

This questionnaire has been designed by a work team of the Technological Center CARTIF to obtain information about the wastewater treatment plant in the field of the MEDAWARE project - Development of tools and guidelines for the promotion of the sustainable urban wastewater treatment and reuse in the agricultural production in the Mediterranean countries

1 BASIC DATA OF THE WASTEWATER TREATMENT PLANT

Name:	Hoseen Abu Zaid	Position:	General Manager of Gaza WWTP
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1. Where is your local wastewater treatment plant located?

Address:	Gaza WWTP		
City:	Gaza	County:	Palestine
		State:	Gaza Strip
		Zip:	00972
Telephone number	2825165	Fax number	2824400
	2824700	E-mail address	gm@palnet.com

2. How many stages of treatment does your facility use?

Primary	<input checked="" type="checkbox"/>	<u>Sedimentation</u>
Secondary	<input checked="" type="checkbox"/>	<u>Aeration & Trickling Filter</u>
Tertiary	<input type="checkbox"/>	_____
Other	<input type="checkbox"/>	_____

3. What is the capacity of the treatment plant?

Liters per day (average)	<u>Designed 32,000 m³ holding capacity 42,000 m³</u>
Number of People and/or Employees	<u>15 persons</u>
Peak Daily Flow Estimate	<u>60,000 m³</u>

4. How is the sludge disposed of?

Burned	<input type="checkbox"/>	Landfill	<input checked="" type="checkbox"/>
Fertilizer	<input type="checkbox"/>	Other	<input type="checkbox"/>

5. Where does the treated wastewater go after it leaves the plant?River or Stream
Ocean Lake
Other **6. In what year was the plant built?**Gaza WWTO was built in 1977**7. Have there been any modifications of the plant in recent years?**

In 1986, the capacity was expanded to 12,000 m³/d with the construction of two additional ponds. The plant was rehabilitated in 1994 without any increasing in the capacity. In 1999, with USAID funding, the plant was expanded to a capacity of 32,000 m³/d and consisted of Anaerobic Ponds, an aerated pond, biotowers, an effluent polishing pond, disinfection, effluent pump station/force main and drying beds.

8. Are there any plans for additional improvements to the plant?

It was planned under the CAMP project was intended to expand the capacity of the existing plant from its present capacity of 32,000 m³/d to a project flow of 60,000 m³/d by year 2007.

9. Wastewater analysis information (influent)

Wastewater BOD	<u>256 mg/l (April 2005)</u>
Wastewater COD	<u>527 mg/l (April 2005)</u>
Wastewater Suspended Solids	<u>234 mg/l (April 2005)</u>

10. Treated water- Local government requirement - If known (effluent)

Wastewater BOD	<u>32 mg/l (April 2005)</u>
Wastewater COD	<u>94 mg/l (April 2005)</u>
Wastewater Suspended Solids	<u>53 mg/l (April 2005)</u>

2 WASTEWATER TREATMENT INFORMATION

11. Primary Treatment Processes

	<i>Processes</i>	<i>Size (if know)</i>	<i>Main operational problems (if exists)</i>
<input type="checkbox"/>	Bar or bow screen	_____	_____
<input type="checkbox"/>	Grit removal	_____	_____
<input checked="" type="checkbox"/>	Primary sedimentation	<u>Two ponds with total loaded 44,000 m³</u>	<u>Over loaded</u>
<input type="checkbox"/>	Comminution	_____	_____
<input type="checkbox"/>	Oil / fat removal	_____	_____
<input type="checkbox"/>	Flow equalisation	_____	_____
<input type="checkbox"/>	pH neutralisation	_____	_____
<input type="checkbox"/>	Imhoff tank	_____	_____
<input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/>	_____	_____	_____

