

CASE STUDY

PUERTO RICO DAM & EWS MODERNIZATION

Situation

The threat of flooding poses substantial risks to hundreds of thousands of residents and visitors, particularly due to the island's aging dam infrastructure. With climate change creating more extreme weather patterns, the need for state-of-the-art dam sensors and emergency alerting have become increasingly urgent. In the event of large water releases or catastrophic breaches, an effective solution was needed for real-time monitoring and critical notifications to protect communities and residents living near Puerto Rico's dams.

The Puerto Rico Electric Power Authority (PREPA) recognized the pressing challenge of ensuring public safety and effective emergency responses in the event of potential structural failures at 37 dams, many of which were built more than 70 years ago.



Problem

In 2017, hurricanes Irma and Maria caused severe flooding, and the Guajataca Dam experienced a breach that jeopardized nearby residents. While this critical event accelerated Puerto Rico's urgent need for dam monitoring and emergency alerting systems, the island faced significant financial challenges. In response, the Federal Emergency Management Agency (FEMA) provided funding to PREPA and Puerto Rico Emergency Management Agency (PREMA) to implement these vital public safety systems.



Solution

In 2018, FEMA and PREMA selected Genasys' ACOUSTICS outdoor warning system to provide emergency warning notifications to residents living near Guajataca Dam. The successful installation led PREPA to award Genasys a contract in 2024 to implement an expanded Emergency Warning System (EWS) across 37 dams. This comprehensive system includes multiple sensors collecting data on reservoir levels, spillway flows, local weather, and seismic activity. The EWS leverages the predictive analytics and real-time assessments of the Genasys Protect™ software platform, enabling real-time monitoring of all 37 dams from seven newly constructed emergency operation centers.



In the event of an emergency, this sophisticated system will empower emergency managers to issue multi-channel, life safety notifications to residents and visitors in at-risk areas.

Results

This collaboration is significantly enhancing public safety in Puerto Rico, safeguarding the well-being of residents and communities alike. The project, fully funded by FEMA, marks a pivotal step in modernizing the island's dam monitoring and emergency communication systems. With the installation of advanced sensors integrated with Genasys' EWS, PREPA will be better equipped to anticipate and respond to potential flood threats. Greater community resilience against natural disasters and operational integrity across Puerto Rico's vital municipal water storage infrastructure will also result from full EWS implementation.



Quote

"Utilizing advanced sensors and software, the Genasys Emergency Warning System (EWS) will enable Emergency Managers to rapidly communicate with residents and visitors that may be in harm's way in advance of potential structural failures. Through these alarm systems, people will be notified in case of emergencies such as extreme floods, controlled flood releases, or seismic activity, so they can take timely action to reduce disaster risks. Besides helping save lives and property, the EWS will strengthen disaster preparedness and risk reduction in the communities located downstream of each dam."

Josue Colon Ortiz, Executive Director of PREPA

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