

LABORATORY ANALYSIS REPORT

No. 11040505-2

ABOUT QUALITY OF UNDERGROUND WATER

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Belgrade, June 3, 2021

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INTRODUCTORY NOTES:

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- The test results refer only to the submitted sample, except when Anahem doo Belgrade performs sampling.
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- Anahem doo Belgrade disclaims responsibility for the validity of the results for the presentation of which the data obtained from the user were used.

1 INTRODUCTION, OBJECTIVE AND PURPOSE OF THE REPORT

Introduction:

Based on Offer no. 71040501 dated 04/06/2021, ANAHEM d.o.o. performed sampling on 05/27/2021, and then the physical and chemical analysis of water from piezometers at the location: The area of the municipality of Zrenjanin, locations in the vicinity of the future wastewater treatment plant.

Test objective:

Groundwater was sampled as part of the monitoring of certain environmental parameters for the project of construction of a wastewater treatment plant. Examination of the state of water from piezometers was performed by comparing the measured values with the prescribed limit values (GV).

User information:

DVOPER d.o.o. is a company for environmental protection and sustainable development that provides consulting and engineering services in the field of environmental protection and management of its resources. Prepares expert studies of a wide range of activities as well as project-technical and other documentation: Environmental impact assessment studies of certain projects, Strategic environmental assessment studies of certain plans and programs, Waste management plans (local, regional, national, as well as plans for economic entities), Reports on environmental assessment and safety at work.

2 SAMPLING MARKINGS AND SAMPLING LOCATIONS

Sampling of water from piezometers was performed at the location of the municipality of Zrenjanin at the following points, according to the request of the customer:

No.	Sample label	GPS coordinates	
1.	1104050509 - PZ-1	N 45°20'45.10"	E 20°25'10.26"
2.	1104050510 - PZ-2	N 45°20'52,44"	E 20°25'20,73"

GROUNDWATER SAMPLING SITE Macrolocation:



The test sites are located on the eastern edge of the settlement of Mužlja as well as on the western border of the industrial zone "Ečka-Jugoistok" located on the right side of the main road Belgrade-Zrenjanin. Measuring points are defined by the request of the client and based on the project EISA ZRENJANIN.

3 LABEL AND DESCRIPTION OF THE SAMPLE

Sampling was performed on 05/27/2021, Sampling was performed in accordance with the standards SRPS EN ISO 5667-1, SRPS ISO 5667-3, SRPS ISO 5667-11 i SRPS EN ISO 19458. The following figures show the sampling locations.

Sample marked 1104050509, (PZ-1)



Sample marked 1104050510, (PZ-2)



4 MEASURING PROCEDURE AND TYPE OF MEASURING DEVICES

ATOMIC EMISSION SPECTROMETER (ICP-OES)

Manufacturer	THERMO SCIENTIFIC - USA
Model:	iCAP 6500 Duo
Serial number:	IC5D20125009
inventory number:	3022211



Flame atomic absorption spectrophotometer (metals)

Manufacturer	Perkin Elmer USA	Karakteristike
Model:	AAAnalyst 100	Opseg: As: 0.5-10 µg/l Hg: 0.5-10 µg/l Talasna duzina: As: $\lambda = 193.7 \text{ nm}$ Hg: $\lambda = 253.7 \text{ nm}$
Serial number:	04059100103	
inventory number:	3103002	



UV-VIS SPECTROPHOTOMETRE

Manufacturer	Perkin Elmer USA
Model:	Lambda 40
Serial number:	101N0032402
inventory number:	7080831



BOD OXITOP

Manufacturer	WTW GERMANY
Model:	Oxitop 18 BOD
Serial number:	/
inventory number:	4012903-27



ION CHROMATOGRAPH	
Manufacturer	DIONEX USA
Model:	DX-500
Serial number:	932011
inventory number:	7080810



TOC Zellweger labTOC 2100	
Manufacturer	Z Zellweger UK
Model:	LabTOC2100
Serial number:	000101
inventory number:	7080812



COD	
Manufacturer	HACH USA
Model:	Hach Cod
Serial number:	/
inventory number:	7080820



