

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK



4409

Accredited to
ISO/IEC 17025:2005

ALS Environmental Ltd Wakefield

Issue No: 074 Issue date: 23 May 2017

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Testing performed at the above address only

DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
WATERS: Potable and Raw waters	<p>Testing for the purpose of enforcement of the <u>Water Supply (Water Quality) Regulations 2000 (SI 2000/3184)</u>. The testing is in accordance with the <u>Drinking Water Testing Specification (DWTS)</u>.</p> <p><u>Chemical Testing</u></p>	Documented In-House Methods based on Standing Committee of Analysts Methods for the Examination of Waters and Associated Materials, HMSO Publication, Year and ISBN No given where applicable
Potable and Raw waters	<p>Phenols:</p> <ul style="list-style-type: none"> 2,3-Dichlorophenol 2,3-Xylenol 2,4,5-Trichlorophenol 2,4,6-Trichlorophenol 2,4-Dichlorophenol 2,4-Xylenol 2,5-Xylenol 2,6-Dichlorophenol 2,6-Xylenol 2-Chloro-4-Methylphenol 2-Chlorophenol 3,4-Xylenol 3,5-Xylenol 3-Chloro-4-Methylphenol 3-Chlorophenol 4-Chloro-2-Methylphenol 2-Chloro-5-Methylphenol 4-Chlorophenol 2-Methylphenol 3-Methylphenol 4-Methylphenol Phenol 	WPC34 using Pentafluorobenzoylation and Gas Chromatography/Mass Spectrometry



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WATERS: Potable and Raw waters (cont'd)	<p><u>Testing for the purpose of enforcement of the Water Supply (Water Quality) Regulations 2000 (SI 2000/3184).</u> <u>The testing is in accordance with the Drinking Water Testing Specification (DWTS) (cont'd)</u></p> <p><u>Chemical Testing (cont'd)</u></p>	Documented In-House Methods based on Standing Committee of Analysts Methods for the Examination of Waters and Associated Materials, HMSO Publication, Year and ISBN No given where applicable (cont'd)
Potable and Raw waters	<p>Taste and Odour compounds: 2,3,4-Trichloroanisole 2,3-Dichlorophenol 2,4,5-Trichlorophenol 2,4,6-Tribromoanisole 2,4,6-Tribromophenol 2,4,6-Trichloroanisole 2,4,6-Trichlorophenol 2,4-Dibromophenol 2,4-Dichlorophenol 2,6-Dibromophenol 2,6-Dichlorophenol 2-Bromophenol 2-Chloroanisole 2-Chlorophenol 2-Isobutyl-3-methoxypyrazine 2-Isopropyl-3-methoxypyrazine 3-Chloroanisole 4-Chloroanisole</p>	WPC36 using Liquid-Liquid Extraction And Detection By Gas Chromatography With Mass Spectrometric Detection
Potable and Raw waters	<p>THMs and other VOCs: 1,1,1-Trichloroethane 1,1- Dichloroethane 1,2-Dichloroethane 1,4-Dichlorobenzene Benzene Bromodichloromethane Bromoform Carbon Tetrachloride Chlorodibromomethane Chloroform Dichloromethane Ethylbenzene m&p-Xylene MTBE o-Xylene Tetrachloroethene Trichloroethene</p>	WPC28 using Headspace Gas Chromatography with MS Detection



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Potable and Raw waters	<u>Chemical Testing (cont'd)</u> PAHs: Benzo (b) fluoranthene Benzo(k)fluoranthene Benzo(ghi)perylene Benzo(a)pyrene Fluoranthene Indeno(1,2,3-cd)pyrene	WPC27 using HPLC
Potable and Raw waters	Polar herbicides: 2,3,6-Trichlorobenzoic acid 2,4,5-T 2,4,5-TP (Fenoprop) 2,4-D 2,4-DB 2,4-DP (Dichloroprop) Asulam Benazolin Bentazone Bromoxynil Clopyralid Dicamba Fluroxypyr Imazapyr Ioxynil Dinoseb MCPA MCPB MCPB (Mecoprop) Pentachlorophenol Picloram Propamocarb Iprodione Triclopyr	WPC45 using LCMSMS
Potable and Raw waters	Acrylamide	WPC53 using HPLCMSMS



