

Expanding Your Inspection Toolbox: The Benefits of Sonar in Sewer Inspections

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As communities invest in smarter and more cost-effective infrastructure maintenance, the need for comprehensive and accurate sewer system assessments continues to grow. While CCTV remains the foundation of internal pipeline inspection, it has one critical limitation, it cannot see below the waterline. This is where sonar inspection technology becomes an essential complement, offering valuable insights in environments where visibility is limited, debris is heavy, or flow conditions make standard inspection methods ineffective.

WHAT IS SONAR INSPECTION?

Sonar, or Sound Navigation and Ranging, uses sound waves to map the interior geometry of a pipe, focusing especially on the submerged portion that CCTV cannot capture. In sewer applications, a sonar head emits acoustic pulses outward. A receiver then measures the time it takes for those pulses to return. These signals are translated into a cross-sectional visual profile of the submerged environment, allowing operators to detect silt accumulation, debris, and pipe wall irregularities that are hidden below the flow line.

KEY BENEFITS OF SONAR TECHNOLOGY IN SEWER INSPECTION

Inspects Where Cameras Cannot See

In many systems, especially large-diameter interceptors, siphons, and outfalls, pipes may be partially or fully surcharged, making visual inspection difficult or impossible. Sonar allows operators to assess conditions beneath the water surface, identifying sediment buildup and capacity restrictions that traditional CCTV would miss.

Enhances Condition Assessment Accuracy

Sonar is particularly effective in large-diameter sewers, typically 24 inches and larger, where flow levels often remain too high for a full CCTV inspection. When paired with CCTV and laser profiling, sonar completes the inspection picture. CCTV provides visuals of the above-water portion, laser profiling detects pipe degradation and ovality, and sonar captures the submerged conditions. This combination offers a full 360-degree view of the pipe's condition, enabling more accurate assessments and data-driven decisions for maintenance and rehabilitation. Sonar equipment can be deployed using floating platforms, crawlers, or tethered systems, making it adaptable to a variety of site conditions.

Quantifies Debris and Sediment

Sonar technology provides measurable data on debris volume and sediment accumulation. This information is essential for planning and prioritizing cleaning operations, estimating removal costs, and identifying persistent problem areas. With sonar, cleaning efforts can be targeted more effectively, reducing unnecessary work and increasing overall system efficiency.

Supports Asset Management and Capacity Planning

Sonar data can be integrated into asset management systems to monitor sediment levels over time, reveal trends, and support proactive maintenance planning. By identifying potential restrictions before they impact capacity, utilities can extend asset life, minimize overflows, and improve compliance with regulatory requirements.

When to Use Sonar

Sonar inspection is best suited for large-diameter interceptors, outfalls, and siphons where traditional CCTV is limited. It is especially beneficial in partially or fully surcharged pipes, in areas with chronic sediment accumulation, and for both pre- and post-cleaning assessments. Sonar is also valuable in evaluating Combined Sewer Overflows (CSOs) and Sanitary Sewer Overflows (SSOs), where understanding the submerged environment is critical to effective performance and maintenance planning.

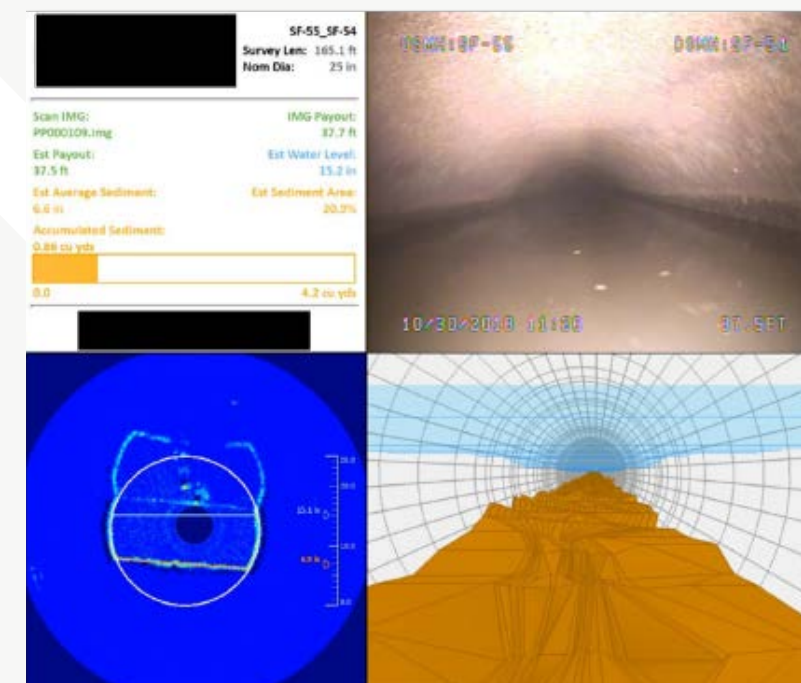
Integration with PACP™

When combined with NASSCO's Pipeline Assessment Certification Program (PACP), sonar enhances the depth and scope of sewer evaluations. PACP focuses on defects visible above the waterline, but sonar provides critical

observations below it. Many software platforms allow sonar data to be integrated with PACP codes, resulting in unified, standardized reporting that supports clearer communication and more informed decision-making.

Conclusion

Sonar is not a replacement for CCTV, but a powerful enhancement. Together, these technologies deliver a complete and detailed picture of sewer system conditions, leading to smarter maintenance strategies, more effective rehabilitation planning, and stronger long-term asset management. As collection systems become more complex and inspection challenges increase, adopting tools like sonar will be essential to maintaining reliable and sustainable utility services.



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