

Schedule

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Certificate No. : LA-2015-0595-F
Issue No. : 15
Date : 25 July 2025
Expiry of Certificate : 18 May 2027
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FIELD OF TESTING : Environmental Testing

MATERIALS / PRODUCTS TESTED	TESTS / PROPERTIES	STANDARD METHODS / TECHNIQUES / EQUIPMENT	SIGNATORIES
A. WATER ANALYSIS - Ballast water - Drinking water (Potable) - Non-potable water - Fresh water - Industrial water - Wastewater, Trade effluent - Ground water - RO water - DI water - Swimming pool water - Cooling tower water - Sea water	1. Acidity	APHA 2310B	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	2. Acid and Base-Neutralizing Capacities	DIN 38409-7: 2005	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	3. Alkalinity	APHA 2320B	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	4. Ammonia	APHA 4500-NH ₃ (D) APHA 4500-NH ₃ (H)	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	5. Appearance	APHA 2110	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	6. Biochemical Oxygen Demand (BOD)	APHA 5210B	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	7. Bromide	APHA 4110B	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC

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	8. Calcite Saturation	DIN 38404-10: 1995	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	9. Carbon Dioxide and Forms of Alkalinity	APHA 4500-CO ₂ (D)	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	10. Cations by Ion Chromatography (IC)	ASTM D6919-17	WPH, TTP, UFG, LYH, CVK, LJJ
	11. Chemical Oxygen Demand (COD)	HACH Method 8000 (Jul 2021) APHA 5220B APHA 5220D	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	12. Chemical Oxygen Demand (COD) for Seawater or Water Samples with High Chloride Content	In-house Method: MLS-SOP-WQ-029 Rev 1 (adapted from HACH) In-house Method: MLS-SOP-WQ-045 Rev 1 (adapted from HACH)	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	13. Chloride Chloride (by Titration)	APHA 4110B APHA 4500-Cl ⁻ (D)	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	14. Chlorine as Cl ₂ (Residual)	Lovibond Test Kit (DPD) Rev 1.0 APHA 4500-Cl (F)	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	15. Chlorine (Free)	HACH Method 8021 (Jan 2014) HACH Method 10241 (Apr 2021) Lovibond Method 110	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	16. Chlorine (Total)	HACH Method 8167 (Jan 2022) Lovibond Method 110	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	17. Chlorophyll-a	APHA 10150B (Spectrophotometric) APHA 10150C (Fluorometric)	WPH, TTP, UFG, LYH, CVK, LJJ

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	18. Chromium VI	APHA 3500-Cr (B)	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	19. Colour	APHA 2120B APHA 2120C In-House Method: MLS-SOP-WQ-036 Rev 0 (using Lovibond Tintometer)	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	20. Complex Cyanide (by Calculation)	In-House Method: MLS-SOP-WQ-035 Rev 0	WPH, TTP, UFG, CVK
	21. Conductivity	APHA 2510B	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	22. Cyanide (Free)	USEPA 9016 (Jun 2010)	WPH, TTP, UFG, CVK
	23. • Cyanide (Total) • Cyanide (Weak acid dissociable)	APHA 4500-CN ⁻ (N)	WPH, TTP, UFG, CVK, NKO
	24. • Cyanide (Total) • Cyanide (Weak acid dissociable)	APHA 4500-CN ⁻ (O)	WPH, TTP, UFG, CVK
	25. Cyanogen Chloride	APHA 4500-CN ⁻ (J)	WPH, TTP, UFG, CVK
	26. Cyanuric acid	HACH Method 8139 (Jan 2014)	WPH, TTP, UFG, LYH, CVK, LJJ
	27. Cyindrospermopsin	USEPA 545 (Apr 2015)	WPH, TTP
	28. Detergents (MBAS)	APHA 5540C	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	29. Dibutyltin (DBT)	In-house Method: MLS-SOP-WQ-046 Rev 0 (adapted from APHA 6710B)	WPH, TTP, UFG, LJJ, CBS

