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CERTIFICATE OF ACCREDITATION

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CONCEPCION UNIVERSITY, CENTER EULA-CHILE

BARRIO UNIVERSITARIO S/N
CONCEPCION 4070386, REPUBLIC OF CHILE

Testing Laboratory TL-812

has met the requirements of AC89, *IAS Accreditation Criteria for Testing Laboratories*, and has demonstrated compliance with ISO/IEC Standard 17025:2017, *General requirements for the competence of testing and calibration laboratories*. This organization is accredited to provide the services specified in the scope of accreditation.

Expiry Date January 1, 2025

Effective Date October 16, 2023



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Accredited to ISO/IEC 17025:2017

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FIELDS OF TESTING	MATERIAL/ MATRIX	DETERMINANT(S)/ ANALYTE(S)	METHOD REFERENCE
Biology	Surface water, Underground water and Wastewater	Determination of long-term toxicity of substances to Daphnia magna Straus (Cladocera, Crustacea)	ISO 10706: 2000
		Acute toxicity bioassay by determination of the inhibition of the mobility of Daphnia magna or Daphnia pulex (Crustacea, Cladocera)	NCh 2083:1999
		Daphnia Chronic Toxicity test.	EPA 712-C-96-120 "Ecological effects test guidelines" OPPTS 850.1300 Daphnid Chronic Toxicity Test.
	Surface water, Wastewater, Marine water	Sampling Phytoplankton	APHA, 2017. 10200 B. Standard Methods 24th Edition.
		Zooplankton – Sample collection	APHA, 2017. 10200 B. Standard Methods 24th Edition.
		Zooplankton – Counting techniques	APHA, 2017 10200 G. Standard Methods 24th Edition.
		Chlorophyll	APHA, 2017. 10200 H. Standard Methods 24th Edition.
		Periphyton Analysis	APHA, 2017. 10300 C. Standard Methods 24th Edition.
		Sampling Periphyton	APHA, 2017. 10300 C. Standard Methods 24th Edition.
		Macrophytes	APHA, 2017. 10400. Standard Methods 24th Edition.
		Benthic macroinvertebrates – Sample collection	APHA, 2017 10500 B. Standard Methods 24th Edition.
		Benthic macroinvertebrates – Sample processing and analysis	APHA, 2017 10500 C. Standard Methods 24th Edition.
		Chlorophyll	EPA Method 445.0 (1997)

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FIELDS OF TESTING	MATERIAL/MATRIX	DETERMINANT(S)/ANALYTE(S)	METHOD REFERENCE
Biology (continued)	Surface water, Wastewater, Marine water (continued)	Benthic Macrofauna – Sampling and analysis	Resolución exenta N°3612 de 2009, numeral 28, de la Subsecretaría de Pesca
		Phytoplankton Analysis Guide for counting phytoplankton by inverted microscopy (Utermöhl technique and Sedgewick- Rafter camera)	UNE-EN-15204:2007 APHA, 2017. 10200 F. Standard Methods 24th Edition.
	Wastewater	Determination of Fecal coliforms	NCh 2313/22 Of. 95
		Determination of Fecal coliforms	NCh 2313/23 Of. 95
		Growth inhibition bioassay of algae in fresh water with <i>Selenastrum capricornutum</i> (<i>Raphidocelis subcapitata</i>)	NCh 2706 of 2002.
	Surface water, Ma- rine water, Under- ground water	Determination of Fecal coliforms	9221 E Standard Methods 24th Edition
	Surface water, Wastewater, Marine water, Underground water	Determination of Total coliforms	9221 B Standard Methods 24th Edition
	Surface water – Field sampling and analysis	Data acquisition and analysis. Fish Sampling	Standard Methods 24th Edition 10600 B
		Identification	Standard Methods 24th Edition 10600 C, D.
		Analysis of collections - Diet	Standard Methods 24th Edition 10600 D.
		Analysis of collections. Structure of population and assemblage	Standard Methods 24th Edition 10600 D
	Surface Water	Growth inhibition bioassay of algae in fresh water with <i>Selenastrum capricornutum</i> (<i>Raphidocelis subcapitata</i>)	NCh 2706 of 2002
	Underground water	Growth inhibition bioassay of algae in fresh water with <i>Selenastrum capricornutum</i> (<i>Raphidocelis subcapitata</i>)	NCh 2706 of 2002
Chemistry	Surface water, Un- derground water	Organic nitrogen (Kjeldahl)	Standard Methods for the examination of water and wastewater 24th Edition 4500- Norg-B

