Hellenic Accreditation System

Annex F1/24 to the Certificate No.**154**-8

SCOPE of ACCREDITATION

of the

Testing Laboratory

of

Envirolab

Materials/Products tested	Types of test/Properties measured	Applied methods/Techniques used
1. Drinking water, surface water, ground water, swimming pool and waste water (For type 3 plus swimming pool)	Chemical Tests 1. Determination of total and hexavalent (VI) chromium	*In-house method (MΔ-27)* based on HACH, Method 8023, 8024 and LCK 313
	2. Determination of total (TS), dissolved (TDS) and suspended (TSS/SS) solids and Volatile Suspend Solids (VSS) and Total Volatile Solids(VS)	APHA* 2540, modified method (MΔ-23)
	3. Determination of Alkalinity	APHA* 2320
	4. Determination of colour in Pt.Co (Hazen)	APHA* 2120, modified method (MΔ-22)
	5. Determination of Arsenic	*In house method (MΔ-39)* by Graphite Furnace Atomic Absorption Spectroscopy, based on ASTM** D2972-08

Materials/Products tested	Types of test/Properties measured	Applied methods/Techniques used
	6. Determination of metals: - Aluminum (Al), - Beryllium (Be), - Cobalt (Co), - Iron (Fe), - Nickel (Ni), - Cadmium (Cd), - Copper (Co), - Selenium (Se), - Arsenic (As), - Manganese (Mn), - Tin (Sn), - Lead (Pb), - Chromium (Cr), - Vanadium (V), - Strontium (Sr)	APHA* 3113 A, B, C, (MΔ-40) by Electrothermal Continuous Source Atomic Absorption Spectroscopy (GF-CS-AAS)
2. Drinking water, surface water, ground water and sea water	1. Determination of arsenic	*In house method (MΔ-35)* by Hydride Generation Atomic Absorption Spectroscopy based on ISO 11969:1996
3. Drinking water, surface water, ground water, sea water and waste water	1. Determination of free and total cyanide (CN^-)	HACH 8027 and LCK315 (MΔ-42)
	2. Determination of Mercury (Hg)	*In house method (MΔ-30)* by Cold Vapor Atomic Fluorescence Spectroscopy based on ISO 17852:2006
	3. Determination of Inorganics Nutrients: - Nitrates (NO_3^-), - Nitrites, (NO_3^-), - Ammonium (NH_4), - Silicates (SiO_2) - Total and dissolved Phosphorous ($P\text{-}PO_4$)	Spectrophotometric methods (MΔ-43, MΔ-72): HACH LCK 339 HACH LCK 341 HACH LCK 304 HACH 8186 HACH LCK 349
	4. Determination of chlorides and salinity	APHA* 4500-Cl B, (MΔ 54)
	5. Determination of silicates (SiO_2)	Spectrophotometric method HACH 8185 (MΔ 72B)
4. Water and waste water	1. BOD 5 determination (Bilogical Oxygen Demand)	Manometric method based on APHA* 5210 D, (MΔ 71)
	2. Determination of total organic carbon (TOC)	HACH 10129 method (MΔ 73)
	3. Determination of UV absorbing organic constituents	In house method based on APHA* 5910B, (MΔ 50)

Materials/Products tested	Types of test/Properties measured	Applied methods/Techniques used
Water and waste water (continued)	4. Determination of Total nitrogen (TN) Total Kjeldahl nitrogen (TKN) Total oxidisable nitrogen (TON) Inorganic and organic nitrogen	Spectrophotometry Methods (MΔ 61) HACH LCK 138 HACH LCK 339 HACH LCK 341 HACH LCK 304
	5. Determination of Anionic and Non ionic surfactants (detergents)	Spectrophotometry Methods (MΔ 63, MΔ 64) HACH LCK 332 HACH LCK 333
	6. Determination of oil, grease and petroleum hydrocarbons	In house method (MΔ-25) based on APHA* 5520 B APHA* 5520 F EPA 1664 (2010)
	7. Determination of phenolics (phenol index)	In house method (MΔ-59) based on EPA 420.1 (1978) ASTM** D1783-01 (2012) APHA* 5530 HACK LCK 315
	8. Determination of sulfites (SO_3	APHA* 4500-SO_3 B
	9. Determination of sulfates	APHA* 4500-SO_4 E
	10. Measurment of dissolved oxygen	In house method (MΔ-76) (based on ASTM** 888-05, C)
5. Water and waste water Thermal springs water	1. Determination of sulfides and hydrogen sulfide (free)	Spectrophotometry Methods (MΔ 68, MΔ 69) HACH 8131 HACH LCK 653
6. Sludge, sediments, soil, solid waste	1. Determination of metals: -Aluminum (Al), - Beryllium (Be), - Cobalt (Co), - Iron (Fe), - Nickel (Ni), - Cadmium (Cd), - Copper (Co), - Selenium (Se), - Arsenic (As), - Manganese (Mn), - Tin (Sn), - Lead (Pb), - Chromium (Cr), - Vanadium (V), - Strontium (Sr)	APHA* 3113 A, B, C, 22nd Ed. 2012 (MΔ-40) by Electrothermal Continuous Source Atomic Absorption Spectroscopy (GF-CS-AAS) After sample preparation based on the following standards ASTM** D 5198-09 ASTM** D 4698-92 EPA 3050 B

