



INTERNATIONAL  
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# CERTIFICATE OF ACCREDITATION

*This is to attest*

**CENTRO DE ECOLOGIA APLICADA S.A.**  
LABORATORIO AMBIENTAL LOS HILANDEROS 8733 LA REINA  
SANTIAGO, 7880031, CHILE

**Inspection Agency AA-815 (Type A)**

has met the requirements of AC98, *IAS Accreditation Criteria for Inspection Agencies*, and has demonstrated compliance with ISO/IEC Standard 17020:2012, *Conformity assessment - Requirements for the operation of various types of bodies performing inspection*. This organization is accredited to provide the services specified in the scope of accreditation.

Expiry Date December 1, 2026

Effective Date March 4, 2025



*International Accreditation Service*  
Issued under the authority of IAS management

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# SCOPE OF ACCREDITATION

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## CENTRO DE ECOLOGIA APLICADA S.A.

[www.cea.cl](http://www.cea.cl)

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**Contact Phone** +56-228405507

**Accredited to** ISO/IEC 17020:2012

**Effective Date** March 4, 2025

FIELD AND RANGE OF INSPECTION	REGULATIONS, INSPECTION METHODS, STANDARDS AND/OR SPECIFICATIONS
Sampling of Surface water, groundwater, sea water	DI-101 version 2 based on NCh ISO 5667/1:2017; NCh ISO 5667/4:2016; NCh ISO 5667/6:2015; NCh 411/3:2014; NCh 411/9:1997; NCh 411/11:2022; NCh 411/12:2018 and NCh 411/19:2017
Sampling water for industrial purposes	DI-128 version 1 based on NCh ISO 5667/1:2017, 411/3:2014 and NCh 411/10:2005
Sampling of wastewater	NCh 411/10.Of2005. Parte 10. Wastewater sampling - Collection and handling of samples
Sampling of drinking water, source of drinking water and sources catchment,	DI-129 versión 1 based on NCh ISO 5667/1:2017, NCh 411/3:2014 and NCh 409/2:2004
Sampling of Aquatic sediments, lake sediments and marine sediments	DI-101 version 2 based on NCh ISO 5667/1:2017; NCh ISO 5667/4:2016; NCh ISO 5667/6:2015; NCh 411/3:2014; NCh 411/9:1997; NCh 411/11:2022; NCh 411/12:2018 and NCh 411/19:2017
Sampling of Aquatic organisms in continental ecosystems	DI-102 version 1 based on Fisheries and Aquaculture Research Fund (2018) Methodological guide and sampling protocols for aquatic flora and fauna in Chilean inland waters. Fishing and Aquaculture Undersecretary (Fipa No. 2016-46)
Sampling of Aquatic organisms in marine ecosystems	DI-111 version 1 based on INVEMAR – Institute for Marine and Coastal Research (2012) Manual of marine and coastal ecosystem methods with a view to establishing environmental impacts. Institute of Marine and Coastal Research "José Benito Vives de Andreis" and National Hydrocarbons Agency ANH. Colombia
Sampling of Soil	DI-112 version 1 based on NCh 3400/1: 2016; NCh 3400/2: 2016.
Measurement of Dissolved Oxygen in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	SM - APHA/AWWA/WEF, 24th Edition, 2023. 4500-O G

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FIELD AND RANGE OF INSPECTION	REGULATIONS, INSPECTION METHODS, STANDARDS AND/OR SPECIFICATIONS
Measurement of Oxygen Saturation in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	DI-105 version 3 based on IT-002 Instructions for the use and maintenance of multiparametric instrument
Measurement of Conductivity in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	SM - APHA/AWWA/WEF, 24th Edition, 2023. 2510 B
Measurement of Salinity in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	DI-105 version 3, based on measuring equipment manuals
Measurement of pH in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	SM - APHA/AWWA/WEF, 24th Edition, 2023. 4500-H+ B
Measurement of pH in wastewater	NCh2313/1:2021 Waste water - Methods of analysis - Part 1: Determination of pH
Measurement of Temperature in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	SM - APHA/AWWA/WEF, 24th Edition, 2023. 2550 B
Measurement of Temperature in wastewater	NCh2313/2. Of.95 Waste water - Methods of analysis. Part 2: Determination of temperature
Measurement of settleable solids in wastewater	NCh 2313/4:1995 Wastewater - Methods of analysis - Part 4: Determination of settleable solids - Volumetric method
Measurement of Turbidity of Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	DI-105 version 3 based on measuring equipment manuals
Measurement of True and Apparent Color in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	SM - APHA/AWWA/WEF, 24th Edition, 2023. 2120 B Visual comparison Method
Measurement of Free Chlorine and Total Chlorine (residual chlorine) in Surface Water, Groundwater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	ISO 7393-2: 2017. Water quality: Determination of free chlorine and total chlorine, Part 2: Colorimetric method using N, N-dialkyl-1,4- phenylenediamine, for routine control purposes