12. Secondary Treatment Processes

	<i>Processes</i>	<i>Size (if know)</i>	<i>Main operational problems (if exists)</i>
<input checked="" type="checkbox"/>	Activated sludge	_____	_____
<input type="checkbox"/>	Extended aeration	_____	_____
<input checked="" type="checkbox"/>	Aerated lagoon	<u>38,000 m³</u>	_____
<input checked="" type="checkbox"/>	Trickling filter	<u>8,000 m³</u>	_____
<input type="checkbox"/>	Rotating bio-discs	_____	_____
<input checked="" type="checkbox"/>	Anaerobic treatment/UASB	<u>32,000 m³</u>	_____
<input type="checkbox"/>	Anaerobic filter	_____	_____
<input type="checkbox"/>	Stabilisation ponds	_____	_____
<input type="checkbox"/>	Constructed wetlands	_____	_____
<input type="checkbox"/>	Aquaculture	_____	_____
<input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/>	_____	_____	_____

13. Tertiary Treatment Processes

	Processes	Size (if know)	Main operational problems (if exists)
<input type="checkbox"/>	Nitrification	_____	_____
<input type="checkbox"/>	Denitrification	_____	_____
<input type="checkbox"/>	Chemical precipitation	_____	_____
<input type="checkbox"/>	Disinfection	_____	_____
<input type="checkbox"/>	(Direct) filtration	_____	_____
<input type="checkbox"/>	Chemical oxidation	_____	_____
<input type="checkbox"/>	Biological P removal	_____	_____
<input type="checkbox"/>	Constructed wetlands	_____	_____
<input type="checkbox"/>	Aquaculture	_____	_____
<input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/>	_____	_____	_____

14. Advanced Treatment Processes

	Processes	Size (if know)	Main operational problems (if exists)
<input type="checkbox"/>	Chemical treatment	_____	_____
<input type="checkbox"/>	Reverse osmosis	_____	_____
<input type="checkbox"/>	Electrodialysis	_____	_____
<input type="checkbox"/>	Carbon adsorption	_____	_____
<input type="checkbox"/>	Selective ion exchange	_____	_____
<input type="checkbox"/>	Hyperfiltration	_____	_____
<input type="checkbox"/>	Oxidation	_____	_____
<input type="checkbox"/>	Detoxification	_____	_____
<input type="checkbox"/>	_____	_____	_____
<input type="checkbox"/>	_____	_____	_____

Other comments

- The over loaded of treatment plant from the essential problem is the treatment plant it mainly influence the efficiency of the treatment process.
- The disinfection unit in the TP is done with using Sodium Hypochlorite , although all units related are not working since the Hypochlorite are expensive and hard to be obtain.

3 CONTROL AND MONITORING SYSTEMS

15. Which are the most critical process parameters that may affect the efficiency of the wastewater treatment plant?

<i>Parameter</i>	<i>Process</i>	<i>Current Automatic Control?</i>	
<input type="checkbox"/> Wetwell levels	On-off pumping	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input checked="" type="checkbox"/> Sludge depth	Primary treatment	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Solids Retention Time (SRT)	Conventional activated sludge	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Dissolved oxygen concentration	Conventional activated sludge	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<input type="checkbox"/> Return flowrate from the clarifier	Conventional activated sludge	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input type="checkbox"/> Internal recycle	Biological nutrient removal	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input type="checkbox"/> Methanol feed rate	Biological nutrient removal	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input type="checkbox"/> Air / solids ratio	Dissolved air flotation thickening	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input checked="" type="checkbox"/> Sludge depth	Gravity thickening	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<input type="checkbox"/> Belt speed	Gravity belt thickening	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input type="checkbox"/> Chemical dosage rate	Chemical addition for water-solids separation	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input type="checkbox"/> Chlorine dosage rate	Chlorination	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input type="checkbox"/> Flow rate	Influent, effluent	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
<input type="checkbox"/> Chemical parameters	Treatment processes	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/>	No <input type="checkbox"/>
<input type="checkbox"/> _____	_____	Yes <input type="checkbox"/>	No <input type="checkbox"/>

16. In your opinion, what are the main problems with the control system of the wastewater treatment plant?

The operation of the treatment plant processes is not automatically controlled. All the unit are opened and switched off by hand.

17. In your opinion, what treatment processes / parameters should be monitored / controlled automatically?

- If it possible all the machine process should be automatically controlled.
- General parameters could be monitored automatically which indicate the general performance of the treatment plant.

If you have any questions about this document, please contact us by e-mail at yolnun@cartif.es

Thank you for you collaboration.