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FIELDS OF TESTING	MATERIAL/MATRIX	DETERMINANT(S)/ANALYTE(S)	METHOD REFERENCE
Chemistry (cont'd.)	Surface water, Underground water (cont'd.)	Total cadmium, Total calcium, Total copper, Total chromium, Total iron, Total magnesium, Total manganese, Total nickel, Total lead, Total potassium, Total sodium, Total zinc.	Standard Methods for the examination of water and wastewater 24th Edition 3111 B
		Dissolved cadmium, Dissolved calcium, Dissolved copper, Dissolved chromium, Dissolved iron, Dissolved magnesium, Dissolved manganese, Dissolved nickel, Dissolved lead, Dissolved potassium, Dissolved sodium, Dissolved zinc	Standard Methods for the examination of water and wastewater 24th Edition 3030 B (Filtration) 3111 B.(quantification)
	Surface water, Marine water, Underground water	Oil and Grease - Soxhlet Extraction Method	Standard Methods for the examination of water and wastewater 24th Edition 5520-D
		Boron	Standard Methods for the examination of water and wastewater 24th Edition 4500 B - B
		Cyanide total	Standard Methods for the examination of water and wastewater 24th Edition 4500 CN - C (Distillation) 4500 CN - E (Quantification)
		Nitrate	Standard Methods for the examination of water and wastewater 24th Edition 4500-NO3 E
		Nitrite	Standard Methods for the examination of water and wastewater 24th Edition 4500-NO2-B
		DBO ₅	Standard Methods for the examination of water and wastewater 24th Edition 5210 B
		DQO	Standard Methods for the examination of water and wastewater 24th Edition 5220 D



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Chemistry (cont'd.)	Surface water, Marine water, Underground water (cont'd.)	Total Phosphorus	Standard Methods for the examination of water and wastewater 24th Edition 4500 P-B (Digestion) 4500-P-E (Quantification)
		Fixed Hydrocarbons	Standard Methods for the examination of water and wastewater 24th Edition 5520-F
		Phenol index	Standard Methods for the examination of water and wastewater 24th Edition 5530 C
		Ammonia nitrogen	Standard Methods for the examination of water and wastewater 24th Edition 4500 – NH3 F
		Determination of pH	Standard Methods for the examination of water and wastewater 24th Edition 4500-H B
		Settleable Solids	Standard Methods for the examination of water and wastewater 24th Edition 2540 F
		Total Suspended Solids Dried at 103 °C - 105 °C	Standard Methods for the examination of water and wastewater 24th Edition 2540 D
		Sulfide	Standard Methods for the examination of water and wastewater 24th Edition 4500 S2- G
		Total aluminum, Total antimony, Total barium, Total beryllium, Total boron, Total cadmium, Total calcium, Total cobalt, Total copper, Total chromium, Total strontium, Total iron, Total lithium, Total magnesium, Total manganese, Total molybdenum, Total nickel, Total silver, Total lead, Total potassium, Total sodium, Total vanadium, Total zinc	Standard Methods for the examination of water and wastewater 24th Edition 3120 B



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Chemistry (cont'd.)	Surface water, Marine water, Underground water (cont'd.)	Sodium adsorption ratio (RAS) Sodium Percentage	NCh1333:1978 modified in 1987
		Total aluminum, Total molybdenum, Total vanadium	Standard Methods for the examination of water and wastewater 24th Edition 3111 D
		Dissolved aluminum, Dissolved molybdenum, Dissolved vanadium	Standard Methods for the examination of water and wastewater 24th Edition 3030 B (Filtration) 3111D(Quantification)
		Total Arsenic, Total Selenium	Standard Methods for the examination of water and wastewater 24th Edition 3114 B.
		Dissolved Arsenic, Dissolved Selenium	Standard Methods for the examination of water and wastewater 24th Edition 3030 B (Filtration) 3114 B (Quantification).
		Mercury	Standard Methods for the examination of water and wastewater 24th Edition 3112 B
		Total Bismuth, Total tin, Total phosphorus, Silica	LEE-MET-504-VAL-11 v2 Based on: Standard Methods for the examination of water and wastewater 24th Edition 3120 B
	Surface water, Underground water and wastewater	Bromide, Fluoride, Phosphate, Nitrate, Nitrite	Standard Methods for the examination of water and wastewater 24th Edition 4110 B
		Chlorate, Chlorite	Standard Methods for the examination of water and wastewater 24th Edition 4110 D
		Mercury Dissolved	Standard Methods for the examination of water and wastewater 24th Edition 3030 B (Filtration) 3112 B(quantification)



