

Dike S4 completes the main tailings containment system

Work has started on Dike S4. The structures remain stable and the Company is working on expanding the sediment retention capacity pursuant to the specified goals.

On 22 September, Samarco started building Dike S4, which is part of the emergency sediment retention system of the mining complex of Germano, in Mariana, Minas Gerais. The structure is considered top priority because of the upcoming rainy season, and its construction was authorized by Decree No. 500 of the State Government of Minas Gerais. The overall sediment retention system also includes dikes S1, S2 and S3, in addition to the Fundão Axis 1 and Nova Santarém dams.

Dike S4 is being built in the district of Bento Rodrigues, on a site defined by Samarco after a thorough technical study. In order to allow the Company to proceed with the construction, the government determined the administrative requisition of the land, which affects possession but not ownership. Samarco will transfer to the State the funds for compensation for the use of the area, according to the procedures to be defined by the government.

After the construction of Dike S4, part of the area already impacted in Bento Rodrigues will be flooded. The old stone wall in the district will be preserved by means of a protective enclosure built by the Company. The ruins of the São Bento chapel and the cemetery will not be flooded, nor the part of the district that was not impacted by the tailings slide.

S1, S2, S3, Nova Santarém and Axis 1

With Dike S4, Samarco concludes the main sediment retention system, which contemplates three other dikes, in addition to the Axis 1 and the Nova Santarém dams. All of these structures were created to expand, on an emergency basis, the sediment containment facilities within Samarco's property and recover those that were heavily impacted by the Fundão dam collapse in November 2015. The Company has been working around the clock to fast track the containment system works.

The first structures to be built along the Fundão creek were dikes S1 and S2, of smaller capacity, but which met the needs of the peak of the first rainy season, in January of this year. Dike S3 is a larger and more robust structure, and is currently being raised to expand its capacity by 800 thousand cubic meters.

In addition, Samarco is building the Nova Santarém dam. Work is already well advanced and the dam will have a spillway system.

In parallel with these emergency structures, Samarco is continuing work on the recovery of the Sela, Tulipa and Selinha dikes, located right in front of the Santarém dam.

The Company is also continuing with the construction of the structures designed to meet longer term needs. The installation of Axis 1 is one of them. This structure involves a dike, a dam and a spillway. The position of Axis 1 was chosen because it is right in the area of the old Fundão dam. The total capacity of Axis 1 will be around 20 million cubic meters, assuring the retention of the entire volume still contained within Fundão.

All of the current containment system structures in Germano are stable. The dams are being monitored in real time with radar and daily inspections. In addition, drones, laser scanning and existing geotechnical instrumentation are being used for technical evaluation. In the case of the Germano dam, readings are automatic, with online data acquisition.

Germano Sediment Containment System				
Dam/dike	Total capacity	Works	Factor of safety*	Status
Germano		Drainage work and erosion recovery	1.98	Capacity reached
Sela		Recovery and reinforcement of the dam structure	1.55	Concluded
Selinha			1.86	Concluded
Tulipa			1.59	Concluded
S4	1.05 million m ³	Construction	In progress	
S3	2.1 million m ³	Raising		Being raised to be able to handle 2.9 million m ³
S2	45 thousand m ³	Capacity reached		
S1	15 thousand m ³	Capacity reached		
Santarém	7.1 million m ³	Construction of spillway, dam structure and earth fill	2.23	Under construction

Axis I	20 million m ³	Barriers and spillway	Under construction
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*Data from September 2016.

About Samarco

Samarco has been in operation for 39 years. It has two operational units – Germano, in Mariana, Minas Gerais, where it mines the iron ore and beneficiates it using three concentrators, and Ubu, in Anchieta, Espírito Santo, where it has four pellet plants and its own port facility. These two units are linked by 3 pipelines of 400 km each, which cross 29 municipalities.

In 2015, the year of the Fundão dam break, Samarco produced 24.9 million tons, of which 97% were pellets and 3% were pellet feed. In that year, the Company was the 12th largest exporter of Brazil and generated 3027 direct jobs, of which 1736 in Minas Gerais and 1291 in Espírito Santo.

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