DenseSludge™ Treatment Plant Enables Recreational Fishing
Mining | Case Study

The Client
The Pennsylvania Department of Environmental Protection (PA DEP), Bureau of Abandoned Mine Reclamation (BAMR) is responsible for resolving problems that have resulted from past coal mining practices, including mining-impacted water supplies, in accordance with the Surface Mining Control and Reclamation Act (SMCRA) of 1977.

The Client’s Needs
The water quality in Bennett Branch of Sinnemahoning Creek was impacted by Acid Mine Drainage (AMD) to the point that the stream could no longer support aquatic life. BAMR’s goal was to restore water quality to the main stem of Bennett Branch to a level that would sustain sport fishing between Hollywood and Caledonia, Pennsylvania. The AMD entered the stream from 20 discharge points, requiring an extensive collection and treatment solution.

The Solution
Veolia conducted treatability studies and developed a treatment process and system design utilizing DenseSludge technology to effectively treat the AMD. DenseSludge technology reduces sludge management costs and improves treatment plant operating efficiency. The process utilizes standard equipment combined with Veolia’s process expertise in sludge recycling techniques to form a heavier, denser sludge, reducing sludge generation by nearly 90%. Sludge from this process contains up to 25% solids as compared to 4% solids or less typically achieved by conventional processes, facilitating sludge disposal.

Veolia designed a centralized treatment facility near Hollywood, Pennsylvania, with provisions for sludge disposal in an abandoned mine. The facility treats up to 10 million gallons per day (MGD) of AMD and meets the requirements of Pennsylvania Code, Title 25 PA DEP Chapter 87 Subpart 102 - Hydrologic balance: effluent limits, Group A criteria plus aluminum, as required by BAMR. Due to a PA DEP reorganization, the plant is now operated by DEP’s Bureau of Conservation and Restoration.

For this project, Veolia partnered with Civil & Environmental Consultants, Inc. (CEC) for the design of the civil work, including design of the collection system, sludge disposal system, a polishing basin for the effluent and building architecture. Veolia’s work scope included the treatability studies, process design, equipment specifications, general plant layout, the basic mechanical design for the treatment plant, and electrical and instrumentation/controls for the entire project.

The process utilizes sludge recirculation.

The Benefits
• Recreational fishing has been restored.
• Sludge generation is reduced by 90%.
• The DenseSludge process incorporates sludge recirculation, which reduces lime usage and the associated cost.
• The sludge disposed in the mine contains less water, reducing the volume of water that returns to the mine pool for re-treatment.

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