

West Bekaa Wastewater Treatment Project – Systems 1, 2 & 4

Country
Lebanon

Clients
Council For Development
And Reconstruction
Islamic Development Bank

Project Capital Cost
US\$53 Million

Services
Design Review
Construction Supervision

Main Trades
Architecture, Civil, MEP
and Environmental
Engineering

Project Time Frame
2003 – 2011



General View of The Bio Tank

Narrative Description

Karaoun Lake has longtime endured from massive water pollution. Since its construction in 1959, the lake has been a vital source of water and energy for the whole region.

Fed by the Litani River, the 11km² artificial lake irrigates 310km² of farmland in South Lebanon and 80 km² in the Bekaa Valley. The preservation of this national asset and the crisis of water scarcity looming on the horizon necessitated the creation of an effective wastewater collection system in addition to the implementation of two wastewater treatment facilities for the underprivileged West Bekaa region.

The Council for Development and Reconstruction (CDR) acting on behalf of the Lebanese Government commissioned Dar Al Handasah Nazih Taleb & Partners (DAHNT) in association with Montgomery Watson Harza – Arabtech Jardaneh (MWH) with providing comprehensive consultancy engineering services including Design and Construction Supervision Services for the West Bekaa Wastewater Project which is financed by the Islamic Development Bank (IDB).

The projet area covered the following villages: Soutane Yaacoub, Soutane Yaacoub El Tahta, Ed Dakoué, El Khiara, Ghazzé, Haouch El Harimé & Ej Jaziré, Joubb Janine, Mansoura, Deir Tahnich, Aita El Foukhar, Aazzé, Hammara (Manara), Kamed El Loz, Lala, Aammiq & Haouch Aamiq, Aana, Bab Mareaa, Kefraya, Kherbit Qanafar, Saghbine, and Tell Znoub & Tell Znoub El Jdidé.

The works were sub-divided into 2 lots, the first lot consisted of the construction of 4.700 reinforced concrete manholes for sewer pumping and gravity lines, laying and testing of sewer lines amounting to 200km ranging from 200mm to 600mm (ductile iron pipes, UPVC Pipes, concrete pipes, GRP pipes, welded steel pipes), construction of house connections, concrete casting for pipe works, filling and backfilling pipe trenches, repaving of pipe trenches & around manholes and construction of concrete pavement.

Lot 2 consisted of the construction of two treatment plants at Joub Jannine and Saghbine. The Joub Jannine plant was designed with a capacity of 10.000m³/day and the Saghbine plant with a capacity of 560m³/day.

Wastewater goes through a number of processes before it can be returned safely to the environment. The Treatment process consists of the removal of solid matter, then remaining liquid (effluent) is treated, before being discharged to river course. The solids (sludge) are also treated, and then taken to landfill; at every stage odour control is ensured.

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The project also included the construction and equipping of 9 pumping and lifting stations with flows up to 100L/s and heads up to 42m at Haouch El Harimé (2), Mansoura (1), El Khiara (1), Ghazzé (3), Manara (1), and Deir Tahnich (1).



Manhole Construction and Pipe Laying



Clarifiers Construction at the Saghbine Wastewater Treatment Plant



Excavation Works



Air Piping and Flow Boosters in Bio tank



Clarifier Scrapper



Automatic Fine Screen