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Chemistry (cont'd.)	Surface water, Marine water, Underground water and Wastewater	Chloride, Sulfate	Standard Methods for the examination of water and wastewater 24th Edition 4110 B
		Chlorophenols: 2-3-6 Trichlorophenol 2-4-6 Trichlorophenol 2-3-5-6 Tetrachlorophenol 2-3-4-6 Tetrachlorophenol Pentachlorophenol	LEE-MET-504-VAL-03 v3.0 Based on Diserens, JM and Savoy, M.C Research note N° QSRN950008: Determination of pentachlorophenol in fruit and baby foods and Diserens, J.M. A Screening methods for the detection of chlorophenols in wood, Laboratory news N°70, topic 5
		Determination of True and apparent color.	LEE-MET-504-VAL-13 v1 Based on: Standard Methods for the examination of water and wastewater 24th Edition 2120 C
		Conductivity Laboratory Method	Standard Methods for the examination of water and wastewater 24th Edition 2510 B
		Phosphate	LEE-MET-504-VAL-14 v1 Based on: Standard Methods for the examination of water and wastewater 24th Edition 4500 - P E
		Dissolved Phosphorus	Standard Methods for the examination of water and wastewater 24th Edition 3030 B (Filtration) 4500 P-B (Digestion) 4500-P-E (Quantification)
		Polycyclic Aromatic Hydrocarbons: Acenaphthylene Acenaphthene Anthracene Benzo (a) Anthracene Benzo (b) Fluoranthene Benzo (k) Fluoranthene Benzo (g, h, i) Perylene Criseno Dibenzo (a, h) Anthracene Phenanthrene	LEE-MET-504-VAL-07 v3.0 Based on: Standard Methods for the examination of water and wastewater 24th Edition 6440 B

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Chemistry (cont'd.)	Surface water, Marine water, Underground water and Wastewater (cont'd.)	Fluoranthene Fluorene Indene (1, 2, 3 cd) Pyrene Naphthalene Pyrene	
		Total nitrogen	Standard Methods for the examination of water and wastewater 24th Edition 4500-N C 4500-NO3-E 4500-NO2-B
		Polychlorinated Biphenyls (PCBs) PCB-28 PCB-52 PCB-101 PCB-118 PCB-153 PCB-138 PCB-180	LEE-MET-504-VAL-08 v3 Based on: Standard Methods for the examination of water and wastewater 24th Edition 6431-B
		Organochlorine pesticides: Aldrin Alpha-BHC, Beta-BHC Delta-BHC Dieldrin Endosulfan I Endosulfan II Endrin Gama-BHC Heptachlor Heptachlor Epoxide Hexachlorobenzene Lindane Methoxychlor Parathion o, p-DDT pp-DDD pp-DDE pp-DDT Trifluralin	LEE-MET-504-VAL-08 v3 Based on: Standard Methods for the examination of water and wastewater 24th Edition 6630-B
		Pesticides: Aldicarb Atrazine Carbaryl Chloridazon Chlorpyrifos Cyanazine	LEE-MET-504-VAL-04 v3 Based on: Extraction procedures and determination of pesticides in environmental samples Course 2011/12 Sciences and technology



