

Baltimore County Sees Significant Boost in Lab Productivity and Data Quality with Investment in Sample Master® LIMS

The move to lab automation has eliminated transcription errors, improved turnaround time and allowed staff to spend more time on analysis.

Organization Profile

Baltimore County, Maryland is the third-most populated county in Maryland, with a population of 828,431 in 2018. The county surrounds the City of Baltimore and is a mix of urban and rural landscapes. Baltimore County hosts a diversified economy with a strong emphasis on education, government and health care.

Baltimore County Government provides local services for the county residents and businesses. The Engineering and Regulation Division, which includes the Engineering and Regulation Laboratory (E&R Lab), is part of the Bureau of Utilities. The Laboratory staff includes the Laboratory Supervisor and four analysts. The mission of the Laboratory include the following:

- Working with the Engineering and Regulations Compliance Section to provide effective management and enforcement of the Division's Wastewater Monitoring and Analysis Program.
- Analyze and ensure drinking water for Baltimore County complies with drinking water standards set by the Maryland Department of the Environment (MDE).
- Analyzing wastewater samples collected from industrial and commercial users of the sanitary sewer system.
- Monitoring industrial waste discharges and determining compliance with permit conditions. The Laboratory provides results to other County agencies that allows them to manage their National Pollutant Discharge Elimination System (NPDES) permits and ensures that the wastewater discharges in the county are in compliance.
- The E&R Lab logs in approximately 200 samples a month, running 1,800+ tests. These samples cover wastewater, drinking water, stream and landfill monitoring.



Baltimore County Engineering & Regulation Laboratory Staff



baltimorecountymd.gov

“Moving from logbooks and a highly manual testing and reporting process to Sample Master® LIMS has made a huge difference in our lab's productivity and data quality. Moving to the LIMS has also resulted in less time entering data and more time doing analysis, something our staff really appreciates.”

Joyce Burch,
Environmental Laboratory Supervisor

Their Challenge

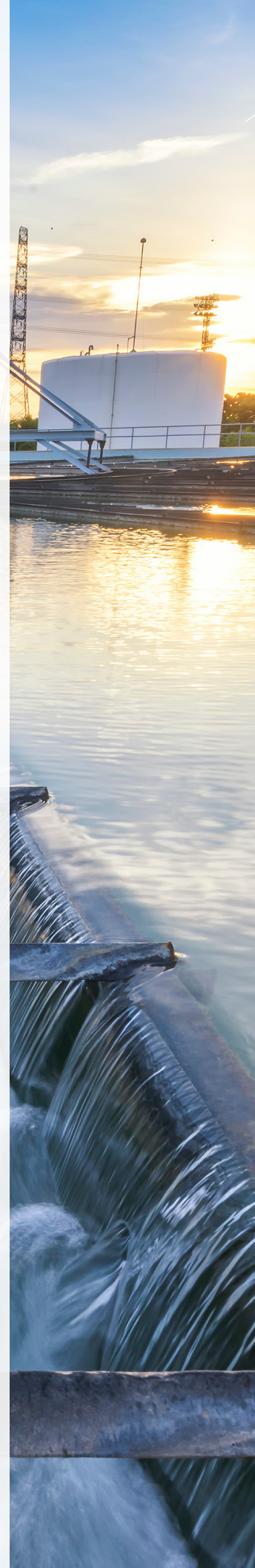
For many years, the Engineering and Regulations Laboratory accomplished their tasks using manual and low-tech tools beginning with the use of paper log books to login samples and test results. Eventually the lab staff graduated to using Microsoft Word to capture lab results and generate basic reports. All of these methods for documenting the analysis being performed in the lab was highly time-consuming and prone to human error.

Working in this environment presented the E&R Lab with many challenges including the following:

- In addition to manually entering lab results in logbooks and Microsoft Word, the lab analysts also manually entered the results from testing conducted on the laboratory's instruments. Again, this was a time-consuming process prone to transcription errors.
- The laboratory was responsible for providing result data generated in the lab and providing it to another group at Baltimore County for entry into their pretreatment software application. This meant that data was being hand-entered twice – again very time-consuming and with the risk of transcription errors.
- When logging in new samples, the lab would generate new sample numbers manually and manually write the numbers onto labels – a time-consuming and inefficient process.
- The E&R Laboratory generated a significant amount of paper, which created several problems. First, storage of paper files became a challenge, especially since some state regulations require keeping ten or more years of reporting. Second, if there was a need to conduct any type of investigation or audit and document the history of a sample test, it meant digging through these paper files.
- Conducting water analysis in this manual environment proved to be challenging in a number of ways. If a water sample tested above or below a defined control limit, there was no immediate method to indicate this potential out of compliance status. Also holding times for samples were not immediately generated, so the potential for a sample to be held beyond the allowable holding time was greater.
- The lab was responsible for landfill monitoring in Baltimore County and there were challenges to completing testing, analysis and reporting in a timely fashion and the department responsible for managing the landfills (Solid Waste Department) wanted the reports delivered more quickly so they could report their results to the State of Maryland.



