

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: <u>Jamal Al-Riati</u>	Position:
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1. Where is your local wastewater treatment plant located?

Address: <u>Aqaba W.W.T.P</u>			
City: <u>Aqaba</u>	County: <u>Jordan</u>	State:	Zip:
Telephone number <u>0795602521</u>	Fax number	E-mail address	

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

Primary	<input checked="" type="checkbox"/>	_____
Secondary	<input checked="" type="checkbox"/>	_____
Tertiary	<input checked="" type="checkbox"/>	_____
Other	<input type="checkbox"/>	_____

3. What is the capacity of the treatment plant?

Liters per day (average)	<u>11940 x 10³ l/day</u>
Number of People and/or Employees	<u>25</u>
Peak Daily Flow Estimate	<u>13352 m³/day</u>

4. How is the sludge disposed of?

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

The sludge disposed to AHAQ farm.

5. Where does the treated wastewater go after it leaves the plant?

River or Stream Lake
Ocean Other To irrigate
the date farms, forestry trees

6. In what year was the plant built?

1987

7. Have there been any modifications of the plant in recent years?

The plant was changed from natural to mechanical plant in 2005.

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

Non

9. Wastewater analysis information (influent)

Wastewater BOD	<u>580 mg/l</u>
Wastewater COD	<u>1631 mg/l</u>
Wastewater Suspended Solids	<u>438 mg/l</u>

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

Wastewater BOD	<u>26 mg/l</u>
Wastewater COD	<u>273 mg/l</u>
Wastewater Suspended Solids	<u>292 mg/l</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 checked="" type="checkbox"/>	Bar or bow screen	_____	_____
<input checked="" type="checkbox"/>	Grit removal	_____	_____
<input type="checkbox"/>	Primary sedimentation	_____	_____
<input type="checkbox"/>	Comminution	_____	_____
<input checked="" 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 type="checkbox"/>	Activated sludge	_____	_____
<input checked="" type="checkbox"/>	Extended aeration	32000 m ³ /2 aerated pomp	_____
<input type="checkbox"/>	Aerated lagoon	_____	_____
<input type="checkbox"/>	Trickling filter	_____	_____
<input type="checkbox"/>	Rotating bio-discs	_____	_____
<input type="checkbox"/>	Anaerobic treatment/UASB	_____	_____
<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

	<i>Processes</i>	<i>Size (if know)</i>	<i>Main operational problems (if exists)</i>
<input checked="" type="checkbox"/>	Nitrification	_____	_____
<input checked="" type="checkbox"/>	Denitrification	_____	_____
<input type="checkbox"/>	Chemical precipitation	_____	_____
<input checked="" type="checkbox"/>	Disinfection	_____	_____
<input checked="" 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

	<i>Processes</i>	<i>Size (if know)</i>	<i>Main operational problems (if exists)</i>
<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

- We use the treated wastewater for industry and landscaping purposes
- Can we use the treated wastewater in agriculture (for irrigation) since the quality of treated water is good.
- About the sludge: we store it until now (The plant was changed from natural to mechanical plant in 2005) and if there any ideas about how can we use it in agriculture (as a fertilizer) or how can we deposit it without any negatives to nature.

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 type="checkbox"/> Sludge depth	Primary treatment	Yes <input type="checkbox"/> No <input type="checkbox"/>
<input checked="" type="checkbox"/> Solids Retention Time (SRT)	Conventional activated sludge	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<input checked="" type="checkbox"/> Dissolved oxygen concentration	Conventional activated sludge	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<input checked="" type="checkbox"/> Return flowrate from the clarifier	Conventional activated sludge	Yes <input checked="" 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 type="checkbox"/> Sludge depth	Gravity thickening	Yes <input type="checkbox"/> No <input 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"/> _____	_____	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"/>
<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 lake of experience for the separation and for the maintenance of the plant. Plant manager and his staff must be well trained to keep every controlling parameter under control as per design according to the weather condition.

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

D.O, Return sludge rate, excess sludge rate chlorination or disinfection system

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

Thank you for you collaboration.