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Chemistry (cont'd.)	Surface water, Marine water, Underground water and Wastewater (cont'd.)	Dimethoate Lenacil Methyl Chlorpyrifos Propazine Simazine Tebuconazole	29 I.S.B.N: 978-84-15910-29-9
		Silica	Standard Methods for the examination of water and wastewater 24th Edition 4500-SiO ₂ D
		Total Solids Dried at 103 °C - 105 °C	Standard Methods for the examination of water and wastewater 24th Edition 2540 B
		Total Dissolved Solids Dried at 180 °C	Standard Methods for the examination of water and wastewater 24th Edition 2540 C
		Fixed and Volatile Solids ignited at 550 °C	Standard Methods for the examination of water and wastewater 24th Edition 2540 E
		Turbidity	Standard Methods for the examination of water and wastewater 24th Edition 2130 B
		Aluminum Dissolved, antimony Dissolved, barium Dissolved, beryllium Dissolved, Bismuth Dissolved, boron Dissolved, cadmium Dissolved, calcium Dissolved, cobalt Dissolved, copper Dissolved, chromium Dissolved, strontium Dissolved, iron Dissolved, lithium Dissolved, magnesium Dissolved, manganese Dissolved, molybdenum Dissolved, nickel Dissolved, silver Dissolved, lead Dissolved, potassium Dissolved, sodium Dissolved, vanadium Dissolved, zinc Dissolved	Standard Methods for the examination of water and wastewater 24th Edition 3030 B (Filtration) 3120 B(Quantification)



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FIELDS OF TESTING	MATERIAL/MATRIX	DETERMINANT(S)/ANALYTE(S)	METHOD REFERENCE
Chemistry (cont'd.)	Surface water, Marine water, Underground water and Wastewater (cont'd.)	Hardness Total	Standard Methods for the examination of water and wastewater 24th Edition 2340 B
		Bismuth Dissolved, tin Dissolved, phosphorus Dissolved, Silica Dissolved.	LEE-MET-504-VAL-11 v2 Based on: Standard Methods for the examination of water and wastewater 24th Edition, 3030 B (Filtration) 3120 B (quantification)
	Soil, lake sediments, aquatic sediments, marine sediments	Kjeldahl Nitrogen	LEE-MET-504-VAL-05 v1 Based on: Molecular absorption spectroscopy Cobertera E. "Edaphology Applied. Editions Catedral, Spain (1993) Pp, 237-239 (Digestion) Standard Methods for examination of water and wastewater 24th Edition 4500 NH3-D (Quantification)
		pH	LEE-MET-504-VAL-18 v1 Based on: "Recommended analysis methods in the Chilean soils" Method 3.1 Suspension and potentiometric determination
		Available Phosphor	LEE-MET-504-VAL-16 v1 Based on: Methods of analysis recommended in the soils of Chile Revision 2006. Government of Chile Ministry of Agriculture, INIA and Chilean Society of Soil Sciences. Method 1.1, Sample Preparation. Method 6.i. Analysis of phosphorus in solution baking soda (Olsen Method)
		Total Phosphorus	LEE-MET-504-VAL-06 v3 Based on: ML molecular absorption spectroscopy Jackson, "analysis Soil Chemist." Omega Editions

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Chemistry (cont'd.)	Soil, lake sediments, aquatic sediments, marine sediments (cont'd.)	Total Phosphorus (cont'd.)	Spain (1976) Pp, 190-253.Edition. (Digestion) Standard Methods for examination of water and wastewater 24th Edition 4500 P-E (Quantification)
		Organic Matter	LEE-MET-504-VAL-15 v1 Based on: "Recommended Analysis Methods for Chilean soils " Method 1.1 Preparation of samples Method 7.2 Loss to calcination
		Aluminum removable, cadmium removable, copper removable, chromium removable, iron removable, magnesium removable, manganese removable, Molybdenum removable, nickel removable, lead removable, potassium removable, sodium removable, zinc removable. in Soils, sediments lacustrine	LEE-M ET-504-VAL-17 v1 Based on: EPA 3050-B (Digestion) Standard Methods for examination of water and wastewater 24th Edition 3120B (Quantification)
		Arsenic removable	LEE-MET-504-VAL-17 v1 Based on: EPA 3050-B (Digestion) Standard Methods for examination of water and wastewater 24th Edition 3114B (Quantification)
		Mercury removable	LEE-MET-504-VAL-19 v1 Based on: EPA-245.5 (Digestion) Standard Methods for examination of water and wastewater 24th Edition 3112 B (Quantification)
	Wastewater	Determination of oil and grease	NCh2313/6:2015 - Part 6