Materials/Products tested	Types of test/Properties measured	Applied methods/Techniques used
	2. Determination of Boron (B)	Spectrophotometric Azomethine-H in house method and HACH LCK 307 (MΔ-41) After sample treatment with warm water
	3. Determination of the heavy metals: - Cadmium (Cd), - Copper (Cu), - Lead (Pb), - Zinc (Zn), - Nickel (Ni), - Iron (Fe), - Manganese (Mn)	APHA* 3111 B Flame atomic absosption spectrophotometry After sample preparation based on the following standards: ASTM** D 5198-09 ASTM** D 4698-92 EPA 3050 B
	4. Leaching tests	EN 12457-1 (2002) EN 12457-2 (2002) EPA 1311 (1992) EPA 1312 (1994) ASTM** D5233-92 (2007) ASTM** D6234-13
7. Surface water, ground water and waste water	1. Determination of antimony (Sb)	APHA* 3113 A, B, C, *(MΔ-40)* by Electrothermal Continuous Source Atomic Absorption Spectroscopy (GF-CS-AAS)
	2. Determination of Fe	ASTM** D1068 – 10
	3. Determination of Mn	ASTM** D858 – 07
	4. Determination of the heavy metals: - Cadmium (Cd), - Copper (Cu), - Lead (Pb), - Zinc (Zn), - Nickel (Ni), - Iron (Fe), - Manganese (Mn)	APHA* 3111 B Flame atomic absosption spectrophotometry
8. Drinking water, surface water, ground water, sea water, waste water and Soil Extracts	1. Determination of Boron (B)	Spectrophotometric Azomethine-H in house method and HACH LCK 307 (MΔ-41)
9. Drinking water, Swimming pool water and sodium hypochlorite solutions	1. Determination of Chlorates	ASTM** D4327-91, modified method IC-CD (MΔ-104)

Materials/Products tested	Types of test/Properties measured	Applied methods/Techniques used
10. Drinking water	1. Determination of Bromates	Ion chromatography in house method, with IC-CD and chemical suppression (MΔ 105)
11. Drinking water, surface water, groundwater and wastewater	1. Determination of Anions - F - Cl - NO_2 - Br - NO_3 - PO_4 - SO_4	ASTM** D4327-91, modified method (MΔ-04) IC-CD
	2. Determination of cations - Li - Na - K - Ca - Mg - NH_4	*In-house method (MΔ-05)*, IC-CD method based on ISO 14911:1998
	3. Determination of total and free chlorine	*In-house method (MΔ-08)* using portable photometer
	4. Determination of total hardness	APHA* 2340 B
	5. Calculation of Sodium Absorption Ratio	Calculated parameter according to U.S. Salinity Lab.,1954
12. Drinking water, groundwater, seawater and waste water For type 2 and 3 plus swimming pool	1. Determination of ammonia	ASTM** D 1426-93, modified colorimetric Nessler method (MΔ-11)
	2. Measurement of electric conductivity	ASTM** D1125 – 95 (2009)
	3. Measurement of Ph	ASTM** D1293 – 99 (2005)
	4. Determination of nitrite ion	APHA* 4500-NO_2 B, modified colorimetric UV method (MΔ-13)
	5. Determination of ortho-phosphate ion and total phosphorous	APHA* 4500-P D, modified colorimetric Stannous chloride method (MΔ-09)
	6. Measurement of turbidity	ASTM** D 1889-88, modified method using portable photoelectric turbidimeter (MΔ-14)
13. Drinking water and non-turbid water of low organic matter content	1. Determination of nitrates (screening method)	APHA* 4500-NO_3 B, modified colorimetric UV method (MΔ-10)

