of SSOS dropped over 30 percent and have continued to drop substantially every year since.
- Taking an O&M approach as opposed to a "Find and Fix" mentality, all things being equal, over 20 years, the cost would be about \$157 million, significantly less than the nearly \$400 million estimated for a traditional once-and-done solution that would likely require a reinvestment 20 years down the road.



Duke's exclusive Razorooter® is a diquat-based herbicide registered by the U.S. Environmental Protection Agency (EPA) for controlling nuisance tree roots in sanitary sewer line collection systems.

"The comprehensive MOM program, which includes a sizeable root control effort, is a prime example of a success story that can be shared with other similar communities. It documents capacity assurance results and reductions in SSOS, which was our primary goal, without high cost of implementing traditional I&I reduction efforts. We now have a good, solid foundation, fewer environmental impacts and a process to continually get to the cause — grease and roots — instead of our previous reactionary approach to clean when the stoppages occurred. We have made great strides."

— Aaron K. Nelson, P.E., VP
Brown and Caldwell