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Potable Water Treatment

Adana / Turkey

The city of Adana / Turkey uses raw water from the Catalan Dam located 20 km north of the city to secure its potable water supplies.
This water requires treatment to meet the prescribed Turkish and European quality standards for drinking water.
The potable water treatment project will be realised in three phases. The Phase I treatment plant is designed to supply a water demand of 250 000 m³/d with all the provisions for the Phase II and III capacity extensions (another 250,000 and 500,000 m³/d respectively).

Bamag is an international EPC contractor for water and wastewater treatment plants as well as thermal processes. We design, supply and operate your plant.
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... the experts

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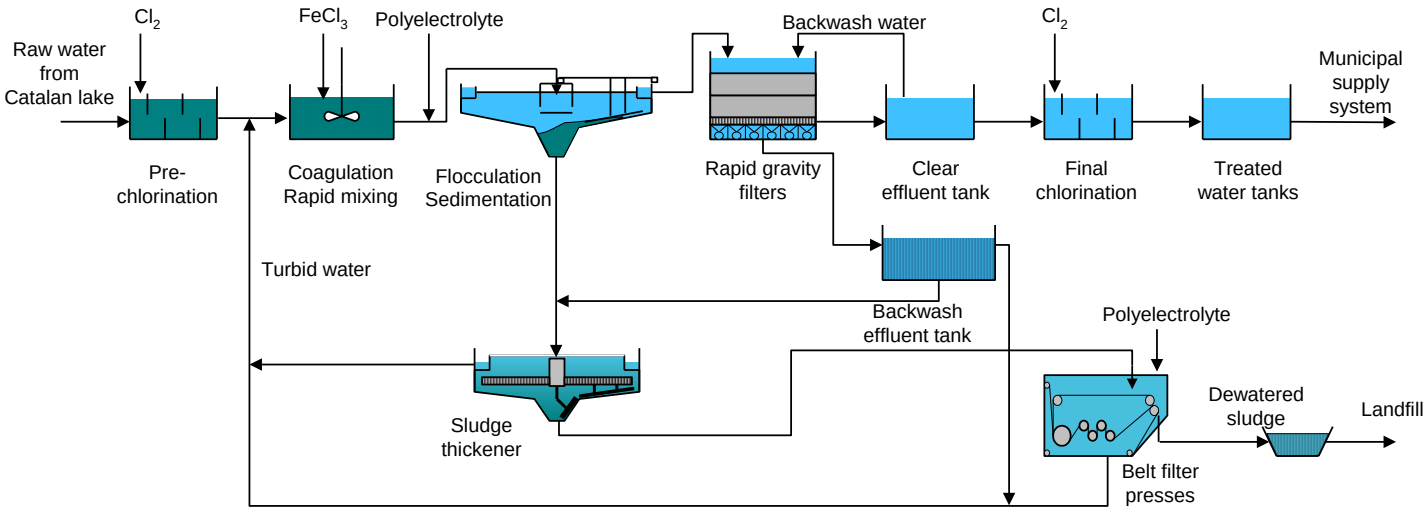

1. Objective

Treatment of potable water

- Design data

Source	lake
Throughput	250,000 m³/d
Max. throughput	275,000 m³/d
Total dissolved solids	292 mg/l
Suspended solids, max.	30 mg/l

- Treated water quality

pH	pHs+ 0.2
Colour	< 5 Pt-Co
Turbidity	< 0,4 NTU
Free chlorine	> 0.1 mg/l
Coliform organisms (MPN/100 ml)	0

2. Plant concept

- Process steps

Pre-chlorination, rapid mixing, flocculation, clarification, filtration through rapid gravity filters, final chlorination, backwash water and sludge treatment

- Brief description

A pipeline, 2.2 m in diameter, delivering the raw water from the lake discharges into a raw water distribution chamber. Chlorine is injected at the outlet of the distribution chambers. After the coagulation and flocculation steps, suspended solids settle in the combined sedimentation and flocculation unit.

The clarified water from the sedimentation tanks is routed to the filter unit via the clarified water channel. Filtration is accomplished in dual-media, rapid-gravity filters which operate in the down-flow mode and are equipped with nozzless M-block filter bottoms.

18 filters are arranged in two rows of nine filters standing face to face. The filters are of the single bed type. Water from the clarified water channel is led into each filter via an adjustable overflow weir which ensures uniform distribution of clarified water to all filters irrespective of fluctuations in the flow rate.

As solids build up in the filter bed during the filter run, the differential pressure across the filter bed rises, thereby compensating the head loss. When the differential pressure has reached a pre-set maximum level, filter backwashing is initiated. Filter backwashing serves the dual purpose of cleaning the filter bed of accumulated solids and loosening up the bed. Filter backwashing in water treatment applications typically comprises the following steps: air scouring - combined water wash and air scouring - water wash.

The filtered water discharging from the filters is led into the down-stream wash water holding tank.

At the outlet of the wash water holding tank, chlorine is added to the filtered water to prevent algae growth and provide final disinfection. From the treated water tank, the water flows by gravity to the balancing chamber.

The sludge from the clarifiers is pumped to the gravity thickener.

The turbid water flows by gravity to the filtrate tank.

The thickened sludge flows by gravity to the filter press building and is distributed to the sludge pumps of the belt filter presses. The de-watered sludge is transported by a belt conveyor out of the filter press building and discharged into containers.

3. Characteristic plant data

- 8 flocculation tanks

Ø	11.4 m
Water depth	4.7 m

- 8 settling tanks

Outside Ø	37.5 m
Clarification area	990 m²/tank

- Chemicals dosing station
- 18 rapid gravity filters

open submerged dual-media filters

Filter area	60 m²/filter

- 2 chlorination units

for raw and filtered water chlorination

- 2 contact tanks

Volume	5,250 m³/tank

- 2 treated water tanks

Volume	12,000 m³/tank

- 1 sludge thickener

Ø	14 m
Volume	550 m³

- 2 belt filter presses

DS content of dewatered sludge	25-30 %
Capacity	14 m³/h /press

- Chemical dosing units