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Chemistry (cont'd.)	Wastewater (cont'd.)	Cyanide total	NCh2313/14:1997
		Chloride	NCh2313/32: 1999
		DBO ₅	NCh2313/5:2005
		DQO	NCh2313/24:1997
		Total phosphorus	NCh2313/15:2009
		Fixed Hydrocarbons	NCh2313/7:2021
		Total Hydrocarbons	NCh2313/7:2021
		Volatile Hydrocarbons	NCh2313/7:2021
		Phenol index	NCh2313/19:2001
		Ammonia nitrogen	NCh2313/16:2010
		Kjeldahl Nitrogen	NCh2313/28:2009
		Determination of pH In Situ	NCh2313/1:2021
		Foaming Power	NCh2313/21:2010
		Settleable Solids	NCh2313/4:1995
		Determination of anionic surfactants-Methods for methylene blue active substances (MBAS)	NCh 2313/27:1998
		Total Suspended Solids Dried at 103-105 °C	NCh2313/3:1995
		Sulfide	NCh2313/17:1997
		Fluoride	NCh 2313/33: 1999
		Temperature	NCh2313/2:1995
		Total Aluminum, Total Antimony, Total Barium, Total Beryllium, Total Bismuth, Total boron, Total Cadmium, Total calcium, Total Cobalt, Total Copper, Total Chromium, Total Tin, Total Strontium, Total Phosphorus, Total Iron, Total Dissolved Iron, Total Lithium, Total Magnesium, Total Manganese, Total Molybdenum, Total Nickel, Total Silver, Total Lead, Total Potassium, Total	NCh2313/25:1997



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Chemistry (cont'd.)	Wastewater (cont'd.)	Silicon, Total Sodium, Total Vanadium, Total zinc	
		Determination of Arsenic	NCh2313/9:1996
		Determination of heavy metals: Total cadmium, Total copper, Total chromium, Total iron, iron Dissolved, Total manganese, Total nickel, Total lead, Total zinc	NCh2313/10:2020
		Hexavalent Chromium	NCh2313/11:1996
		Determination of Mercury	NCh2313/12:1996
		Determination of Molybdenum	NCh2313/13:1998
		Determination of selenium	NCh2313/30:1999
		Phenols (phenolic compounds, phenol index).	LEE-MET-504-VAL-37 V2 based on: Standard Methods for the examination of water and wastewater 24th Edition 5530 C. 5530 B Cleanup Procedure
		Determination of Tetrachloroeteno (Tetrachloroetileno), Triclorometano, Bromodiclorometano (Diclorobromometano), Dibromoclorometano, Tribromometano (Bromoformo), Bromodiclorometano (Diclorobromometano)	NCh2313/20.Of98. Parte 20. Determination of trihalomethanes (THM) by gas chromatography with electron capture detector (ECD). 1998 INN.
Determination of Tetrachloroeteno (Tetrachloroetileno) Triclorometano Bromodiclorometano (Diclorobromometano), Dibromoclorometano Tribromometano (Bromoformo), Bromodiclorometano (Diclorobromometano)	LEE-MET-504-VAL 38 V2 Liquid-Liquid Extraction Gas Chromatographic Method. Trihalomethanes and Chlorinated Organic Solvents. Based on Standard Methods for the examination of water and wastewater 24th Edition 6232. B		

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Chemistry (cont'd.)	Wastewater (cont'd.)	Dissolved sulfates	NCh2313/18.Of97. Parte 18. Determinación de sulfato disuelto por calcinación de residuo 1997 INN
		AOX	LEE-MET-504-VAL-39 V2 Based on: ISO 9562:2004. Water quality - Determination of adsorbable organically bound halogens (AOX) 2004 ISO.
		Nitrite Nitrogen	LEE -MET-504-VAL 41 v2 Colorimetric Method NO ₂ ⁻ Nitrogen (Nitrite). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NO ₂ - B.
		Nitrate Nitrogen	LEE -MET-504-VAL 42 v2 Cadmium Reduction Method NO ₃ ⁻ Nitrogen (Nitrate). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NO ₃ - E
		Ammonium	LEE -MET-504-VAL 43 v2 Phenate Method NH ₃ Nitrogen (Ammonia). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NH ₃ F.
		Total Hydrocarbons	LEE-MET-504-VAL-48 v2 based on: NCh 2313/7:2021
	Lacustrine, Aquatic sediments, Marine Sediments and Soils	Particle size analysis- Laser diffraction (granulometry)	ISO 13320:2009 Res. Ex. N°3612/2009, mod Res. Ex 1508 /2014 numeral 26 Subsecretaría de Pesca
		Removable Selenium, Removable Barium, Removable Beryllium, Removable Lithium, Removable Cobalt, Removable Vanadium, Removable Strontium, Removable Silicon, Removable Silica.	LEE-MET-504-VAL-17 version 1
		Conductivity	LEE-MET-504-VAL-21 version 1