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	30. Disinfectant by-products: • Bromochloroacetonitrile • Chloropicrin • Dibromoacetonitrile • Dichloroacetonitrile • Trichloroacetonitrile	USEPA 551.1 (1995)	WPH, TTP, UFG, LJJ, CBS
	31. Dissolved Oxygen	APHA 4500-O (G)	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	32. Elements / Metals	APHA 3125B (Refer to Appendix 1 for list of elements)	WPH, TTP, UFG, CVK, NKO, CYC
	33. Elements / Metals	APHA 3120B USEPA 6010D (Jul 2018) (Refer to Appendix 5 for list of elements)	WPH, TTP, UFG, CVK, NKO, CYC
	34. Fixed Solids (FS)	APHA 2540E	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	35. Flavor Threshold Number (FTN)	APHA 2160B	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	36. Flocculated Filtered Chemical Oxygen Demand (ff COD)	Methods for Wastewater Characterization in Activated Sludge Modeling (2004) Section 7.4.1	WPH, TTP, UFG, LYH, CVK, LJJ
	37. Fluoride	APHA 4110B APHA 4500-F (C)	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	38. Formaldehyde	APHA 6252B	WPH, TTP, UFG, LJJ, CBS
	39. Glyphosate and AMPA	In-House Method: MLS-SOP-WQ-040 Rev 0 (using LCMS-MS)	WPH, TTP
	40. Geosmin (GSM) 2-Methylisoborneol (MIB)	APHA 6040D	WPH, TTP, UFG

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	41. Haloacetic Acids & Dalapon: • Bromochloroacetic acid (BCAA) • Dibromoacetic acid (DBAA) • Dibromochloroacetic acid (DBCAA) • Dichloroacetic acid (DCAA) • Dichlorobromoacetic acid (DCBAA) • Monobromoacetic acid (MBAA) • Monochloroacetic acid (MCAA) • Tribromoacetic acid (TBAA) • Trichloroacetic acid (TCAA) • Dalapon	USEPA 552.3 (2003)	WPH, TTP, UFG, LJJ, CBS
	42. Hardness as CaCO ₃	APHA 2340B	WPH, TTP, UFG, LYH, CVK, NKO, CYC
	43. Hydrazine	HACH Method 8141 (Aug 2019) ASTM D1385-07	WPH, TTP, UFG, LYH, CVK, LJJ
	44. Hydrogen Peroxide (H ₂ O ₂)	In-house Method: MLS-SOP-WQ-047 Rev 0 (adapted from Merck)	WPH, TTP, UFG, LYH, CVK, LJJ
	45. Inorganic Anions (Bromate, Chlorite, Chlorate)	USEPA 300.1 (1997)	WPH, TTP, UFG, LYH, CVK, LJJ, NKO
	46. Inorganic Anions (Bromate, Chlorite, Chlorate) in Seawater	In-house Method: MLS-SOP-WQ-034 Rev 1 (Sample Preparation) USEPA 300.1 (1997) (Analysis)	WPH, TTP, UFG, LYH, CVK, LJJ, NKO

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	47. Inorganic Anions (Bromate, Chlorite, Chlorate) in NaOCl	In-house Method: MLS-SOP-WQ-038 Rev 1 (Sample Preparation) USEPA 300.1 (1997) (Analysis)	WPH, TTP, UFG, LYH, CVK, LJJ, NKO
	48. Iron (Fe ²⁺)	HACH Method 8146 (Aug 2019)	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	49. Mercury	USEPA 245.1 (FIMS) (1994)	WPH, TTP, UFG, CVK, NKO, CYC
	50. Microcystins	Abraxis Test Kit	WPH, TTP, UFG LYH, CVK
	51. Microcystins-LR	USEPA 544 (Feb 2015)	WPH, TTP, LJJ
	52. Nitrate	APHA 4110B APHA 4500-NO ₃ (I)	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	53. Nitrite	APHA 4110B APHA 4500-NO ₃ (I)	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	54. Odor Threshold Number (OTN)	APHA 2150B	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	55. Oil and Grease	USEPA 1664 (Feb 2010)	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	56. Oil & Grease (Hydrocarbon)	APHA 5520F	WPH, TTP, UFG, LYH, CVK, LJJ NKO, CYC
	57. Oil & Grease (Total) by FTIR	In-house Method: MLS-SOP-WQ-033 Rev 2 (adapted from APHA 5520C)	WPH, TTP, UFG, LYH, CVK, NKO, LJJ, CYC
	58. Oil & Grease (Total) by Gravimetric	APHA 5520B	WPH, TTP, UFG, LYH, CVK, LJJ, CYC