Materials/Products tested	Types of test/Properties measured	Applied methods/Techniques used
14. Surface water and waste water	1. Determination of chemical oxygen demand (COD)	APHA* 5220D, modified closed refluxed method (ΜΔ-21).
15. Surface water	1. Trophic state Index (Carlson)	Calculated parameter based on Carlson equations (1976)
	2. Free un-ionized Ammonia	Calculated parameter (Environment Canada 1999; Jofre and Karasov 1999; EPA 1998)
	3. Water Quality Index (WQI)	Calculated parameter, In house method based upon 8 or nine water quality parameters
16. Algae, surface and sea water	1. Determination of Chlorofyll -a	In house method based on ASTM** D3731- 87 (Reapproved 2012)
17. Particulate matter samples from ambient atmosphere or stack emissions	1. Determination of Zn, Mn, Ni, Cu, Cd, Pb, Ag, As, Sb, Se, Co	In house method ΜΔ101 based on ELOT EN 14385:2004, NIOSH Method 7300, APHA 3111B (Direct Acetylene Air Flame AAS) και APHA 3113 (Electrothermal CS-AAS)
18.Ambient air/stack emission gases	Measurement of apparent density of smoke	In house method based on Ringellmann method, OE117
19.Particulate matter (dust for workplace air, ambient air particulate matter, flying ash,stack emissions particulate matter)	Determination of particulate matter concentration, 2.5μm inhalable, 10 μm, resrpirable	In house method, based on AS/NZS3580 (Determination of light scattering), OE118
20.Water, wastes, soil and sediments	Determination of oil	In house method based on manufacturer's method- NDIR Horiba – OCMA500 – IR), OE119
21. Water	Determination of Uranium isotopes U234/U238 ICP-MS	Modified method (ICP MS) based on EN ISO 17924-2:2016 Annex A
22. Aqueous, granular (sludge,soil,sediments etc) and solid materials	Determination of Major and Trace elements with atomic number 13 until 92 by X-ray fluorescence analyzer XRF	In house method OE_121 (XRF)

Materials/Products tested	Types of test/Properties measured	Applied methods/Techniques used
23. Solid, Liquid, Alternative and Waste Recovered Solid	Determination of Gross Calorific Value	In house method OE_120 acc. to EN15400:2011
24. Drinking water, surface water and groundwater Not applicable to document compliance with drinking and surface water legislation	1.Determination of equivalent Microcystin LR	In house method OE 122 (quantitative screening).
25.Drinking water, surface water and groundwater, wastewater	2. Determination of Exctractable substances by chloroform	In house method (OE123) Liquid-Liquid Extraction (LLE) Acc. to ASTM D 1178-54
	3 Determination of Nitrates, Nitrite, Ammonium, TON, sulfate, Phosphate, Fluoride by analyzer	ISO 15923-1 & ISO 15923-2
26. Drinking water, surface water and groundwater, seawater	Determination of Pheophytin	In house method OE 72B
27. surface water, wastewater, sludge, soil, sediments	Determination of TN (Kheldahl)	OE 124 Mod. Acc to ISO 5663-1984
28. Drinking water, surface water, ground water, sea water, waste water and Sludges, solid wastes, sediments, soil samples, atmospheric particulate matter	1. Determination of metals	Electrothermal –CS- AAS (ΜΔ-40) Flame AAS (ΜΔ-26) Hydride – CS – AAS (ΜΔ-35) CV-AFS (ΜΔ-30) According to IC-CD ISO 14911:1998, ΕΣΩΤ.ΜΔ-05 ASTM D5198-09 ASTM D4698-92 EPA 3050 B (ICP-MS) (ΜΔ-31

Materials/Products tested	Types of test/Properties measured	Applied methods/Techniques used
29. Microbiological and Chemical analysis: Drinking water, surface water, ground water, sea water, waste water and Sludges, solid wastes, sediments, soil samples	Opinion and Interpretation	In house procedure based on EA-4/23 INF 2019 OE601_02 OE601_01
Flexibility regarding the addition of new analytes in methods/matrices already accredited (b) Flexibility regarding the addition of already accredited matrices in already accredited combinations of methods/analytes already accredited (c) Flexibility regarding the addition of new matrices (from the list of environmental samples) in already accredited combinations of methods/analytes d)flexibility regarding the modification of performance characteristics of already accredited methods (range, limit of quantification) The detailed list of accredited activities can be found at: www.envirolab.gr		
30. Surface water, sea water, sludges, sediments	Determination of polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), pesticide residue (PESTs)	In house procedure based on ISO 6468, ISO 28540, ISO 23646
31.Surface water, sea water, wastewater	Determination of volatile compounds (VOCs)	In house procedure based on ISO 17943, ISO 22155
32. Wastewater	Determination of settleable solids/ Cone of Imhoff	In house procedure based on APHA 2540F
	Microbiological Tests	
1. Drinking water and groundwater	1. Enumeration of culturable micro-organisms at 22±2 °C and 36±2 °C	ISO 6222:1999
2. Drinking water, groundwater and sea water and waste water	1. Enumeration of *Escherichia coli* and coliform bacteria	ISO 9308 –1: 2014
	2. Enumeration of intestinal enterococci	ISO 7899-2:2000
3. Drinking water	1. Enumeration of *Pseudomonas aeruginosa*	ISO 16266:2006
4. Drinking water, surface water and groundwater	1. Enumeration of *Clostridium perfringens* (including spores)	Annex III of Joined Ministerial Decision No Y2/2600/2001 (National Gazette No 892/B'/11.7.2001), as amended and is in force
	2. Enumeration of *Clostridium perfringens* (including spores)	ISO 14189:2013
5. Surface water and waste water	1. Enumeration of total coliforms and fecal coliforms	APHA* 9222 B, D
	2. Enumeration fecal coliforms (7 hours procedure)	APHA* 9211 B