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Chemistry (cont'd.)	Lacustrine, Aquatic sediments, Marine Sediments and Soils (cont'd.)	Moisture	LEE-MET-504-VAL-22 version 2
		Total nitrogen	LEE-MET-504-VAL-23 version 1
	Surface water, Wastewater, Marine water and Underground water	Volatile hydrocarbons (C5-C12)	LEE-MET-504-VAL-20 version 3
		Colorimetric Method Chrome VI	LEE-MET-504-VAL-26 version 1, based on Standard Methods for examination of water and wastewater 24th Edition 3500-Cr B, Chromium
		Anionic Surfactants as MBAS.	Standard Methods for examination of water and wastewater 24th Edition 5540. C. Anionic Surfactants as MBAS.
		Fatty and Oleic Acid, Linoleic Acid, Linolenic Acid, Stearic Acid, Resin acids, 9,10-Dichlorostearic Acid, Isopimaric Acid, Abietic Acid, Deshydroabietic Acid, Pimaric Acid, Palustric Acid, Neoabietic Acid, Sandaracopimaric Acid, Levopimaric Acid, 12-Chlorodehydroabietic Acid, 14-Chlorodehydroabietic Acid, 12,14-Dichlorodihydroabietic Acid	LEE-MET-504-VAL-24 version 1
	Underground water	Phenols (phenolic compounds, phenol index).	LEE-MET-504-VAL-37 V2 based on: Standard Methods for the examination of water and wastewater 24th Edition 5530 C. 5530 B Cleanup Procedure
		Determination of Tetrachloroethene (Tetrachloroetileno) Trichlorometano Bromodichlorometano (Diclorobromometano), Dibromoclorometano Tribromometano (Bromoformo),	LEE-MET-504-VAL 38 V2 Based Liquid-Liquid Extraction Gas Chromatographic Method. Trihalomethanes and Chlorinated Organic Solvents. Based on Standard Methods for the examination of water and wastewater 24th Edition 6232. B

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Chemistry (cont'd.)	Underground water (cont'd.)	Bromodiclorometano (Diclorobromometano)	
		AOX	LEE-MET-504-VAL-39 V2 Based on: ISO 9562:2004. Water quality - Determination of adsorbable organically bound halogens (AOX) 2004 ISO.
		Nitrite Nitrogen	LEE -MET-504-VAL 41 v2 Colorimetric Method NO ₂ ⁻ Nitrogen (Nitrite). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NO2- B.
		Nitrate Nitrogen	LEE -MET-504-VAL 42 v2 Cadmium Reduction Method NO ₃ ⁻ Nitrogen (Nitrate). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NO3- E
		Ammonium	LEE -MET-504-VAL 43 v2 Phenate Method NH ₃ Nitrogen (Ammonia). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NH3 F.
		Total Hydrocarbons	LEE-MET-504-VAL-48 v2 based on: NCh 2313/7:2021
		Determination of oil and grease	LEE-MET-504-VAL-44 v2 based on: NCh 2313/6:2015
	Marine water	Phenols (phenolic compounds, phenol index).	LEE-MET-504-VAL-37 V2 based on: Standard Methods for the examination of water and wastewater 24th Edition 5530 C. 5530 B Cleanup Procedure
		Determination of Tetracloroeteno (Tetracloroetileno) Triclorometano Bromodiclorometano (Diclorobromometano), Dibromoclorometano Tribromometano	LEE-MET-504-VAL 38 V2 Based Liquid-Liquid Extraction Gas Chromatographic Method. Trihalomethanes and Chlorinated Organic Solvents. Based on Standard Methods for the examination of water and