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	59. Perchlorate (Freshwater and Seawater)	USEPA 314.0 (Nov 1999)	WPH, TTP, UFG, CVK, LJJ, NKO
	60. Perchlorate (NaOCl)	In-house Method: MLS-SOP-WQ-039 Rev 0 (Sample Preparation) USEPA 314.0 (Nov 1999) (Analysis)	WPH, TTP, UFG, CVK, LJJ, NKO
	61. pH	APHA 4500-H (B)	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	62. Phenolic Compounds (as Phenol)	APHA 5530B (Distillation) APHA 5530D (Determination) In-house Method: MLS-SOP-WQ-009 Rev 2 using Microdist Method (Distillation) APHA 5530D using Flow Injection Analysis Colorimetry (Determination)	WPH, TTP, UFG, CVK WPH, TTP, UFG, CVK
	63. Phosphate as PO ₄	In-house Method: MLS-SOP-WQ-009 Rev 2 APHA 4110B APHA 4500-P (E) APHA 4500-P (G)	WPH, TTP, UFG, CVK, NKO WPH, TTP, UFG, LYH, CVK, NKO, LJJ, CYC
	64. Polybrominated Diphenyl Ethers (PBDEs)	In-house Method: MLS-SOP-WQ-020 Rev 2	WPH, TTP, UFG, LJJ, CBS
	65. Salinity	APHA 2520B	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	66. Settleable Solids	APHA 2540F	WPH, TTP, UFG, LYH, CVK, LJJ, CYC

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	67. Silica as SiO ₂	APHA 4500-SiO ₂ (D) HACH Method 8282 (Jan 2014) HACH Method 8186 (Sep 2019)	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	68. Silt Density Index (SDI)	ASTM D4189-23	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	69. Sulfate	APHA 4110B HACH Method 8051 (Oct 2019)	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	70. Sulfide	APHA 4500-S ²⁻ (D) APHA 4500-S ²⁻ (F)	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	71. Sweeteners: • Aspartame • Saccharin • Sucralose	In-house Method: MLS-SOP-WQ-048 Rev 0 (using LCMS-MS)	WPH, TTP, LJJ
	72. Taste	APHA 2160C	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	73. Temperature	APHA 2550B	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	74. Thiocyanate	APHA 4500-CN- (M)	WPH, TTP, UFG, CVK
	75. Total Dissolved Solids	APHA 2540C	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	76. Total Kjeldahl Nitrogen Content (TKN)	APHA 4500-N _{org} (D)	WPH, TTP, UFG, CVK, LJJ, NKO
	77. Total Nitrogen (TN)	APHA 4500-N (C)	WPH, TTP, UFG, CVK

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	78. Total Nitrogen (TN) Total Phosphorus (TP)	APHA 4500-P (J)	WPH, TTP, UFG, CVK, LJJ, NKO
	79. • Total Organic Carbon (TOC) • Dissolved Organic Carbon (DOC)	APHA 5310B	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	80. Total Organic Carbon (TOC)	APHA 5310C	WPH, TTP, UFG, LYH, CVK, LJJ, NKO, CYC
	81. Total Phosphorus	APHA 4500-P (H)	WPH, TTP, UFG, CVK
		In-house Method: MLS-SOP-WQ-028 Rev 2 (Digestion) APHA 4500-P (E) (Determination)	WPH, TTP, UFG LYH, CVK, LJJ NKO
	82. Total Solids	APHA 2540B	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	83. Total Suspended Solids	APHA 2540D	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	84. Total Volatile Solids	APHA 2540E	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	85. Tributyltin (TBT)	APHA 6710B In-house Method: MLS-SOP-WQ-046 Rev 0 (adapted from APHA 6710B)	WPH, TTP, UFG, LJJ, CBS
	86. Turbidity	APHA 2130B	WPH, TTP, UFG, LYH, CVK, LJJ NKO, CYC
	87. Urea in Seawater	In-house Method: MLS-SOP-WQ-041 Rev 0	WPH, TTP, UFG, LYH, CVK, LJJ

