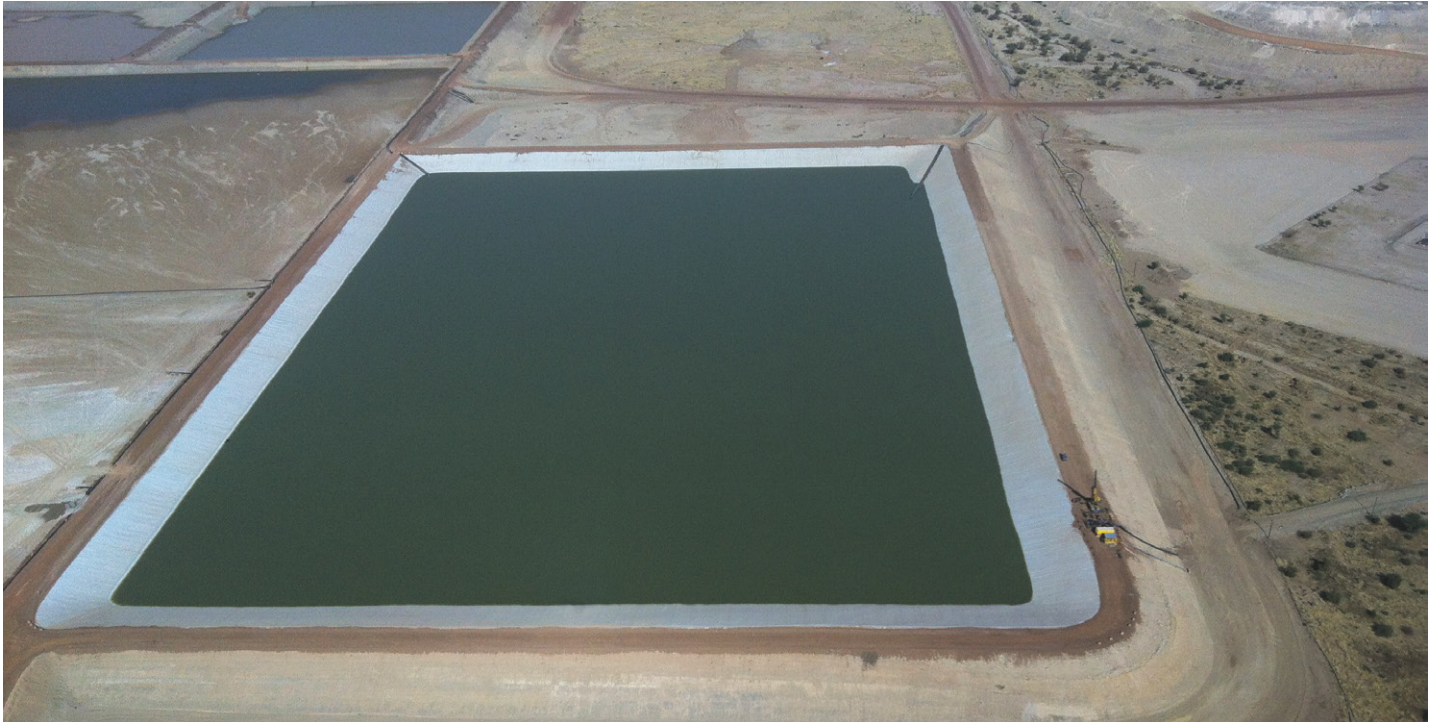


ESSAKANE RAW WATER RESERVOIRS, BURKINA FASO

Restoring raw water supply

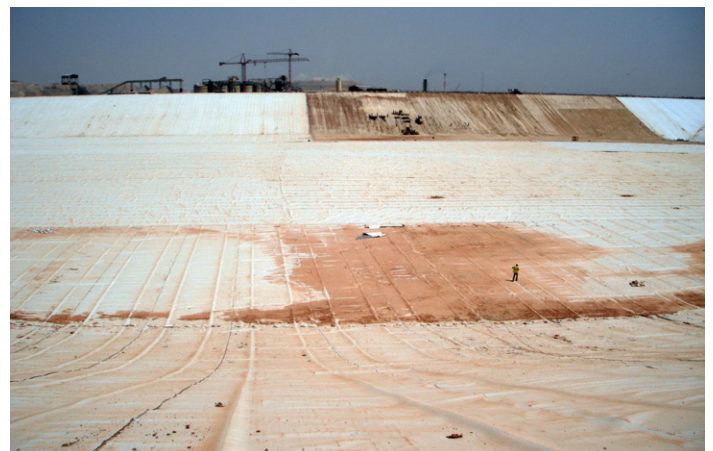


Industry: Mining
Application: Tailing Storage Facilities
Location: Burkina Faso
Product: GSE® HD

Taking into consideration future expansion plans, IAMGOLD Engineering and Construction determined the best strategy would be to build a new reservoir, bulk water storage (BWS) 3, to add capacity. Once BWS 3 was operational, the two existing reservoirs (BWS 1 and 2) would be lined to ensure a sufficient raw water supply.

Overview

In 2008, IAMGOLD acquired the Essakane Gold Mine in Burkina Faso, Africa, and quickly implemented mine, plant and support infrastructure. The plant process water was obtained from storage basins built from easily accessible, low permeability saprolite (clay) material. Operators soon discovered that the potential for seepage in the storage basins was more elevated than previously foreseen, which could hinder the mine's ability to meet production targets.



Studies showed that underperforming clay as a sole barrier could cause the reservoirs to lose water.

Challenge

Studies showed that underperforming clay as a sole barrier could cause the reservoirs to lose water. To address this issue, engineers designed a composite barrier consisting of low permeability local clay installed over a saprolite

CASE STUDY

Restoring raw water supply

base, followed by a 2.5 mm (0.98 in) thick white **GSE HD** geomembrane as the primary barrier.

The designers specified 2.5 mm white **GSE HD** geomembrane for several reasons. First, the light color helps prevent desiccation of clay liners, and white liners have a lower wave build up. Second, because the white surface reflects UV radiation, the liner temperature stays lower. This allowed the welding and installation to proceed uninterrupted, even in the hot Burkina Faso climate.

After researching their options, engineers chose Solmax's White **GSE HD** Geomembrane due to its proven track record of UV stability under similar conditions.

Challenge

Solmax manufactured and supplied nearly 700,000 m² (765,529 yd³) of white **GSE HD** geomembrane over the course of the 3-year project. In addition, Solmax's experienced engineers provided technical assistance during the design and installation phases of the project.

The entire project was completed in the fourth quarter of 2012. The installation schedule was tight, and the construction crew faced many challenges.

Burkina Faso has a rainy season from June-September and in order to maximize the pond's capacity, BWS 3 needed to be completed prior to the rainy season. This requirement reduced the installation period to just 8 weeks. Although BWS 2 was constructed during the rainy season, it was successfully completed on time. By the time construction began on BWS 1, the installation crew was so familiar with every aspect of the work that they completed the reservoir ahead of schedule.

The installation of a properly engineered composite barrier solved the water loss issue and increased the holding capacity of the three ponds.

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