



CERTIFICATE OF ANALYSIS

Work Order	: PR2499765	Issue Date	: 29-Aug-2024
Customer	: VISA - Consultores de Geologia Aplicada e Engenharia	Laboratory	: ALS Czech Republic, s.r.o.
Contact	: Mr. Joao Meira	Contact	: Client Service
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Project	: ----	Page	: 1 of 4
Order number	: ----	Date Samples	: 22-Aug-2024
		Received	
		Quote number	: PR2023VISAC-PT0001 (PT-300-23-0144)
Site	: ----	Date of test	: 22-Aug-2024 - 29-Aug-2024
Sampled by	: customer	QC Level	: ALS CR Standard Quality Control Schedule

General Comments

This report shall not be reproduced except in full, without prior written approval from the laboratory. The laboratory is not responsible for the sample data supplied by the customer and their impact on the validity of the result.

The laboratory declares that the test results relate only to the listed samples. If "ALS" is not included in the test report in the "Sampled by" section, then the results refer to the sample as received.

Sample(s) PR2499765/001, method W-PAHGMS04 - LOR for particular sample(s) raised due to matrix interference.

Sample(s) PR2499765/001, 002, Method W-PAHGMS05: The sample(s) contained particles. The sample(s) was (were) decanted prior to analysis.

Responsible for accuracy

Testing Laboratory No. 1163
Accredited by CAI according to
CSN EN ISO/IEC 17025:2018

Signatories

Lubomír Pokorný

Position

Country Manager



The company is certified according to ČSN EN ISO 14001 (Environmental management systems) and ČSN ISO 45001 (Occupational health and safety management systems)