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B. ENVIRONMENTAL SAMPLES • Water • Soil • Sediment • Sludge	88. UV-Absorbing Organic Constituents at 254nm / UV Transmittance (UVT)	APHA 5910B	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	89. Volatile Suspended Solids	APHA 2540E	WPH, TTP, UFG, LYH, CVK, LJJ, CYC
	90. Volatile Fatty Acids (VFA)	APHA 5560C HACH Method 10240 (Mar 2015)	WPH, TTP, UFG, LYH, CVK, LJJ
		APHA 5560D	WPH, TTP, LJJ, CBS
	1. Aliphatics and Aromatics Hydrocarbons (C6-C35)	In-house Method: MLS-SOP-WQ-042 Rev 0	WPH, TTP, LJJ, CBS
	2. Dimethylformamide (DMF) Dimethyl sulfoxide (DMSO)	In-house Method: MLS-SOP-WQ-043 Rev 0 (using GC-FID)	WPH, TTP, LJJ, CBS
	3. Heavy Metals by ICP-MS	USEPA 3015A (2007) USEPA 3050B (1996) USEPA 3051A (2007) USEPA 3052 (1996) APHA 3125B (Refer to Appendix 1 for list of elements)	WPH, TTP, UFG, CVK, NKO, CYC
	4. Heavy Metals by ICP-OES	USEPA 3015A (2007) USEPA 3050B (1996) USEPA 3051A (2007) USEPA 3052 (1996) APHA 3120B USEPA 6010D (Jul 2018) (Refer to Appendix 5 for list of elements)	WPH, TTP, UFG, CVK, NKO, CYC
	5. Leaching of Granular Waste Materials and Sludges	BS EN 12457-1:2002	WPH, TTP, UFG, CVK, NKO

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	6. Mercury Speciation by FIMS: • Total Mercury • Inorganic Mercury • Organic Mercury	In-house Method: MLS-SOP-SED-006 Rev 1	WPH, TTP, UFG, CVK, NKO
	7. Oil & Grease	USEPA 9071B (1998)	WPH, TTP, UFG, CVK
	8. Oil & Grease for Sludge	APHA 5520E	WPH, TTP, UFG, CVK
	9. Per- and polyfluoroalkyl substances (PFASs) by LCMS-MS: • Perfluorooctanesulfonic acid (PFOS) • Perfluorooctanoic acid (PFOA)	USEPA 537.1 (Mar 2020) USEPA 8327 (Jul 2021) USEPA 1633 Rev A (Dec 2024)	WPH, TTP, LJJ
	10. Pesticides and Toxaphene	USEPA 8081B (2007) USEPA 8270E (Jun 2018) (Toxaphene only) USEPA 3510C (1996) USEPA 3545A (2007) (Refer to Appendix 6 for list of compounds)	WPH, TTP, LJJ, CBS
	11. Pharmaceutical and Personal Care Products in Environmental Samples: • Caffeine • Triclocarban • Ibuprofen • Naproxen • Gemfibrozil • Diclofenac Sodium • Ketoprofen • Acetaminophen • Carbamazepine • Triclosan	USEPA 1694 (2007)	WPH, TTP, LJJ