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FIELDS OF TESTING	MATERIAL/MATRIX	DETERMINANT(S)/ANALYTE(S)	METHOD REFERENCE
Chemistry (cont'd.)	Marine water (cont'd.)	(Bromoformo), Bromodiclorometano (Diclorobromometano)	wastewater 24th Edition 6232. B
		Nitrite Nitrogen	LEE -MET-504-VAL 41 v2 Colorimetric Method NO ₂ ⁻ Nitrogen (Nitrite). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500- NO2- B.
		Nitrate Nitrogen	LEE -MET-504-VAL 42 v2 Cadmium Reduction Method NO ₃ ⁻ Nitrogen (Nitrate). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500- NO3- E
		Ammonium	LEE -MET-504-VAL 43 v2 Phenate Method NH ₃ Nitrogen (Ammonia). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NH3 F.
		Total Hydrocarbons	LEE-MET-504-VAL-48 v2 based on: NCh 2313/7:2021
		Determination of oil and grease	LEE-MET-504-VAL-44 v2 based on: NCh 2313/6:2015
	Drinking water	Determination of trihalomethanes THM (dibromoclorometano, bromodiclorometano, tribromometano, triclorometano) y de Tetracloroeteno por Gas chromatography method with electron capture detector (ECD)	Manual SISS ME-22-2007.
Surface Water	Determination of Tetracloroeteno (Tetracloroetileno) Triclorometano Bromodiclorometano (Diclorobromometano), Dibromoclorometano Tribromometano (Bromoformo),	LEE-MET-504-VAL 38 V2 Liquid-Liquid Extraction Gas Chromatographic Method. Trihalomethanes and Chlorinated Organic Solvents. Standard Methods for the examination of water and	

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Chemistry (cont'd.)	Surface Water (cont'd.)	Bromodiclorometano (Diclorobromometano)	wastewater 24th Edition 6232. B
		AOX	LEE-MET-504-VAL-39 V2 Based on: ISO 9562:2004. Water quality - Determination of adsorbable organically bound halogens (AOX) 2004 ISO.
		Nitrite Nitrogen	LEE -MET-504-VAL 41 v2 Colorimetric Method NO ₂ ⁻ Nitrogen (Nitrite). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NO2- B.
		Nitrate Nitrogen	LEE -MET-504-VAL 42 v2 Cadmium Reduction Method NO ₃ ⁻ Nitrogen (Nitrate). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NO3- E
		Ammonium	LEE -MET-504-VAL 43 v2 Phenate Method NH ₃ Nitrogen (Ammonia). Based on Standard Methods for the examination of water and wastewater 24th Edition 4500-NH3 F.
		Total Hydrocarbons	LEE-MET-504-VAL-48 v2 based on: NCh 2313/7:2021
	Determination of oil and grease	LEE-MET-504-VAL-44 v2 based on: NCh 2313/6:2015	
	Soil	AOX	LEE-MET-504-VAL-39 v2 Based on: ISO 9562:2004. Water quality - Determination of adsorbable organically bound halogens (AOX) 2004 ISO
		Organic and inorganic phosphorus.	LEE-MET-504-VAL-06 V3 Based on Molecular absorption spectroscopy ML Jackson, "Chemical analysis of soils" Edn., Omega Spain 1976 pages 190-253 Edition (Digestion) and Standard Methods for examination of