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Potable and Raw Waters	Vinyl Chloride	WPC63 using Headspace GC-MS QQQ
Potable and Raw waters	Polar pesticides: Atrazine Boscalid Bromacil Carbaryl Carbetamide Chlorbufam Chloridazon Chlorpropham Chlorpyriphos-Ethyl Chlorpyriphos-Methyl Chlortoluron Clomazone Cyanazine Cyproconazole Diazinon Difenoconazole Diflufenican Diuron EPTC Epoconazole Fluazifop-Butyl Flufenacet Flurtamone Flusilazole Flutriol Isoproturon Kresoxim-Methyl Linuron Metoxuron Tebuconazol Simazine Trietazine Monuron Propham Prosulfocarb	WPC43 using direct aqueous injection with on-line solid phase extraction analysed by Triple Quadrupole LC/MS/MS



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Potable and Raw waters (cont'd)	<u>Chemical Testing (cont'd)</u> Polar pesticides: (cont'd) Quinmerac Oxadixyl Flusilazole Metalaxyl Triallate Metazachlor Pendimethalin Propachlor Propiconazole Propyzamide Metaldehyde	WPC43 using direct aqueous injection with on-line solid phase extraction analysed by Triple Quadrupole LC/MS/MS (cont'd)
Potable and Raw waters	Organochlorine pesticides, polychlorinated biphenyls and selected non-polar organic compounds: Dichlobenil alpha-HCH Hexachlorobenzene gamma-HCH delta-HCH Chlorothalonil Heptachlor Aldrin cis-Heptachlor Epoxide trans-Heptachlor Epoxide o,p'-DDE p,p'-DDE Dieldrin o,p'-TDE Endrin p,p'-TDE o,p'-DDT p,p'-DDT Methoxychlor Parathion-Ethyl	WPC50 using solvent extraction and GCMSMS



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Potable and Raw waters (cont'd)	<p>Organochlorine pesticides, polychlorinated biphenyls and selected non-polar organic compounds (cont'd)</p> <p>Tecnazene Trifluralin cis-Permethrin Fluazifop-Butyl trans-Permethrin Cyfluthrin Cypermethrin Fenvalerate Deltamethrin Chlorthal-dimethyl Parathion-ethyl Pentachlorobenzene</p>	WPC50 using solvent extraction and GCMSMS (cont'd)



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Potable and Raw waters (cont'd)	<u>Chemical Testing (cont'd)</u> Organochlorine pesticides, polychlorinated biphenyls and selected non-polar organic compounds (cont'd)	WPC50 using solvent extraction and GCMSMS (cont'd)
Potable and Raw waters	Pesticides: Chloromequat Diquat Paraquat Mepiquat	WPC51 by LCMSMS
Potable And Raw waters	Pesticides: Ametryn Azinphos-methyl Carbendazim Chlorfenvinphos Dichlorvos Dimethoate Ethofumesate Fenpropidin Fenpropimorph Malathion Methabenzthiazuron Methiocarb Mevinphos Pirimicarb Pirimiphos-methyl Prometryn Propazine Propetamphos Terbutryn	WPC46 using LCMSMS



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	<u>Chemical Testing (cont'd)</u>	
Potable and Raw waters	Glyphosate Aminomethylphosphonic acid	WPC52 by LCMSMS
Potable and Raw waters	Metaldehyde	WPC31 using SPE GC/MS
Potable and Raw waters	Metaldehyde	WPC62 using LC-qTOF MS
Potable, River and Groundwaters	Microcystin - LR	WPC59 using LCMSMS
Potable and Raw waters	Haloacetic acids: MonoChloroAcetic Acid (MCAA) MonoChloroAcetic Acid (MCAA) MonoBromoAcetic Acid (MBAA) DiChloroAcetic Acid (DCAA) 2,2-DiChloroPropanoic Acid (Dalapon) TriChloroAcetic Acid (TCAA) BromoChloroAcetic Acid (BCAA) DiBromoAcetic Acid (DBAA) BromoDiChloroAcetic Acid (BDCAA) DiBromoChloroAcetic Acid (DBCAA) TriBromoAcetic Acid (TBAA)	WPC60 using GCMS
Potable and Raw waters	pH	WPC 8 using manual meter
Potable and Raw waters	Conductivity	WPC 7 using manual meter
Potable and Raw waters	Turbidity	WPC 6 using manual meter
Potable and Raw waters	Colour	WPC13 using UV-Vis spectrometer
Potable and Raw waters	Fluoride	WPC20 using Ion Selective Electrode
Potable and Raw waters	Suspended Solids (105 °C)	WPC22 by gravimetry