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	12. Polychlorinated Biphenyls (PCB)	USEPA 8082A (2007) USEPA 8270E (Jun 2018) USEPA 3510C (1996) USEPA 3545A (2007) (Refer to Appendix 6 for list of compounds)	WPH, TTP, LJJ, CBS
	13. Semi-Volatile Organic Compounds (SVOC) and Solvents	USEPA 8270E (Jun 2018) (Refer to Appendix 4 for list of compounds)	WPH, TTP, LJJ, CBS
	14. Settled Sludge Volume	APHA 2710C	WPH, TTP, UFG, CVK, LJJ, CYC
	15. Sludge Volume Index (SVI)	APHA 2710D	WPH, TTP, UFG, CVK, LJJ, CYC
	16. Synthetic Precipitation Leaching Procedure (SPLP)	USEPA 1312 (1994) APHA 3120B APHA 3125B USEPA 6010D (Jul 2018)	WPH, TTP, UFG, CVK, NKO
	17. Time-to-Filter	APHA 2710H	WPH, TTP, UFG, CVK, LJJ, CYC
	18. Total, Fixed & Volatile Solids in Solid & Semi-solid Samples	APHA 2540G	WPH, TTP, UFG, CVK, LJJ
	19. Total Organic Carbon (TOC)	BS EN 15936:2022 In-House Method: MLS-SOP-SED-007 Rev 1 (by Suspension)	WPH, TTP, UFG, LJJ, NKO WPH, TTP, UFG, LJJ, NKO
	20. Total Petroleum Hydrocarbon (TPH) by FTIR	USEPA 8440 (1996) USEPA 3540C (1996) (Extraction)	WPH, TTP, UFG, CVK, NKO
	21. Total Petroleum Hydrocarbon: • Diesel Range Organics (DRO) • Gasoline Range Organics (GRO)	USEPA 8015C (2007)	WPH, TTP, LJJ, CBS

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C. FINE AGGREGATE / SOIL / SEDIMENT / PLANT / SOLID SAMPLES	22. Toxicity Characteristic Leaching Procedure (TCLP): Ag, As, Ba, Cd, Cr, Cu, Fe, Hg, Mn, Ni, Pb, Se, Zn, CN, F, Phenolic compounds as Phenol	USEPA 1311 (1992) (exclude Zero-Headspace Extraction) APHA 3120B APHA 3125B USEPA 6010D (Jul 2018)	WPH, TTP, UFG, CVK, NKO
	23. Volatile Organic Compounds (VOC)	USEPA 8260D (Jun 2018) (Refer to Appendix 2 for list of compounds)	WPH, TTP, LJJ, CBS
	24. Volatile Organic Compounds (VOC) and Solvents	USEPA 8260D (Jun 2018) USEPA 1666 Rev A (1998) (Refer to Appendix 3 for list of compounds)	WPH, TTP, LJJ, CBS
	1. Acid Solubility	ANSI/AWWA B100-16	WPH, TTP, UFG, CVK, LJJ
	2. Active Oxygen	ASTM D2180-17	WPH, TTP, UFG, CVK, LJJ
	3. Bioaccessibility Arsenic and Lead	In-house Method: MLS-SOP-SED-002 Rev 2	WPH, TTP, UFG, CVK, NKO
	4. Carbonate	BS 1377-3:2018+A1:2021 Section 8	WPH, TTP, UFG, LJJ
	5. Chloride • Acid-soluble • Water-soluble	BS 1377-3:2018+A1:2021 Section 9	WPH, TTP, UFG, CVK, LJJ
	6. Conductivity in Soil	Australian Standard (Soil Survey Standard Method: EC-C1-A-3)	WPH, TTP, UFG, CVK, LJJ
	7. Fall Velocity by Owen Tube Method	In-house Method: MLS-SOP-SED-001 Rev 0	WPH, TTP, UFG, CVK
	8. Mass Loss on Ignition (440°C)	BS 1377-3:2018+A1:2021 Section 6	WPH, TTP, UFG, CVK, LJJ
	9. Material in Soils Finer than 75 µm	ASTM D1140-17	WPH, TTP, UFG, CVK, LJJ

