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**WASTEWATER & PRE-POTABLE WATER SAMPLING RESULTS AND ONEWATER®
TREATMENT PROCESS VALIDATION REPORT.**
**COMPANY: WASTE & WATER TECHNOLOGIES, LTD LOCATED IN THE MUNICIPALITY
OF Reus (SPAIN).**

WASTE & WATER TECHNOLOGIES, LTD.
Falset Av., nº 6
REUS (Tarragona-SPAIN)

REPORT # 43-43-M06-1-004193

Date: 21st January 2015

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1. BACKGROUND.

At the request of the company **WASTE & WATER TECHNOLOGIES LTD**, ECA, SL Unipersonal proceeded to perform sampling control and validation of the treatment system designed by **WASTE & WATER TECHNOLOGIES LTD**, and located in the town of Reus, SPAIN.

2. PURPOSE.

The purpose of this report is to show the results obtained through the sampling carried out with **Onewater®** treatment system designed by **WASTE & WATER TECHNOLOGIES LTD** during the validation process, which included:

- Input water sampling.
- Verification of water treatment and filtration processes.
- Sampling of treated water.
- Analysis of samples.

2.1. Description of Validated Treatment System

Onewater® treatment system for polluted wastewater is based on the use of polarizers acting by means of magneto-electric induction.

The process is based on the arrangement of the polarizers in a specific design, in which a low voltage and reduced intensity electric field is applied to, and coupled to a permanent magnetic field. During the process, polluted water is submitted to the influence of these polarizers during a specified time. This process causes electrical destabilization of polluting species, by way of reduction and oxidation, intensified by the magnet-hydro-dynamics effects. The result is the separation of water pollutants without adding additives or reactants.

As a result of treatment process, sludge is generated, being physically removed from water during the treatment.

Once water is treated in the above process, it is filtered with filtering paper of 40-50 µm, zeolite and sand mixed bed. In the case of drinking water, water is also filtered through an activated carbon bed.

3. SCOPE

Treatment and sampling of wastewater and pre-potable water was made on 22nd December 2014, at the headquarters of **WASTE & WATER TECHNOLOGIES, LTD** Company, in Reus.

Two separate treatment processes were carried out:

- Treatment process for polluted drinking water.
- Treatment process for urban wastewater

Pre-potable (drinking) water inlet had artificial pollution, and wastewater inlet came from an urban WWTP.

Water samples were introduced into different containers according to the laboratory analysis that were performed later. Samples were kept refrigerated until its delivery to the laboratory **LABAQUA, SA** (laboratory accredited by the ACA, Nr. 109 / LE983 according to UNE-EN ISO / IEC 17025: 2005 CGA-ENAC-LEC).

4. RESULTS

Human Consumption Water				
Sampling Date		Reference sample		
12-22-2014		Input Sample: 63/B9/M06/1		
		Output Sample: 63/B9/M06/2		
Analysis before treatment		Analysis after Onewater® treatment		Efficiency
Parameter	Concentration (units)	Parameter	Concentration (units)	(Removal, %)
Arsenic	0,86 mg/l	Arsenic	0,0326 mg/L	96,21 %
Total Chromium	0,97 mg/l	Total Chromium	< 0,0010 mg/l	> 99,90 %
Chromium (VI)	0,918 mg/l	Chromium (VI)	< 0,005 mg/l	> 99,46 %
Colour	34 mg/l Pt/Co	Colour	< 1,0 mg/l Pt/Co	> 97,06 %
Taste	No abnormal taste (Dilution index)	Taste	No abnormal taste (Dilution index)	-
Conductivity 25°C	848 µS/cm	Conductivity 25°C	229 µS/cm	73,00 %
Hardness	36,0 °F	Hardness	5,3 °F	85,28 %
Calcium	99,3 mg/l	Calcium	16,1 mg/l	83,79 %
Magnesium	27,2 mg/l	Magnesium	3,1 mg/l	88,60 %
pH	7,6	pH	9,3	-
Potassium	4,2 mg/l	Potassium	15,2 mg/l	-
Sodium	49,2 mg/l	Sodium	19,6 mg/l	60,16 %
Bicarbonate	202,3 mg/l	Bicarbonate	66,6 mg/l	67,08 %
Carbonate	< 2,0 mg/l	Carbonate	16,3 mg/l	-
Chloride	53,8 mg/l	Chloride	25,5 mg/l	52,60 %
Nitrate	9,1 mg/l	Nitrate	< 0,5 mg/l	> 94,51 %
Sulphate	178,1 mg/l	Sulphate	52,6 mg/l	70,47 %
Total Iron	22 µg/l	Total Iron	17 µg/l	22,73 %

Urban wastewater				
Sampling Date		Reference sampling		
12-22-2014		Input Sampling: 63/B9/M06/3		
		Output Sampling: 63/B9/M06/4		
Analysis before treatment		Analysis after Onewater ® treatment		Efficiency
Parameter	Concentration (units)	Parameter	Concentration (units)	(Removal, %)
Fats and oils	2,7 mg/l	Fats and oils	0,28 mg/l	89,63 %
Ammonium	61,6 mg/l	Ammonium	12,3 mg/l	80,03 %
Conductivity 25°C	2220 µS/cm	Conductivity 25°C	1273 µS/cm	42,66 %
BOD ₅	150 mg/l	BOD ₅	24 mg/l	84,00 %
COD	258 mg/l	COD	63 mg/l	75,58 %
Nitrogen Kjeldahl	62,4 mg/l	Nitrogen Kjeldahl	14,1 mg/l	77,40 %
pH	7,9	pH	9,4	-
Suspended solids	96 mg/l	Suspended solids	8 mg/l	91,67 %
Chloride	268,5 mg/l	Chloride	237,8 mg/l	11,43 %
Sulphate	182,5 mg/l	Sulphate	58,9 mg/l	67,73 %
Total Phosphorous	6,5 mgP/l	Total Phosphorous	< 0,1 mgP/l	> 98,46 %

And for the record, this report of process validation and sampling analytical results is signed.



Montserrat Madurell i Malapeira
Geology Graduated

Tarragona, 21st. january 2015



With the consent



Àngels Álvarez
Head – Environment Operations Unit