



JIBIYA DAM

Nigeria, 1987

PROJECT CHARACTERISTICS

Works: Earthfill dam, spillway, and intake tower, valve chamber

Purpose: irrigation and water supply

Dimensions:

- *height:* 23.5 m
- *embankment volume:* 2 000 000 m³
- *storage:* 142 300 000 m³
- *crest length:* 3 660 m
- *geomembrane liner:* 165 000 m²
- *spillway capacity:* 2100 m³/s

Watertightness: PVC geomembrane plus PP geotextile geocomposite on the upstream slope. Vertical plastic diaphragm at the upstream toe.

Materials:

- *foundation:* eolic sand, riverbed sand, gneiss, diorite;
- *embankment:* eolic sand.



PROFESSIONAL SERVICES PERFORMED

Planning and supervision of the investigation campaign, conceptual design, computations, construction drawings, assistance during construction and analysis of the dam behaviour.

Jibiya dam, designed in 1987 and completed in 1989, is located on Gada River, in the Katsina State, a sub-desertic region in North Nigeria. The upstream slope is set at 3H/1V and lined with a continuous geosynthetic liner tied to the top of a vertical, plastic diaphragm wall reaching into foundation rock. The diaphragm wall stops short of the dam's ends where it is replaced by a horizontal geomembrane blanket. The crest is 9 m wide and is set at 419.5 m a.s.l. say 23.5 m above the lowest foundation grade. The downstream slope is set at 2.5H/1V without berms and is completely protected by a rip-rap laid over a geotextile separator.

A toe drain runs along the toe of the slope collecting the slope rainfall as well as seepage discharges collected by the horizontal foundation drain and by relief wells.

A reinforced concrete culvert, 105 m long, crosses the dam providing access to the intake tower and the valve chamber.

The spillway, 143 m long has a design discharge capacity of 2 100 m³/s and is overpassed by a 9 span bridge.