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Potable and Raw waters	<u>Chemical Testing (cont'd)</u> Total Dissolved Solids (180 °C)	WPC25 by gravimetry
Potable and Raw waters	pH, Conductivity, Turbidity and Colour	WPC 40 using the Peerless Automated Robotic System
Potable and Raw waters	Chlorite, Chlorate, and Bromide	WPC18
Potable and Raw waters	Chlorite, Chlorate, and Bromide	WPC61 using ion chromatography
Potable and raw waters Bottled waters	Free Cyanide Total Cyanide	WPC65 using continuous flow autoanalyser
Potable and Raw waters	Metals (total and dissolved): Iron Aluminium Manganese Phosphorus Sulphur as Sulphate (SO ₄) Silicon as Silica (SiO ₂)	WPC12 using Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES)
Potable and Raw waters	Metals (total): Calcium Magnesium Hardness as CaCO ₃ Potassium Sodium	WPC12 using Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES)
Potable and Raw waters	Metals (total): Boron	WPC12 using Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES)



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Potable and Raw waters	<u>Chemical Testing (cont'd)</u> Permanganate Index	WPC47 using manual titration
Potable and Raw waters	Metals: Lead Copper Zinc Nickel Cadmium Chromium Silver Antimony Selenium	WPC15 using Inductively Coupled Plasma Mass Spectrometry (ICP-MS) - Perkin Elmer DRC and Perkin Elmer Nexion instruments
Potable and Raw waters	Metals: Arsenic Strontium Barium Cobalt Molybdenum Uranium Vanadium	WPC15 using Inductively Coupled Plasma Mass Spectrometry (ICP-MS) - Perkin Elmer DRC and Perkin Elmer Nexion instruments (cont'd)
Potable and Raw waters	Tin Titanium	WPC15 using Inductively Coupled Plasma Mass Spectrometry (ICP-MS) - Perkin Elmer DRC ONLY
Potable Waters	Thallium	WPC15 using Inductively Coupled Plasma Mass Spectrometry (ICP-MS) - Perkin Elmer DRC ONLY
Potable and Raw waters	Beryllium Lithium Thallium	WPC15 using Inductively Coupled Plasma Mass Spectrometry (ICP-MS) - Perkin Elmer Nexion ONLY



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WATERS: Potable, Raw and Surface Waters	<u>Testing for the purpose of enforcement of the Water Supply (Water Quality) Regulations 2000 (SI 2000/3184).</u> <u>The testing is in accordance with the Drinking Water Testing Specification (DWTS) (cont'd)</u> <u>Chemical Testing (cont'd)</u>	Documented In-House Methods based on procedures in the Standing Committee of Analysts Publication "The Microbiology of Water 2002" unless stated otherwise
Potable waters	Tin Titanium	WPC15 using Inductively Coupled Plasma Mass Spectrometry (ICP-MS) - Perkin Elmer Nexion ONLY
Potable and Raw waters	Mercury	WPC21 using ICP-MS
Potable and Raw waters	TOC	WPC24 using GE Analytical Instruments Sievers InnovOx TOC analyser
Potable, Bottled and Raw waters	Bromate	WPC54 using IC (Methrom)
Potable and Raw waters	Sulphide (test kit)	WPC37 using spectrophotometer
Potable and Raw waters	Bromate	WPC42 using IC (Dionex)
Potable, Raw, Surface and groundwaters	Dissolved and total metals: Iron Manganese Aluminium Sodium Potassium Calcium Magnesium Sulphur (as sulphate) Silicon (as Silica) Phosphorus Boron	WPC 49 using Inductively Coupled Plasma optical emission spectrometry (ICP-OES)
Drinking water, Groundwater and Surface Water	Ammonium Total Oxidised Nitrogen Nitrite Nitrate (by calculation) Chloride Orthophosphate Silica Alkalinity	WPC64 by discrete analysis (Aquakem)