Baltimore County Engineering & Regulation Laboratory



Our Solution

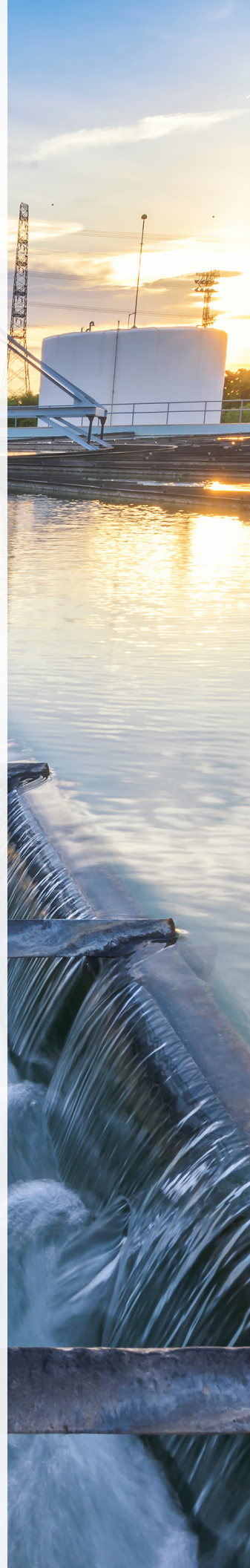
The previous laboratory supervisor had experience using a Laboratory Information Management System (LIMS) before coming to Baltimore County, so he knew the value of a LIMS and how it is critical to supporting a modern laboratory's operations. The lab team defined their LIMS requirements based on the challenges and pain points encountered due to their existing manual processes. It was clear to the team that these challenges could be addressed by lab automation with the LIMS at the center of the solution.

The lab evaluated several LIMS products and determined that ATL Sample Master® LIMS best addressed their needs and also had an interface that the lab considered user-friendly. Upon going live, the lab staff saw productivity and data quality gains immediately. ATL was asked to interface instruments in the lab to Sample Master. These included a GC/MS, ICP/MS, discrete analyzer and ion chromatograph (IC). Having result data flow directly from the instruments to Sample Master eliminated the time spent entering data manually as well as the associated transcription errors.

Another benefit provided by the move to Sample Master was the integration to Baltimore County's pre-treatment software. Previously, data was manually transcribed from spreadsheets – a very time-consuming process. Data from Sample Master now is transmitted to the pretreatment software, where quarterly reports are generated and sent on time to the State of Maryland.



Baltimore County Engineering & Regulation Laboratory



The E&R Lab has really taken advantage of Sample Master's reporting capabilities. They were able to easily modify the standard reports in Sample Master as well as create new reports when needed. As a result, the lab has been able to create a significant number of new internal reports to satisfy the data requests coming from a wide variety of county departments. The power of Sample Master's reporting has also allowed the lab to meet their regulatory reporting requirements. The ease in regulatory reporting also extends to discharge monitoring – quicker turnaround time on testing allows the lab to deliver data to the landfill monitoring group so they can complete their DMR report promptly.

One key metric that the lab tracks is a 30-day deadline for samples from log-in to disposal. In the past, the percentage of samples meeting this deadline was below the lab's goal due to inefficiencies created by their manual processes. Once Sample Master was implemented, turnaround time improved dramatically and now achieving the 30-day goal is regularly met.

From a staff perspective, moving to the LIMS has been a very positive experience. Lab productivity and data quality have increased significantly and using the LIMS has made the auditing process much easier.

And the team's morale has been helped by the fact that they are spending less time manually entering data and more time focused on sample analysis. It is clear to the lab that the investment in Sample Master has already paid dividends for Baltimore County and they are confident that its value to the organization will only increase over time.



Baltimore County Engineering & Regulation Laboratory

Accelerated Technology Laboratories (ATL), headquartered in West End, NC, provides laboratory automation solutions to a variety of industries from analytical, environmental, food & beverage, water and wastewater, chemical, government, public health, clinical testing and manufacturing. ATL's LIMS products are installed in over 600 laboratories around the world and supported by a steadfast commitment to excellence in product quality, support and training. ATL is one of the few LIMS providers that is ISO 9001:2015 certified. For additional information, visit: www.atlab.com.