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	10. Moisture (Water Content)	BS EN ISO 17892-1: 2014+A1:2022	WPH, TTP, UFG, CVK, LJJ
	11. pH	BS 1377-3:2018+A1:2021 Section 12	WPH, TTP, UFG, CVK, LJJ
	12. Polymer Screening/ Qualitative Analysis using FTIR-ATR	In-house Method: MLS-SOP-SED-013 Rev 0	WPH, TTP, UFG, CVK, LJJ, NKO
	13. Shell / Coral Content	SANS 5840: 2008 Ed 2.2	WPH, TTP, UFG, LJJ
	14. Sulfate • Acid-soluble • Water-soluble	BS 1377-3:2018+A1:2021 Section 7	WPH, TTP, UFG, CVK, LJJ
	15. Sulfide (Acid-soluble/ Easily-liberated)	In-house Method: MLS-SOP-SED-009 Rev 0	WPH, TTP, UFG, CVK, LJJ
	16. Total Kjeldahl Nitrogen Content (TKN)	In-house Method: MLS-SOP-SED-010 Rev 0	WPH, TTP, UFG, CVK, LJJ, NKO
	17. Total Nitrogen (TN)	In-house Method: MLS-SOP-SED-011 Rev 0	WPH, TTP, UFG, CVK, LJJ, NKO
	18. Total Phosphorus (TP) (Plant)	USEPA 3052 (1996) (Digestion) APHA 3120B (Determination)	WPH, TTP, UFG, CVK, NKO
D. WATER FOR MAKING CONCRETE	1. Suitability of Water	BS EN 1008: 2002 (Preliminary assessment)	WPH, TTP, UFG, LYH, CVK, LJJ

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E. WATER MICROBIOLOGY - Ballast water - Drinking water (Potable) - Non-potable water - Fresh water - Industrial water - Wastewater, Trade effluent - Ground water - RO water - DI water - Swimming pool water - Cooling tower water - Sea water	1. Actinomycete using Double-Layer Agar Technique	APHA 9250B	WPH, JRG, LCH, LWE, CWY
	2. Aerobic Endospore Bacteria	APHA 9218B	WPH, JRG, LCH, LWE, CWY
	3. Aeromonas	APHA 9262	WPH, JRG, LCH, LWE, CWY
	4. Aspergillus	In-house Method: MLS-SOP-MB-017 Rev 4	WPH, JRG, LCH, LWE, CWY
	5. Assimilable Organic Carbon (AOC)	APHA 9217B	WPH, JRG, LCH, LWE, CWY
	6. <i>Bacillus subtilis</i>	In-house Method: MLS-SOP-MB-018 Rev 4	WPH, JRG, LCH, LWE, CWY
	7. Campylobacter	ISO 17995: 2019	WPH, JRG, LCH, LWE, CWY
	8. Clostridium perfringens	NSM HPA Reference No. W5i3.1:2005	WPH, JRG, LCH, LWE, CWY
	9. Coliforms	APHA 9221B (MPN Method) APHA 9222B (MF Method) APHA 9222C (MF Method) APHA 9223B (Enzyme Substrate Method) Rapid Test Kit Manual (Defined Substrate Technology- DST)	WPH, JRG, LCH, LWE, CWY
	10. Cryptosporidium and Giardia	USEPA 1623.1 (2012)	WPH, JRG, LCH
	11. Enterococci	APHA 9230C (23 rd Ed., 2017)	WPH, JRG, LCH, LWE, CWY

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	12. <i>Escherichia coli</i>	APHA 9221F (MPN Method) APHA 9222H (MF Method) APHA 9223B (Enzyme Substrate Method) Rapid Test Kit Manual (Defined Substrate Technology- DST)	WPH, JRG, LCH, LWL, CWY
	13. Faecal Coliforms	APHA 9221E (MPN Method) APHA 9222D (MF Method) APHA 9222E (MF Method) Rapid Test Kit Manual (Defined Substrate Technology- DST)	WPH, JRG, LCH, LWL, CWY
	14. Faecal Enterococci / <i>Streptococci</i>	APHA 9230C (MF Method) APHA 9230D (Fluorogenic Substrate Method)	WPH, JRG, LCH, LWL, CWY
	15. Faecal <i>Streptococci</i>	APHA 9230C (MF Method) (23 rd Ed., 2017)	WPH, JRG, LCH, LWL, CWY
	16. <i>Klebsiella</i> spp. by Membrane Filter Procedure	APHA 9222F	WPH, JRG, LCH, LWL, CWY
	17. Male-specific (F+) and Somatic Coliphage	USEPA 1602 (2001)	WPH, JRG, LCH, LWL, CWY
	18. <i>Pseudomonas aeruginosa</i>	APHA 9213E (MF Method) APHA 9213G (Enzyme Substrate Method)	WPH, JRG, LCH, LWL, CWY
	19. <i>Salmonella</i> spp.	APHA 9274	WPH, JRG, LCH, LWL, CWY
	20. Sampling and Extraction of Enterovirus	APHA 9510C	WPH, JRG, LCH
	21. <i>Shigella</i> spp.	APHA 9276	WPH, JRG, LCH, LWL, CWY
	22. Spore of Sulphite-reducing Anaerobes	BS EN 26461-2: 1993 ISO 6461/2: 1986	WPH, JRG, LCH, LWL, CWY