Analytical Results

Sub-Matrix: WATER

Client sample ID
Laboratory sample ID
Client sampling date / time

				CORTA		SUBT1		----	
				PR2499765001		PR2499765002		----	
				[20-Aug-2024]		[20-Aug-2024]		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU
Microbiological Parameters									
Coliform Bacteria	W-COLIF	-	CFU/100mL	620	----	8500	----	----	----
Enterococci	W-ENTCO	-	CFU/100mL	31	± 30.0%	53	± 30.0%	----	----
Thermotolerant coliform bacteria	W-TCEC	-	CFU/100mL	8	----	1100	----	----	----
Escherichia coli	W-TCEC	-	CFU/100mL	8	----	800	----	----	----
Physical Parameters									
Electrical Conductivity @ 25°C	W-CON-PCT	0.10	mS/m	31.9	± 10.0%	32.5	± 10.0%	----	----
pH Value	W-PH-PCT	1.00	-	7.57	± 1.0%	7.25	± 1.0%	----	----
Nonmetallic Inorganic Parameters									
Ammonia and ammonium ions as N	W-NH4-SPC	0.040	mg/L	<0.040	----	<0.040	----	----	----
Ammonia and ammonium ions as NH4	W-NH4-SPC	0.050	mg/L	<0.050	----	<0.050	----	----	----
Chemical Oxygen Demand (COD-Mn)	W-CODMN-SPC	0.50	mg/L	7.24	± 30.0%	0.80	± 30.0%	----	----
Chloride	W-CL-IC	1.00	mg/L	34.9	± 15.0%	35.4	± 15.0%	----	----
Nitrates	W-NO3-SPC	0.27	mg/L	<0.27	----	6.28	----	----	----
Sulphate as SO4 2-	W-SO4-SPC	5.0	mg/L	21.8	± 30.0%	24.4	± 30.0%	----	----
Nitrate as N	W-NO3-SPC	0.060	mg/L	<0.060	----	1.42	----	----	----
Suspended solids dried at 105 °C	W-TSS45-GR	3.0	mg/L	4.0	± 13.8%	<3.0	----	----	----
Total Metals / Major Cations									
Aluminium	W-METMSFX6	0.0100	mg/L	0.115	± 10.0%	<0.0100	----	----	----
Antimony	W-METMSFX6	0.0100	mg/L	<0.0100	----	<0.0100	----	----	----
Arsenic	W-METMSFX6	0.0050	mg/L	<0.0050	----	<0.0050	----	----	----
Barium	W-METMSFX6	0.00050	mg/L	0.0366	± 10.0%	0.0395	± 10.0%	----	----
Beryllium	W-METMSFX6	0.00020	mg/L	<0.00020	----	<0.00020	----	----	----
Boron	W-METMSFX6	0.0100	mg/L	0.0221	± 10.0%	0.0189	± 10.0%	----	----
Cadmium	W-METMSFX6	0.00040	mg/L	<0.00040	----	<0.00040	----	----	----
Calcium	W-METMSFX6	0.0500	mg/L	29.8	± 10.0%	34.3	± 10.0%	----	----
Chromium	W-METMSFX6	0.0010	mg/L	<0.0010	----	<0.0010	----	----	----
Cobalt	W-METMSFX6	0.0020	mg/L	<0.0020	----	<0.0020	----	----	----
Copper	W-METMSFX6	0.0010	mg/L	<0.0010	----	<0.0010	----	----	----
Iron	W-METMSFX6	0.0020	mg/L	1.27	± 10.0%	0.0035	± 10.0%	----	----
Lead	W-METMSFX6	0.0050	mg/L	<0.0050	----	<0.0050	----	----	----
Lithium	W-METMSFX6	0.0010	mg/L	<0.0010	----	<0.0010	----	----	----
Magnesium	W-METMSFX6	0.0030	mg/L	9.32	± 10.0%	4.35	± 10.0%	----	----
Manganese	W-METMSFX6	0.00050	mg/L	0.0627	± 10.0%	<0.00050	----	----	----
Mercury	W-HG-AFSFX	0.0100	µg/L	<0.0100	----	<0.0100	----	----	----
Molybdenum	W-METMSFX6	0.0020	mg/L	<0.0020	----	<0.0020	----	----	----
Nickel	W-METMSFX6	0.0020	mg/L	<0.0020	----	<0.0020	----	----	----
Phosphorus	W-METMSFX6	0.0500	mg/L	<0.0500	----	<0.0500	----	----	----
Potassium	W-METMSFX6	0.0500	mg/L	3.26	± 10.0%	1.85	± 10.0%	----	----
Selenium	W-METMSFX6	0.0100	mg/L	<0.0100	----	<0.0100	----	----	----
Silver	W-METMSFX6	0.0010	mg/L	<0.0010	----	<0.0010	----	----	----
Sodium	W-METMSFX6	0.0300	mg/L	18.7	± 10.0%	19.0	± 10.0%	----	----
Thallium	W-METMSFX6	0.0100	mg/L	<0.0100	----	<0.0100	----	----	----
Vanadium	W-METMSFX6	0.0010	mg/L	<0.0010	----	<0.0010	----	----	----
Zinc	W-METMSFX6	0.0020	mg/L	<0.0020	----	<0.0020	----	----	----
Polycyclic Aromatics Hydrocarbons (PAHs)									
Naphthalene	W-PAHGMS04	0.0070	µg/L	<0.0070	----	<0.0070	----	----	----
Acenaphthylene	W-PAHGMS04	0.0010	µg/L	<0.0010	----	<0.0010	----	----	----
Acenaphthene	W-PAHGMS04	0.0010	µg/L	<0.0010	----	<0.0010	----	----	----
Fluorene	W-PAHGMS04	0.0010	µg/L	<0.0010	----	<0.0010	----	----	----
Phenanthrene	W-PAHGMS04	0.0010	µg/L	<0.0010	----	<0.0010	----	----	----
Anthracene	W-PAHGMS04	0.0010	µg/L	<0.0010	----	<0.0010	----	----	----
Fluoranthene	W-PAHGMS04	0.0010	µg/L	<0.0010	----	<0.0010	----	----	----