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Potable, Raw and Surface Waters	<u>Microbiological Testing</u> Isolation and enumeration of: Total viable count at 22 °C and 37 °C	WPM1 based on "The Microbiology of Drinking Water" Part 7 (2007) (by Pour Plate)
Potable, Raw and Surface Waters	Coliforms presumptive and confirmed	WPM4 based on "The Microbiology of Drinking Water" Part 4 (2009) using membrane filtration using MLGA
Potable, Raw and Surface Waters	<i>Escherichia coli</i> , presumptive and confirmed	WPM4 based on "The Microbiology of Drinking Water" Part 4 (2009) using membrane filtration using MLGA
Potable, Raw and Surface Waters	Enterococci, presumptive and confirmed	WPM2 based on "The Microbiology of Drinking Water" Part 5 (2010) using membrane filtration
Potable, Raw and Surface Waters	<i>Clostridium perfringens</i> presumptive and confirmed	WPM3 based on "The Microbiology of Drinking Water" Part 6 (2010) using membrane filtration
Potable, Raw and Surface Waters	Cryptosporidium Oocysts	WCRY1, WCRY2, & WCRY3 based on "The Microbiology of Drinking Water" Part 14 (2009)
Potable Waters only	Quantitative Taste	WPM 10 using assessed Panel
Potable and Raw waters	Quantitative Odour	WPM 10 using assessed Panel
Potable, Groundwater, Surface, Process and Recreational Waters (natural and man-made)	<i>Pseudomonas aeruginosa</i>	WPM11 based on "The Microbiology of Drinking Water" Part 8 (2010) using membrane filtration



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Potable, Groundwater, Surface, Process and Recreational Waters (natural and man-made)	<i>Pseudomonas Spp</i>	WPM12 in house method based on "The Microbiology of Water" 1994 Part 1 using membrane filtration
Potable, Raw and Surface Waters	<u>Radiochemistry Testing:</u> Radioactivity - Gross Alpha (relative to Am-241) Gross Beta (relative to K-40)	Documented In-House Methods based on Standing Committee of Analysts Methods for the Examination of Waters and Associated Materials, HMSO Publication, Year and ISBN No given where applicable WPC23
WASTE WATERS:	<u>Chemical Testing</u>	Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - sampling and chemical testing of untreated sewage, sewage effluent and trade effluent



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Raw Water	BOD	WWC11 using dissolved oxygen meter
Raw Water	COD	WWC13 using DR3800 Spectrophotometer
Untreated sewage, treated sewage effluent, trade effluent to sewer, trade effluent to controlled water	Alkalinity (to pH 4.5)	WWC9 using manual titration
Untreated sewage, treated sewage effluent, trade effluent to sewer, trade effluent to controlled water	Ammonia Nitrite nitrogen Nitrogen total oxidised Phosphorus soluble reactive Sulphate Chloride Nitrate (by calculation)	WWC12 using Aqua 900 discrete analyser
Untreated sewage, treated sewage effluent, trade effluent to sewer, trade effluent to controlled water	pH	WWC14 using manual probe system
Untreated sewage, treated sewage effluent, trade effluent to sewer, trade effluent to controlled water	Suspended Solids (105 °C) Ashed suspended solids (450 °C)	WWC21 by gravimetry
WASTE WATERS: (cont'd)	<u>Chemical Testing</u> (cont'd)	Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - sampling and chemical testing of untreated sewage, sewage effluent and trade effluent (cont'd)
Untreated sewage, treated sewage effluent, trade effluent to sewer, trade effluent to controlled water	Aluminium, , Boron Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Nickel, Phosphorus, Potassium, , Sodium, Thallium, Vanadium, Zinc and Sulphur (as SO ₄)	WWC8 by ICP-OES
Untreated sewage, treated sewage effluent, trade effluent to sewer, trade effluent to controlled water	Mercury	WWC17 by ICP-MS