GC-MS/MS	
Manufacture	Thermo Fisher Scientific USA
Model:	TSQ 8000 TripleQuad. GC-MS/MS
Serial number:	713201275
inventory number:	4032311



5 REPORTS ON RESULTS OF GROUNDWATER TESTING

R. Br.	Metoda ispitivanja	Parametar ispitivanja	GRV ¹	1104050509	1104050510
1.	EPA 170.1:1974 ³	Water temperature (° C)	/	22,8	23,3
2.	DML 2.16: 2016	Air temperature (° C)	/	24,0	24,0
3.	ISO 10304-1:2007	Nitrates (NO ₃ -), mg / l	50 ²	<0,05	<0,05
4.	SM 4500CN	Cyanides, µg / l	1500	<10	<10
5.	SRPS ISO 6439:1997	Phenol index, ug / l	2000	<1,0	<1,0
6.	ISO 9377-1	Mineral oils, µg / l	600	<100	<100
7.	SRPS EN ISO 11885:2011	Beryllium, µg / l	15	<10	<10
8.	SRPS EN ISO 11885:2011	Cobalt, South / l	100	<10	<10
9.	SRPS EN ISO 11885:2011	Copper, µg / l	75	<10	<10
10.	SRPS EN ISO 11885:2011	Zinc, µg / l	800	<50	<50
11.	EPA 200.9:1994	Lead, South / l	75	<10	<10
12.	SRPS EN ISO 11885:2011	Chromium, µg / l	30	<10	<10
13.	EPA 200.9:1994	Cadmium, µg / l	6	<0,5	<0,5
14.	SRPS EN ISO 11885:2011	Nickel, µg / l	75	<10	<10
15.	SRPS EN ISO 11885:2011	Molybdenum, µg / l	300	<10	<10
16.	SRPS EN ISO 11885:2011	Tellurium, mg / l	70	<50	<50
17.	SRPS EN ISO 11969:2009	Arsenic, South / l	60	110	90
18.	EPA 200.9:1994	Antimony, µg / l	20	<10	<10
19.	SRPS EN ISO 11885:2011	Thallium, µg / l	7	<7	<7
20.	EN ISO 12846:2012	Mercury, South / l	0,3	<0,3	<0,3
21.	SRPS EN ISO 11885:2011	Tin, South / l	50	<50	<50
22.	SRPS EN ISO 11885:2011	Silver, µg / l	40	<20	<20
23.	SRPS EN ISO 11885:2011	Vanadium, µg /	70	<10	<10
24.	EPA 8021 B:1996	Benzene, µg/l	30	<1,0	<1,0
25.	EPA 8021 B:1996	Toluene, µg/l	1000	<1,0	<1,0
26.	EPA 8021 B:1996	Ethylbenzene, µg/l	150	<2,0	<2,0
27.	EPA 8021 B:1996	Xylenes, µg/l	70	<0,50	<0,50
28.	EPA 8021 B:1996	Styrene, µg/l	300	<2,0	<2,0
29.	EPA525.2/625:1994	Aldrin, µg/l	0,1	<0,01	<0,01
30.	EPA525.2/625:1994	Atrazine, µg/l	150	<0,01	<0,01
31.	EPA525.2/625:1994	DDD/ DDE/DDT total, µg/l	0,01	<0,01	<0,01
32.	EPA525.2/625:1994	Endosulfan (I, II) µg/l	5	<0,01	<0,01
33.	EPA525.2/625:1994	Chlordane, µg/l	0,02	<0,01	<0,01
34.	EPA525.2/625:1994	Heptachlor, µg/l	0,3	<0,01	<0,01
35.	EPA525.2/625:1994	Heptachlor epoxid, µg/l	3	<0,01	<0,01
36.	EPA525.2/625:1994	Anthracene, µg/l	5	<0,05	<0,05
37.	EPA525.2/625:1994	Benzo(a)anthracene, µg/l	0,5	<0,1	<0,1

¹GRV- Decree on limit values of polluting, harmful and dangerous substances in the soil ("Official Gazette of RS", No. 30/2018 and 64/2019, Annex 2: remediation values of polluting, harmful and dangerous substances in the aquifer)

²GV, Uredba o graničnim vrednostima zagađujućih materija u površinskim i podzemnim vodama i sedimentu i rokovima za njihovo dostizanje (Sl. Glasnik RS, br. 50/2012, prilog 1, tabela 1, 2 i 3).