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FIELD AND RANGE OF INSPECTION	REGULATIONS, INSPECTION METHODS, STANDARDS AND/OR SPECIFICATIONS
Measurement of Redox Potential in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	SM - APHA/AWWA/WEF, 24th Edition, 2023. 2580 B
Measurement of Redox Potential in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	US EPA Region 4 (2017) Field Measurement of Oxidation-Reduction Potential (ORP). SESDPROC-113-R2
Measurement of Redox Potential in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	US EPA Region 4 (2024) Field Measurement of Oxidation-Reduction Potential (ORP). FSBPROC-113-R5
Measurement of Phreatic Level in Groundwater, sources catchment and water for industrial purposes	DI-123 version 2 based on ASTM D4750-87 (2001)
Measurement of Water Level in Surface Water, sources catchment and water for industrial purposes	DI-124 version 2 based on GTOS (2009)
Measurement of Flow Rate in Surface Channel	DI-125 version 1 based on ASTM D4409-95 (2014) and ISO748:2007
Measurement of Currents in Seawater	DI-125 version 1 based on ASTM D4409-95 (2014) and ISO748:2007
Measurement of Flow in Surface Water	DI-120 version 1, based on NCh 3205-2011
Measurement of Flow in Wastewater	NCh411/10.Of 2005. Part 10. Wastewater sampling - Collection and handling of samples.
Measurement of Total Suspended Solids in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	DI-105 version 3 based on measuring equipment manuals
Measurement of Total Dissolved Solids in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	DI-105 version 3 based on measuring equipment manuals
Measurement of Conductivity in Surface Water and Seawater	DI-121 version 1 based on measuring equipment manuals. CTD-O
Measurement of Temperature in Surface Water and Seawater	DI-121 version 1 based on measuring equipment manuals. CTD-O

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Measurement of Density in Seawater	DI-121 version 1 based on measuring equipment manuals. CTD-O 0, Manuals and Guides 56 Intergovernmental Oceanographic Commission The international thermodynamic equation of seawater – 2010: Calculation and use of thermodynamic properties
Measurement of Dissolved Oxygen in Surface Water and Seawater	DI-121 version 1 based on measuring equipment manuals. CTD-O
Measurement of pH in Surface Water and Seawater	DI-121 version 1 based on measuring equipment manuals. CTD-O
Measurement of Redox Potential in Surface Water and Seawater	DI-121 version 1 based on measuring equipment manuals. CTD-O
Measurement of Oxygen Saturation in Surface Water and Seawater	DI-121 version 1 based on measuring equipment manuals. CTD-O
Measurement of Salinity in Surface Water and Seawater	DI-121 version 1 based on measuring equipment manuals. CTD-O
Measurement of Chlorophyll a in Surface Water and Seawater	DI-121 version 1 based on measuring equipment manuals. CTD-O
Measurement of Turbidity in Surface Water and Seawater	DI-121 version 1 based on measuring equipment manuals. CTD-O
Measurement of Photosynthetic Active Radiation in Surface Water and Seawater	DI-121 version 1 based on measuring equipment manuals. CTD-O
Measurement of Channel Width (for habitat features) in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	DI-124 version 2 Water level measurement
Measurement of Sampling Depth (for habitat features) in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	DI-124 version 2 Water level measurement
Measurement of Surface Velocity (for habitat features) in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	DI-124 version 2 Water level measurement
Determination of Predominant Substrate (for habitat features) in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	DI-130 version 1 Sensory inspection of waters, based on North American Journal of Fisheries Management. Quantification of stream substrate for study and Standard Operating Procedure Bureau of Land and Water Quality Date: April 20, 2006 Doc num: DEPLW0768