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Untreated sewage, treated sewage effluent, trade effluent to sewer, trade effluent to controlled water	COD	WWC13 using DR3800 Spectrophotometer
Untreated sewage, treated sewage effluent, trade effluent to sewer, trade effluent to controlled water	Total Organic Carbon	WWC24 using GE Analytical Instruments Sievers InnovOx TOC analyser
Untreated sewage, treated sewage effluent, trade effluent to sewer, trade effluent to controlled water	Ammonia Nitrite Total Oxidised Nitrogen Nitrate (by calculation) Chloride Soluble reactive phosphorus	WWC47 by discrete analysis (Aquakem)
WASTE WATERS: (cont'd)	<u>Chemical Testing</u> (cont'd)	Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - sampling and chemical testing of untreated sewage, sewage effluent and trade effluent (cont'd)



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Untreated sewage, treated sewage effluent, trade effluent to sewer, trade effluent to controlled water	Metals (total and dissolved) Aluminium Vanadium Chromium Iron Manganese Cobalt Nickel Copper Zinc Arsenic Molybdenum Cadmium Thallium Lead	WWC46 using ICP-MS
Treated sewage effluent and trade effluent to sewer, trade effluent controlled waters	Elements (total and dissolved) Selenium Phosphorus	WWC46 using ICP-MS
Untreated sewage, treated sewage effluent, trade effluent to sewer, trade effluent to controlled water	Petroleum ether extractable matter	WWC48
Untreated sewage, treated sewage effluent, trade effluent to sewer, trade effluent to controlled water	pH and Conductivity (20 °C)	WWC14 using manual probe system
Untreated sewage, treated sewage effluent, trade effluent to sewer, trade effluent to controlled water	Sulphides	WWC20 using spectrophotometer
WASTE WATERS: (cont'd)	<u>Chemical Testing</u> (cont'd)	Documented In-House Method to meet the requirements of the Environment Agency MCERTS Performance Standard - sampling and chemical testing of untreated sewage, sewage effluent and trade effluent (cont'd)



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Untreated sewage, treated sewage effluent, trade effluent to sewer, trade effluent to controlled water	Pesticides: Para Tert Octyl Phenol Ioxynil	WWC42 using GC/MSMS
Untreated sewage, treated sewage effluent, trade effluent to sewer, trade effluent to controlled water	Ammonia Nitrite Total Oxidised Nitrogen Nitrate (by calculation) Chloride Soluble reactive phosphorus	WWC50 by Gallery Plus Discrete Analyser
SOILS:	<u>Chemical Tests</u>	
Sludge only	Alkalinity	WSC1 by titration
Soil and sludge	Kjeldahl Nitrogen	WSC8 determined spectrometrically
Soil and sludge	pH	WSC11 Ion Selective Electrode
Soil and sludge	Total Solids (105 °C) Total Ash Solids (550 °C)	WSC12 by gravimetry
Soil and sludge	Vanadium, Cadmium, Chromium, Cobalt, Nickel, Copper, Arsenic, Selenium, Molybdenum, Thallium, Lead, Zinc	WSC 16 by Boiling Acid Digestion Followed by ICP-MS
Soil and sludge	Mercury	WSC5 using ICP-MS
Soil and sludge	Antimony	WSC7 using ICP-MS
Soil and sludge	Fluoride	WSC18 using ion selective electrode
Soil	Extractable potassium Extractable magnesium	WSC13 using ICP-AES
Soil	Extractable phosphorus	WSC14 using UV 1800 Spectrophotometer



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Accredited to
ISO/IEC 17025:2005

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

ALS Environmental Ltd
Wakefield

Issue No: 074 Issue date: 23 May 2017

Testing performed at main address only

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
SOILS: Soil and sludge	<u>Chemical Tests</u> (cont'd) Aluminium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Nickel, Phosphorus, Sulphur, Tin, Zinc, Potassium, Magnesium, Manganese, Sodium, Lithium, Cadmium,	WSC6 using ICPAES
END		