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	23. <i>Staphylococcus aureus</i>	APHA 9213B (MF Method)	WPH, JRG, LCH, LWL, CWY
	24. Sulfate-Reducing Bacteria using MPN Technique	ASTM D4412-19 (2024)	WPH, JRG, LCH, LWL, CWY
	25. <i>Thiobacillus</i>	APHA 9240D	WPH, JRG, LCH, LWL, CWY
	26. Total Bacteria Count	APHA 9215B (PP Method) APHA 9215C (SP Method) APHA 9215D (MF Method) ISO 6222: 1999	WPH, JRG, LCH, LWL, CWY
	27. <i>Vibrio cholera</i>	APHA 9278	WPH, JRG, LCH, LWL, CWY
	28. Yeast and Mould	APHA 9610D	WPH, JRG, LCH, LWL, CWY
F. COOLING TOWER AND WATER FOUNTAIN	1. Examination of Legionellae including <i>Legionella pneumophila</i>	AS 3896: 2017	WPH, JRG, LCH, LWL, CWY
	2. Detection and Enumeration of <i>Legionella</i>	BS 6068-4.12: 1998 ISO 11731: 2017	WPH, JRG, LCH, LWL, CWY
G. BIOLOGICAL ANALYSIS • Fresh and Marine Water	1. Macrobenthos Analysis	APHA 10500C (Identification)	WPH, LCH, CWY
	2. Phytoplankton & Zooplankton Sampling, Identification and Counting Technique	APHA 10200F APHA 10200G	WPH, JRG, LCH, CWY
• Sand and Sediment	1. Cyst Analysis	In-house Method: MLS-SOP-SED-008 Rev 1	WPH, LCH, CWY
H. PURIFIED WATER, PROCESS, BIOLOGICS AND PHARMACEUTICAL WATER, MEDICAL DEVICES	1. Bacterial Endotoxin test by Chromogenic Kinetic Assay	USP-NF 2025 Issue 2 <85>	WPH, JRG, LCH
	2. Bioburden	ISO 11737-1: 2018/ Amd 1:2021 USP-NF 2025 Issue 2 <61>	WPH, JRG, LCH, LWL, CWY

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	3. Conductivity	USP-NF 2025 Issue 2 <645>	WPH, TTP, UFG, CVK, LJJ, NKO
	4. pH	USP-NF 2025 Issue 2 <791>	WPH, TTP, UFG, CVK, LJJ, NKO
	5. Total Organic Carbon for Pharmaceutical (TOC)	USP-NF 2025 Issue 2 <643>	WPH, TTP, UFG, CVK, LJJ, NKO
	6. Water for Pharmaceutical	USP-NF 2025 Issue 2 <1231>	WPH, JRG, LCH, LWL, CWY
I. INDUSTRIAL HYGIENE	1. Elements by ICP Ag, Al, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, K, Li, Mg, Mn, Mo, Ni, Sb, Se, Sr, Sn, Ti, V, Zn	NIOSH 7301: 2003	WPH, TTP, UFG, CVK, NKO
J. SOURCE EMISSION	1. Determination of Hydrogen Halide and Halogen Emissions From Stationary Sources Isokinetic Method	USEPA Method 26a (Oct 2020) (Analysis only) APHA 4110B	WPH, TTP, UFG, CVK, NKO, LJJ
	2. Determination of Metals Emissions From Stationary Sources	USEPA Method 29 (Aug 2017) (Analysis only) APHA 3125B APHA 3120B USEPA 6010D (Jul 2018)	WPH, TTP, UFG, CVK, NKO
K. ENVIRONMENTAL AND HYGIENE MONITORING	1. Contact Plate	In-house Method: MLS-SOP-MB-040 Rev 0	WPH, JRG, LCH, LWL, CWY
	2. Surface Swab	In-house Method: MLS-SOP-MB-040 Rev 0	WPH, JRG, LCH, LWL, CWY