Sub-Matrix: WATER				Client sample ID		CORTA		SUBT1		----	
				Laboratory sample ID		PR2499765001		PR2499765002		----	
				Client sampling date / time		[20-Aug-2024]		[20-Aug-2024]		----	
Parameter	Method	LOR	Unit	Result	MU	Result	MU	Result	MU		
Polycyclic Aromatics Hydrocarbons (PAHs) - Continued											
Pyrene	W-PAHGMS04	0.0010	µg/L	<0.0010	----	<0.0010	----	----	----		
Benz(a)anthracene	W-PAHGMS04	0.0010	µg/L	<0.0010	----	<0.0010	----	----	----		
Chrysene	W-PAHGMS04	0.0010	µg/L	<0.0010	----	<0.0010	----	----	----		
Benzo(b)fluoranthene	W-PAHGMS04	0.0010	µg/L	<0.0010	----	<0.0010	----	----	----		
Benzo(k)fluoranthene	W-PAHGMS04	0.0010	µg/L	<0.0010	----	<0.0010	----	----	----		
Benzo(a)pyrene	W-PAHGMS04	0.0010	µg/L	<0.0010	----	<0.0010	----	----	----		
Indeno(1.2.3.cd)pyrene	W-PAHGMS04	0.00030	µg/L	<0.00060	----	<0.00030	----	----	----		
Benzo(g,h,i)perylene	W-PAHGMS04	0.00030	µg/L	<0.00030	----	<0.00030	----	----	----		
Dibenz(a,h)anthracene	W-PAHGMS04	0.00060	µg/L	<0.00060	----	<0.00060	----	----	----		
Sum of 16 PAH	W-PAHGMS04	0.0202	µg/L	<0.0205	----	<0.0202	----	----	----		
Sum of carcinogenic PAH	W-PAHGMS04	0.00590	µg/L	<0.00620	----	<0.00590	----	----	----		
Sum of other PAH	W-PAHGMS04	0.0143	µg/L	<0.0143	----	<0.0143	----	----	----		
Sum of 6 PAH (WHO)	W-PAHGMS04	0.00460	µg/L	<0.00490	----	<0.00460	----	----	----		
Sum of 4 PAH	W-PAHGMS04	0.00260	µg/L	<0.00290	----	<0.00260	----	----	----		
Sum of Benzo(b)fluoranthene@Benzo(k)fluoranthene	W-PAHGMS04	0.0020	µg/L	<0.0020	----	<0.0020	----	----	----		
Sum of Indeno(1.2.3.cd)pyrene@Benzo(g,h,i)perylene	W-PAHGMS04	0.00060	µg/L	<0.00090	----	<0.00060	----	----	----		
Sum of 8 PAH (WFD)	W-PAHGMS04	0.0126	µg/L	<0.0129	----	<0.0126	----	----	----		
Petroleum Hydrocarbons											
C10 - C40 Fraction	W-TPHFID19	10.0	µg/L	<10.0	----	<10.0	----	----	----		

When sampling date is not provided by the client, the laboratory determines it for procedural reasons, then it is equal to the date of receipt of the sample to the laboratory and is displayed in brackets. Measurement uncertainty is expressed as expanded measurement uncertainty with coverage factor k = 2, representing 95% confidence level.

Key: LOR = Limit of reporting; MU = Measurement Uncertainty. The MU does not include sampling uncertainty.