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FIELDS OF TESTING	MATERIAL/MATRIX	DETERMINANT(S)/ANALYTE(S)	METHOD REFERENCE
Chemistry (cont'd.)	Soil (cont'd.)		water and waste water 24th Edition 4500 P-E Quantification
		Nitrate, Nitrite, Sulfate, Chlorate, Chloride, chlorite, bromide phosphate and fluoride.	LEE-MET-504-VAL-25 V2 Based on Standard Methods for the Examination of Water and Wastewater, 24th Edition, 4110-B.
	Lake sediments	Organic and inorganic phosphorus.	LEE-MET-504-VAL-06 V3 Based on Molecular absorption spectroscopy ML Jackson, "Chemical analysis of soils" Edn., Omega Spain 1976 pages 190-253 Edition (Digestion) and Standard Methods for examination of water and waste water 24th Edition 4500 P-E Quantification
		Nitrate, Nitrite, Sulfate and Chlorate, Chloride, chlorite, bromide phosphate and fluoride	LEE-MET-504-VAL-25 V2 Based on Standard Methods for the Examination of Water and Wastewater, 24th Edition, 4110-B. Sample preparation, air drying, Recommended methods for Chilean soils, 2006 revision.
	Aquatic sediments	Organic and inorganic phosphorus.	LEE-MET-504-VAL-06 V3 Based on Molecular absorption spectroscopy ML Jackson, "Chemical analysis of soils" Edn., Omega Spain 1976 pages 190-253 Edition (Digestion) and Standard Methods for examination of water and waste water 24th Edition 4500 P-E Quantification
		Nitrate, Nitrite, Sulfate and Chlorate, Chloride, chlorite, bromide phosphate and fluoride	LEE-MET-504-VAL-25 V2 Based on Standard Methods for the Examination of Water and Wastewater, 24th Edition, 4110-B. Sample preparation, air drying, Recommended methods for Chilean soils, 2006 revision.

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FIELDS OF TESTING	MATERIAL/MATRIX	DETERMINANT(S)/ANALYTE(S)	METHOD REFERENCE
Chemistry (cont'd.)	Marine sediments	Organic and inorganic phosphorus.	LEE-MET-504-VAL-06 V3 Based on Molecular absorption spectroscopy ML Jackson, "Chemical analysis of soils" Edn., Omega Spain 1976 pages 190-253 Edition (Digestion) and Standard Methods for examination of water and waste water 24th Edition 4500 P-E Quantification
		Nitrate, Nitrite, Sulfate and Chlorate, Chloride, chlorite, bromide phosphate and fluoride	LEE-MET-504-VAL-25 V2 Based on Standard Methods for the Examination of Water and Wastewater, 24th Edition, 4110-B. Sample preparation, air drying, Recommended methods for Chilean soils, 2006 revision.
Chemistry – Field sampling and analysis	Surface water, Marine water	Transparency	LEE-MET-504-VAL-100 rev.1 based in EPA 440/4-91-002
	Surface water, Marine water, Underground water	pH in situ	Standard Methods for the examination of water and wastewater 24th Edition 4500-H B
		Temperature in situ	Standard Methods for the examination of water and wastewater 24th Edition 2550 B
		Manual sampling	LEE MDT-507-01 v10 LEE PRO-507-01 v18 Based on: NCh-ISO 5667/2:2017 NCh411/3.Of2014 NCh-ISO5667/4:2016 NCh-ISO 5667/6: 2015 NCh411/11:2022
	Underground water	Determining Subsurface Liquid Levels in a Borehole or Monitoring Well (Observation Well)	ASTM-D4750-87 (Reapproved 2001)
Surface water, Marine water, Underground water, and wastewater	Alkalinity in situ, Bicarbonate in situ, Carbonate in situ	LEE-MET-504-VAL-33 v1 Based on: Standard Methods for the examination of water and wastewater 24th Edition 2320 B	

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FIELDS OF TESTING	MATERIAL/MATRIX	DETERMINANT(S)/ANALYTE(S)	METHOD REFERENCE
Chemistry – Field sampling and analysis (cont'd.)	Surface water, Marine water, Underground water, and wastewater (cont'd.)	Residual chlorine in situ	Standard Methods for the examination of water and wastewater 24th Edition 4500 Cl-G
		Conductivity in situ	Standard Methods for the examination of water and wastewater 24th Edition 2510 B
		Determination of Oxygen (Dissolved) in situ	Standard Methods for the examination of water and wastewater 24th Edition 4500 O –B- C
		Determination of Oxygen (Dissolved) in situ	Standard Methods for the examination of water and wastewater 24th Edition 4500 O - G
	Wastewater	Flow measurement	LEE-INS-505-01 v1 Based on: Manufacturer's manual ISCO auto samplers 6172 and Sigma 900 MAX and HACH AS950
		Manual and automatic sampling	LEE MDT-507-01 v10 LEE PRO-507-01 v18 Based on: NCh411/10.Of2005
	Surface Water	Phenols (phenolic compounds, phenol index).	LEE-MET-504-VAL-37 V2 based on: Standard Methods for the examination of water and wastewater 24th Edition 5530 C. 5530 B Cleanup Procedure

