



## CERTIFICATE OF ANALYSIS

Work Order	: PR1641430	Issue Date	: 16-JUN-2016
Client	: 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 3
Order number	: ----	Date Samples	: 09-JUN-2016
C-O-C number	: ----	Received	
		Quote number	: PR2015VISAC-PT0242 (PT-300-15-0407)
Site	: ----	Date of test	: 09-JUN-2016 - 16-JUN-2016
Sampled by	: Client	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 declares that the test results relate only to the listed samples.

Sample PR1641430/001, method W-O2D-ELE was determined in laboratory.

Sample(s) PR1641430/001 method W-CL-IC, W-SO4-IC, W-COD-SPC, W-NH4-SPC, W-NO3-SPC, W-CON-PCT, W-PH-PCT, W-PAHMS01 was/were decanted prior to analysis.

### Responsible for accuracy

Testing Laboratory Accredited by CAI  
according to CSN EN ISO/IEC 17025:2005

Signatories  
Zdenek Jirak

Position  
Environmental Business Unit  
Manager



## Analytical Results

Sub-Matrix: WATER		Client sample ID		2309_Nastente_Lena		---		---	
		Laboratory sample ID		PR1641430001		---		---	
		Client sampling date / time		[09-JUN-2016]		---		---	
Parameter	Method	LOR	Unit	Result	MU	---	---	---	---
<b>Microbiological Parameters</b>									
Coliform Bacteria	W-COLIF	--	CFU/100mL	60	---	---	---	---	---
Enterococci	W-ENTCO	--	CFU/100mL	22	---	---	---	---	---
Thermotolerant coliform bacteria	W-TCEC	--	CFU/100mL	13	---	---	---	---	---
Escherichia coli	W-TCEC	--	CFU/100mL	15	---	---	---	---	---
<b>Physical Parameters</b>									
Electrical Conductivity @ 25°C	W-CON-PCT	0.10	mS/m	45.6	±10.0 %	---	---	---	---
pH Value	W-PH-PCT	1.00	-	7.59	±1.0 %	---	---	---	---
<b>Nonmetallic Inorganic Parameters</b>									
Ammonia and ammonium ions as N	W-NH4-SPC	0.040	mg/L	<0.040	---	---	---	---	---
Ammonia and ammonium ions as NH4	W-NH4-SPC	0.050	mg/L	<0.050	---	---	---	---	---
Chemical Oxygen Demand (COD-Cr)	W-COD-SPC	5.0	mg/L	<5.0	---	---	---	---	---
Chloride	W-CL-IC	1.00	mg/L	10.6	±15.0 %	---	---	---	---
Dissolved Oxygen	W-O2D-ELE	0.20	mg/L	9.63	±30.0 %	---	---	---	---
Nitrates	W-NO3-SPC	0.27	mg/L	3.97	---	---	---	---	---
Sulphate as SO4 2-	W-SO4-IC	5.00	mg/L	13.5	±15.0 %	---	---	---	---
Nitrate as N	W-NO3-SPC	0.060	mg/L	0.897	---	---	---	---	---
Oxygen Saturation	W-O2D-ELE	1	%	110	±30.0 %	---	---	---	---
Suspended solids dried at 105 °C	W-TSS45-GR	3.0	mg/L	<3.0	---	---	---	---	---
<b>Petroleum Hydrocarbons - FTIR</b>									
Total Petroleum Hydrocarbons	W-TPH-IR	0.050	mg/L	<0.050	---	---	---	---	---
<b>Polycyclic Aromatic Hydrocarbons (PAHs)</b>									
Naphthalene	W-PAHGMS01	0.100	µg/L	<0.100	---	---	---	---	---
Acenaphthylene	W-PAHGMS01	0.010	µg/L	<0.010	---	---	---	---	---
Acenaphthene	W-PAHGMS01	0.010	µg/L	<0.010	---	---	---	---	---
Fluorene	W-PAHGMS01	0.020	µg/L	<0.020	---	---	---	---	---
Phenanthrene	W-PAHGMS01	0.030	µg/L	<0.030	---	---	---	---	---
Anthracene	W-PAHGMS01	0.020	µg/L	<0.020	---	---	---	---	---
Fluoranthene	W-PAHGMS01	0.030	µg/L	<0.030	---	---	---	---	---
Pyrene	W-PAHGMS01	0.060	µg/L	<0.060	---	---	---	---	---
Benz(a)anthracene	W-PAHGMS01	0.010	µg/L	<0.010	---	---	---	---	---
Chrysene	W-PAHGMS01	0.010	µg/L	<0.010	---	---	---	---	---
Benzo(b)fluoranthene	W-PAHGMS01	0.010	µg/L	<0.010	---	---	---	---	---
Benzo(k)fluoranthene	W-PAHGMS01	0.010	µg/L	<0.010	---	---	---	---	---
Benzo(a)pyrene	W-PAHGMS01	0.020	µg/L	<0.020	---	---	---	---	---
Indeno(1,2,3,cd)pyrene	W-PAHGMS01	0.010	µg/L	<0.010	---	---	---	---	---
Benzo(g,h,i)perylene	W-PAHGMS01	0.010	µg/L	<0.010	---	---	---	---	---
Dibenz(a,h)anthracene	W-PAHGMS01	0.010	µg/L	<0.010	---	---	---	---	---
Sum of 16 PAH	W-PAHGMS01	0.370	µg/L	<0.370	---	---	---	---	---
Sum of PAH (MoE)	W-PAHGMS01	0.19	µg/L	<0.19	---	---	---	---	---
Sum of 6 PAH (WHO)	W-PAHGMS01	0.090	µg/L	<0.090	---	---	---	---	---
Sum of 4 PAH	W-PAHGMS01	0.040	µg/L	<0.040	---	---	---	---	---