Brief Method Summaries

Analytical Methods	Method Descriptions
Location of test performance: Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
W-CL-IC	CZ_SOP_D06_02_068 (CSN EN ISO 10304-1) Determination of dissolved fluoride, chloride, nitrite, bromide, nitrate and sulphate by ion liquid chromatography and calculation of nitrite nitrogen and nitrate nitrogen and sulphate sulphur from measured values including the calculation of total mineralization.
W-CODMN-SPC	CZ_SOP_D06_02_092 (CSN EN ISO 8467) Determination of chemical oxygen demand using permanganate (CODMn) by titration.
W-COLIF	CSN EN ISO 9308-1. Enumeration of Coliform bacteria by membrane filtration.
W-CON-PCT	CZ_SOP_D06_02_075 (ČSN EN 27 888, SM 2520 B) Determination of electrical conductivity by conductometer and calculation of salinity.
W-ENTCO	CSN EN ISO 7899-2, STN EN ISO 7899-2. Enumeration of intestinal enterococci by membrane filtration.
W-HG-AFSFX	CZ_SOP_D06_02_096 (US EPA Method 245.7, CSN EN ISO 17852) - Determination of Mercury by Fluorescence Spectrometry. Sample was fixed by nitric acid addition prior to analysis.
W-METMSFX6	CZ_SOP_D06_02_002 (US EPA Method 200.8, CSN EN ISO 17294-2, US EPA Method 6020A, CSN 75 7358) - Determination of elements by mass spectrometry with inductively coupled plasma and stoichiometric calculations of compounds concentration from measured values including the calculation of total mineralization and calculating the sum of Ca +Mg. Sample was fixed by nitric acid addition prior to analysis.
W-NH4-SPC	CZ_SOP_D06_02_019 (CSN EN ISO 11732, CSN EN ISO 13395, SM 4500-NO2-, SM 4500-NO3-) Determination of sum of ammonium and ammonium ions, nitrite and the sum of nitrite and nitrate ions by discrete spectrophotometry and calculation of nitrite, nitrate, ammonia, inorganic, organic, total nitrogen, free ammonia and dissociated ammonium ions from measured values including the calculation of total mineralization
W-NO3-SPC	CZ_SOP_D06_02_019 (CSN EN ISO 11732, CSN EN ISO 13395, SM 4500-NO2-, SM 4500-NO3-) Determination of nitrite sum and sum of nitrite and nitrate nitrogen by discrete spectrophotometry and calculation of nitrites and nitrates from measured values



Analytical Methods	Method Descriptions
W-PAHGMS04	CZ_SOP_D06_03_161 (US EPA Method 8270D; US EPA Method 8082A; ČSN EN ISO 6468; US EPA Method 8000D) Determination of semi volatile organic compounds by gas chromatography method with MS or MS/MS detection and calculation of semi volatile organic compounds sums from measured values
W-PH-PCT	CZ_SOP_D06_02_105 (CSN ISO 10523, US EPA Method 150.1, SM 4500-H+ B) Determination of pH by potentiometry
W-SO4-SPC	CZ_SOP_D06_02_016 (US EPA Method 375.4, SM 4500-SO42-) Determination of sulfate by turbidimetry using discrete spectrophotometry and calculation of sulfate sulfur from measured values.
W-TCEC	CSN 75 7835. Enumeration of thermotolerant coliform bacteria and Escherichia coli by membrane filtration.
W-TPHFID19	CZ_SOP_D06_03_151(ČSN EN ISO 9377-2) Determination of extractable substances in the range of hydrocarbons C 10 – C40, their fractions by calculation from measured values using the gas chromatography method with FID detection
W-TSS45-GR	CZ_SOP_D06_02_070 (CSN EN 872, CSN 757350, SM 2540 D, SM 2540 E) Determination of dry suspended solids and annealed suspended solids by gravimetry and determination of loss of ignition of suspended solids and total solids by calculation from measured values (cellulose ester filter of porosity 0,45 µm - Whatman).

The symbol "*" for the method indicates a test outside the scope of accreditation of the laboratory or subcontractor. If the UNICO-SUB code is stated in the method table, this only informs that the tests have been performed by a subcontractor and the results are given in an annex to the test report, including information on test accreditation. If the lab used for matrix outside the scope of accreditation or non-standard sample matrix procedure specified in the accredited method and issues non-accredited results, this fact is stated on the title page of this protocol in the section "Notes". If the test report shows the results of subcontracting, the place of performance of the test is outside the laboratories of ALS Czech Republic, s.r.o.

The method for calculating of the summation parameters is available on request in the customer service.

The end of the certificate of analysis