Materials/Products tested	Types of test/Properties measured	Applied methods/Techniques used
7. WATERS (drinking water, networks of air conditioners, cooling towers, sprinklers, fountains, etc.)	Legionella pneumophila, serogroup 1, Legionella pneumophila, serogroup 2-14	ISO 11731 (2017)
7. Drinking water, surface water and groundwater,wastewater,sludge	1.Enumeration of *salmonella*	ISO 19250:2010 ISO 6579-1:2017/A1:2020
	2 Enumeration & semi quintative determination of campylobacter	ISO 17995:2019
8. Solid and aqueous samples, waste and sludge	1.Enumeration of salmonella	ISO 6579-1:2017/A1:2020
	2.Enumeration of staphylococcus	Public Health England (PHE) FNES8 [F12] UK's National Reference
	3. Enumeration of positive β-glucuronidase Escherichia coli	Public Health England (PHE) FNES3 [F8] UK's National Reference
Sampling		
1. Drinking water, surface water, ground water, seawater, coastal water, piped distribution systems, swimming pool water, water from natural and constructed reserves, and waste water	1. Sampling for the determination of chemical parameters and microbiological investigations	*In house method* based on ISO 5667-1:2006, ISO 5667-3:2003, ISO 5667-4:1987, ISO 5667-5:2006, ISO 5667-6:2005, ISO 5667-9:1992, ISO 5667-14:1998, ISO 19458:2006, ISO 5667-10:1992 and ASTM** D3370-08 (2008). ASTM** D 5013-89(09) ASTM** D 6538 (10) ISO 19458 : 2006 E.U. DIRECTIVE 2006/7 Sampling manual
2. Surface and seawater	1. Sampling from predetermined depth for the determination of chemical parameters, nutrients and microorganisms and measurment of thermal, salinity and microbiological data from water column	ASTM** D 5358-93(09) ASTM** D 6759-09 In house procedure ΕΠΑ-01
	2. Water transparency	Secchi Disc method and clarity tube

Materials/Products tested	Types of test/Properties measured	Applied methods/Techniques used
	3. Sampling for the determination of phytoplankton, zooplankton, cyanobacteria, biomass and chlorophyll	In house method based on ASTM** D4132 – 82 (2012) ASTM** D4136 – 82 (2012) ASTM** D4137 – 82 (2012) APHA* 10200 BS EN 15204:2006 KAI USGS Chapter A4
3. Sludge and water waste	1. Sampling from bulks and waste water treatment plants	ISO 5667-13 (2011) ASTM** D 5633-04 (08)
4. Ground water	1. Sampling from natural springs, wells and irrigation sites for the determination of physicochemical and microbiological parameters	ISO 19458 (2006) ISO 5667-11 (2009) ASTM** D4448-01 (07) ASTM** D 6634-01 (06) ASTM** D 6517-00 (05) ASTM** D 6564-00 (05) ASTM** D 6699-01 (10) ASTM** D 7069-04 (10) ASTM** D 4750-87 (01)
5. Sediments of surface and sea water	1. Sediment sampling	ISO 5567-12 (2012) ISO 5667-19 (2004) ISO 5567-15 (2009)
6. Rain water from surface drain following a storm	1. Storm water sampling	In house procedure based on ISO 5667-8 (1993) ASTM** D 5013-89 (09)
8. Soil	1. Soil sampling for the determination of physicochemical parameters	In house procedure based on ASTM** D1452-09 ASTM** D6640-01 (2010) ASTM** D6282 / D6282M - 14 ASTM** D421-95 (2007) ISO 11464 (2006)

**American Public Health Association, American Water Works Association, Water Environment Federation, "Standard Methods for the Examination of Water and Wastewater",* 24nd Ed. 2023.
*** American Society for Testing and Materials*

Site of assessment: **Permanent laboratory premises, 3 P. Melas str., Volos, Magnesia, Greece.**
Approved signatory: **A. Gounaris, A. Panagiotou.**
This scope of Accreditation replaces the previous one dated 09.09.2024.
The Accreditation Certificate No. **154**-8, to ELOT EN ISO/IEC 17025:2017, is valid until 03.03.2029.

Athens, 14.02.2025

Konstantinou Evaggelos Apostolou
CEO of ESYD