If the client does not specify the date and time of sample collection, the laboratory will specify the date on sample delivery in parentheses, instead. If the time of sample collection is specified as 0:00 it means that the client did specify the date but not the time. 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 end of result part of the certificate of analysis**

#### Brief Method Summaries

<i>Analytical Methods</i>	<i>Method Descriptions</i>
<i>Location of test performance:</i> Na Harfe 336/9 Prague 9 - Vysocany Czech Republic 190 00	
W-CL-IC	CZ_SOP_D06_02_068 (CSN ISO 10304-1, CSN EN 16192) Determination of dissolved fluoride, chloride, nitrite, bromide, nitrate and sulphate by ion liquid chromatography and determination of nitrite nitrogen and nitrate nitrogen and sulfate sulfur by calculation from measured values.
W-COD-SPC	CZ_SOP_D06_02_076 Determination of chemical oxygen demand using dichromate (COD-Cr) by photometry (based on CSN ISO 15705) / CZ_SOP_D06_02_076A / CZ_SOP_D06_07_040 Determination of chemical oxygen demand using dichromate (COD-Cr) by titration (based on CSN ISO 6060, CSN ISO 15705).
W-COLIF	CSN 75 7837. Enumeration of Coliform bacteria by membrane filtration.
W-CON-PCT	CZ_SOP_D06_02_075 Determination of electrical conductivity (based on CSN EN 27 888, SM 2520 B, CSN EN 16192).
W-ENTCO	CSN EN ISO 7899-2, STN EN ISO 7899-2. Enumeration of intestinal enterococci by membrane filtration.
W-NH4-SPC	CZ_SOP_D06_02_019 (CSN EN ISO 11732, CSN EN ISO 13395, CSN EN 16192, SM 4500-NO2(-), SM 4500-NO3(-)) Determination of ammonium, nitrite and the sum of nitrite and nitrate ions by discrete spectrophotometry and determination of nitrite, nitrate, ammonia, inorganic, organic, total nitrogen and free ammonia by calculation from measured values including the calculation of total mineralization.
W-NNO-SPC	CZ_SOP_D06_02_019 (CSN EN ISO 11732, CSN EN ISO 13395, CSN EN 16192, SM 4500-NO2(-), SM 4500-NO3(-)) Determination of ammonium, nitrite and the sum of nitrite and nitrate ions by discrete spectrophotometry and determination of nitrite, nitrate, ammonia, inorganic, organic, total nitrogen and free ammonia by calculation from measured values including the calculation of total mineralization.
W-NO2-SPC	CZ_SOP_D06_02_019 (CSN EN ISO 11732, CSN EN ISO 13395, CSN EN 16192, SM 4500-NO2(-), SM 4500-NO3(-)) Determination of ammonium, nitrite and the sum of nitrite and nitrate ions by discrete spectrophotometry and determination of nitrite, nitrate, ammonia, inorganic, organic, total nitrogen and free ammonia by calculation 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, CSN EN 16192, SM 4500-NO2(-), SM 4500-NO3(-)) Determination of ammonium, nitrite and the sum of nitrite and nitrate ions by discrete spectrophotometry and determination of nitrite, nitrate, ammonia, inorganic, organic, total nitrogen and free ammonia by calculation from measured values including the calculation of total mineralization.
W-O2D-ELE	CZ_SOP_D06_07_044 (CSN EN ISO 5814) Determination of dissolved oxygen by electrochemical method.
W-PAHGMS01	CZ_SOP_D06_03_161 (US EPA 8270, CSN EN ISO 6468, samples preparation according to CZ_SOP_D06_03_P01 chap. 9.1, 9.4.1) 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 Determination of pH by potentiometry (based on CSN ISO 10523, US EPA 150.1, CSN EN 16192, SM 4500-H(+) B).
W-SO4-IC	CZ_SOP_D06_02_068 (CSN ISO 10304-1, CSN EN 16192) Determination of dissolved fluoride, chloride, nitrite, bromide, nitrate and sulphate by ion liquid chromatography and determination of nitrite nitrogen and nitrate nitrogen and sulfate sulfur by calculation from measured values.
W-TCEC	CSN 75 7835. Enumeration of thermotolerant coliform bacteria and Escherichia coli by membrane filtration.
W-TPH-IR	CZ_SOP_D06_02_057 Determination of nonpolar extractive substances by infrared spectrometry (based on CSN 75 7505:2006, STN 830540-4)
W-TSS45-GR	CZ_SOP_D06_02_070 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), (based on CSN EN 872, CSN 757350) (cellulose ester filter of porosity 0,45 µm - Whatman)

A '\*' symbol preceding any method indicates non-accredited test. In the case when a procedure belonging to an accredited method was used for non-accredited matrix, would apply that the reported results are non-accredited. Please refer to General Comment section on front page for information.

The calculation methods of summation parameters are available on request in the client service.