

# Zikim WWTP cleanup using Geotube® technology

Case Study



- Client Kibbutz Zikim
- Planning Union of Water Engineers
- Management Kahalit Project Management Ltd.
- Execution Admir Environment, 2011



## The challenge:

In 15 years of activity at the Zikim WWTP, the pre-sedimentation lagoons developed a buildup of sludge that took up about 65% of the total volume. The sludge buildup significantly reduced the lagoons' active volume – thus reducing the staying and sedimentation time of wastewater in the facility.

To ease the load on the filtering system and improve water quality, the lagoons had to be cleared of the sludge accumulated while minimizing the sludge volume as much as possible – all without damaging the lagoon's waterproof lining, disrupting normal WWTP operations, or creating noxious odors.



## The solution:

To remove the sludge from the bottom and minimize it as much as possible, the chosen solution combined two technologies proposed by Admir:

- 1. Pumping out the sludge using a dredger
- 2. Sludge dewatering using Geotube®

### Execution:

#### The cleanup was carried out in several stages:

- Pumping out the lower sediment using a dredge.
- Mixing polymers into the sludge. The addition of polymers causes suspended particles to form into flocs, thus facilitating the filtering process.
- Pumping the sludge through pipes into the Geotube® systems. The filtered water flowed from the Geotube® back into the lagoons without need for further treatment.
- Leaving the material in the Geotube® for an additional period of dewatering and consolidation, during which the sludge's own weight pressed the filtrate liquids out of the Geotube®. Thus, the sludge's weight further decreased, and the sludge volume for removal became significantly lower.

### Results

- As per project requirements, the entire job was carried out without disrupting the WWTP's normal operations and without causing any noxious odors.
- In total, 8,000m³ of sludge were pumped out at an ~8% solid concentration.

#### Sludge dewatering progress over time

Percentage of solids in the sludge				
TS 105°	% of solids on the bottom before pumping	% of solids in the Geotube® after a week	% of solids in the Geotube® after three months	
	8%	14.3%	41%	

• The filtrate water flowing from the Geotube® during dewatering came out clear, and returned to the lagoons without any need for further treatment.

#### Percentage of contaminant removal

Percentage of contaminant removal				
	Sludge from the bottom	Filtrate water	% of contaminant removal	
COD	79590 mg/L	237 mg/L	99.7%	
BOD	2700 mg/L	35 mg/L	98.7%	