38.	EPA525.2/625:1994	Benzo(a)pyrene, µg/l	0,05	<0,01	<0,01
39.	EPA525.2/625:1994	Benzo(b)fluoranthene, µg/l	0,05	<0,05	<0,05
40.	EPA525.2/625:1994	Benzo(g,h,i)perylene, µg/l	0,05	<0,05	<0,05
41.	EPA525.2/625:1994	Benzo(k)fluoranthene, µg/l	0,05	<0,05	<0,05
42.	EPA525.2/625:1994	Chrysene, µg/l	0,2	<0,1	<0,1
43.	EPA525.2/625:1994	Fluoranthene, µg/l	1	<0,08	<0,08
44.	EPA525.2/625:1994	Indeno(1,2,3-cd)pyrene, µg/l	0,05	<0,05	<0,05
45.	EPA525.2/625:1994	Naphthalene, µg/l	70	<0,01	<0,01
46.	EPA525.2/625:1994	Phenanthrene, µg/l	5	<0,08	<0,08
47.	Polychlorinated biphenyl (PCB)		0,01		
48.	ISO 6468:1996	2,4,4'-trichlorobiphenyl, µg/l	/	<0,01	<0,01
49.	ISO 6468:1996	2,2',5,5'-Tetrachlorobiphenil,	/	<0,01	<0,01
50.	ISO 6468:1996	2,2',4,5,5'-Pentachlorobiphenil,	/	<0,01	<0,01
51.	ISO 6468:1996	2,2',3,4,4',5'-Hexachlorobiphenil, µg/l	/	<0,01	<0,01
52.	ISO 6468:1996	2,2',4,4',5,5'-Hexachlorobiphenil, µg/l	/	<0,01	<0,01
53.	ISO 6468:1996	2,2',3,4,4',5,5'-	/	<0,01	<0,01
54.	EPA 8021B:1996	Trichlorethylene, µg / l	500	<0,50	<0,50
55.	EPA 8021B:1996	Tetrachlorethylene, µg / l	40	<0,05	<0,05
56.	EPA 8021B:1996	Vinyl chloride, µg / l	5	<1,0	<1,0
57.	EPA525.2/625:1994	Monochlorophenol (total), µg / l	100	<0,1	<0,1
58.	EPA525.2/625:1994	Dichlorophenol (total), µg / l	30	<0,2	<0,2
59.	EPA525.2/625:1994	Trichlorophenol (total), µg / l	10	<1,0	<1,0
60.	EPA525.2/625:1994	Tetrachlorophenol (total), µg / l	10	<1,0	<1,0

6 STATEMENT OF CONFORMITY³

Comparing the physico-chemical test results of groundwater samples with the maximum permitted LIMIT VALUES (GV) prescribed by the Regulation on limit values of polluting, harmful and hazardous substances in soil ("Official Gazette of RS", No. 30/2018 and 64/2019, Annex 2 : remediation values of pollutants, harmful and dangerous substances in the aquifer) and maximum permitted values according to the Regulation on limit values of pollutants in surface and groundwater and sediment and deadlines for their achievement (Official Gazette of RS 50/2012), the following can be concluded :

- the quality of the tested samples, at the time of sampling was NOT COMPLIANT with the Regulation on limit values of polluting, harmful and dangerous substances in the soil ("Official Gazette of RS", no. 30/2018 and 64/2019, Annex 2: remediation values of polluting, harmful and hazardous substances in the aquifer), due to exceeding the concentration of arsenic.

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Date

**Controlled and approved by:
Head of laboratory for water analysis**

Belgrade, June 3, 2021

Cveta Đukić, master chemist

³ Applied decision rule: binary system of simple decision-making, ie "shared risk" defined on the anahem.org website.