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FIELD AND RANGE OF INSPECTION	REGULATIONS, INSPECTION METHODS, STANDARDS AND/OR SPECIFICATIONS
Determination of Clarity (visual inspection for habitat features) in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	DI-130 version 1 Sensory inspection of waters, based on North American Journal of Fisheries Management. Quantification of stream substrate for study and Standard Operating Procedure Bureau of Land and Water Quality Date: April 20, 2006 Doc num: DEPLW0768
Determination of on Visible floating solids and unnatural foams in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	DI-130 version 1 Sensory inspection of waters, based on North American Journal of Fisheries Management. Quantification of stream substrate for study and Standard Operating Procedure Bureau of Land and Water Quality Date: April 20, 2006 Doc num: DEPLW0768
Determination of Oil or Hydrocarbons in Surface Water, Groundwater, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	DI-130 version 1 Sensory inspection of waters, based on North American Journal of Fisheries Management. Quantification of stream substrate for study and Standard Operating Procedure Bureau of Land and Water Quality Date: April 20, 2006 Doc num: DEPLW0768
Determination of Aquatic and Riparian Vegetation (visual inspection for habitat features) in Surface Water and Marine Waters	DI-130 version 1 Sensory inspection of waters, based on North American Journal of Fisheries Management. Quantification of stream substrate for study and Standard Operating Procedure Bureau of Land and Water Quality Date: April 20, 2006 Doc num: DEPLW0768
Measurement of Water Transparency (Secchi disc) in Surface Water, Seawater, drinking water, source of drinking water, sources catchment, wastewater and water for industrial purposes	ISO 7027-2: 2019. Water quality: Determination of turbidity, Part 2: Semi-quantitative methods for the assessment of transparency of waters
Measurement of pH in Aquatic Sediments (river, estuary). Lake Sediments, Marine Sediments	DI-109 version 1 based on Res. Ex. No. 3612/2009 SERNAPESCA - Numeral 28 and the modifications indicated in Res. Ex. No. 660/2018 and Res. Ex. No. 3002/2018 of the Undersecretary of Fisheries and Aquaculture
Measurement of Temperature in Aquatic Sediments (river, estuary), Lake Sediments, Marine Sediments	DI-109 version 1 based on Res. Ex. No. 3612/2009 SERNAPESCA - Numeral 28 and the modifications indicated in Res. Ex. No. 660/2018 and Res. Ex. No. 3002/2018 of the Undersecretary of Fisheries and Aquaculture
Measurement of Redox Potential of Aquatic Sediments (river, estuary), Lake Sediments, Marine Sediments	DI-109 version 1 based on Res. Ex. No. 3612/2009 SERNAPESCA - Numeral 28 and the modifications indicated in Res. Ex. No. 660/2018 and Res. Ex. No. 3002/2018 of the Undersecretary of Fisheries and Aquaculture

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Measurement of pH in Soil	DI-117 version 1 based on USDA (1999) Guidelines for soil quality and health assessment
Measurement of Conductivity in Soil	DI-118 version 1 based on USDA (1999) Guidelines for soil quality and health assessment
Measurement of Temperature in Soil	DI-118 version 1 based on USDA (1999) Guidelines for soil quality and health assessment
Measurement of Conductivity in Soil	DI-127 version 1 based on measuring equipment manuals
Measurement of Temperature in Soil	DI-127 version 1 based on measuring equipment manuals
Measurement of Water Content in Soil	DI-127 version 1 based on measuring equipment manuals
Sampling in Solid Industrial Waste (RISES), Solid Waste	DI-132 version 1 based on Supreme Decree N° 148 of 2004, Ministry of Health. Health Regulation on the Management of Hazardous Waste
Identification and Determination of Macroalgae in Marine Ecosystems	DI-111 version 1, based on INVEMAR – Institute for Marine and Coastal Research (2012) Manual of Marine and Coastal Ecosystem Methods with a View to Establishing Environmental Impacts. Institute of Marine and Coastal Research "José Benito Vives de Andreis" and National Hydrocarbons Agency ANH. Colombia.
Identification and Determination of Macrophytes in Continental Aquatic Ecosystems	DI-102 version 1, based on Fisheries and Aquaculture Research Fund (2018) Methodological Guide and Sampling Protocols for Aquatic Flora and Fauna in Chilean Inland Waters. Fishing and Aquaculture Undersecretary (Fipa No. 2016-46)
Identification, Determination and Measurement of Ichthyofauna (fish) in Continental Aquatic Ecosystems	DI-102 version 1, based on Fisheries and Aquaculture Research Fund (2018) Methodological Guide and Sampling Protocols for Aquatic Flora and Fauna in Chilean Inland Waters. Fishing and Aquaculture Undersecretary (Fipa No. 2016-46)
Identification, Determination and Measurement of Ichthyofauna (fish) in Marine Ecosystems	DI-111 version 1, based on INVEMAR – Institute for Marine and Coastal Research (2012) Manual of Marine and Coastal Ecosystem Methods with a View to Establishing Environmental Impacts. Institute of Marine and Coastal Research "José Benito Vives de Andreis" and National Hydrocarbons Agency ANH. Colombia.