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Approved Signatories

S/N	Names	Initials
1.	Mr Wong Pik Hung	WPH
2.	Mr Tan Thuan Piang	TTP
3.	Ms Umalia Flordelina Gabriel	UFG
4.	Mr Lee Chun Hao, Eric	LCH
5.	Mr Jagadeesan Renugopal	JRG
6.	Mr Lim Yeu How	LYH
7.	Mr Chong Vui Ket, Xavier	CVK
8.	Mr Lee Yean Jie	LJJ
9.	Mr Leong Wei En, Isaac	LWE
10.	Mr. Ng Kok Ong	NKO
11.	Mr. Chua Bing Shiun	CBS
12.	Ms. Chai Wan Yin	CWY
13.	Mr. Lionel Chang Yong Chiang	CYC

Note:

This laboratory is accredited in accordance with the recognised International Standard ISO/IEC 17025. A laboratory's fulfilment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and **management system requirements** that are necessary for it to consistently deliver technically valid test results. The **management system requirements** in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001.

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Appendix 1: Metals by ICPMS (APHA 3125B) Elements

1.	Silver as Ag
2.	Aluminium as Al
3.	Arsenic as As
4.	Gold as Au
5.	Boron as B
6.	Barium as Ba
7.	Beryllium as Be
8.	Bismuth as Bi
9.	Calcium as Ca
10.	Cadmium as Cd
11.	Cobalt as Co
12.	Chromium as Cr
13.	Copper as Cu
14.	Iron as Fe
15.	Germanium as Ge
16.	Mercury as Hg
17.	Holmium as Ho
18.	Indium as In
19.	Iridium as Ir
20.	Potassium as K
21.	Lanthanum as La
22.	Lithium as Li
23.	Magnesium as Mg
24.	Manganese as Mn
25.	Molybdenum as Mo
26.	Sodium as Na
27.	Niobium as Nb
28.	Neodymium as Nd

29.	Nickel as Ni
30.	Phosphorus as P
31.	Lead as Pb
32.	Palladium as Pd
33.	Platinum as Pt
34.	Rhodium as Rh
35.	Antimony as Sb
36.	Scandium as Sc
37.	Selenium as Se
38.	Silicon as Si
39.	Tin as Sn
40.	Strontium as Sr
41.	Tantalum as Ta
42.	Terbium as Tb
43.	Tellurium as Te
44.	Thorium as Th
45.	Titanium as Ti
46.	Thallium as Tl
47.	Uranium as U
48.	Vanadium as V
49.	Tungsten as W
50.	Yttrium as Y
51.	Zinc as Zn
52.	Zirconium as Zr
53.	Cesium as Cs
54.	Rubidium as Rb

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Appendix 2: Volatile Organic Compounds, VOC (USEPA 8260D)

Compounds

MONOCYCLIC AROMATICS

Benzene
Toluene
Ethylbenzene
o,m,p-xylene
Styrene

OXYGENATED COMPOUNDS

Cyclohexanone
Tetrahydrofuran
Tetrahydrothiophene

FUMIGANTS

1,2-Dichloropropane
1,3-Dichloropropane
2,2-Dichloropropane
1,3-Dichloropropene (Cis)
1,3-Dichloropropene (Trans)

HALOGENATED AROMATICS

1,4-Dichlorobenzene
1,2-Dichlorobenzene
1,3-Dichlorobenzene

TRIHALOMETHANES

Chloroform
Bromodichloromethane
Dibromochloromethane
Bromoform

HALOGENATED ALIPHATICS

Vinyl Chloride
Chloromethane
Chlorobenzene
Chloroethene
Chloroethane
1,1-Dichloroethene
1,2-Dichloroethene (cis + Trans)
1,1-Dichloroethane
Dichloromethane
Carbon Tetrachloride
Trichloroethene
1,1,1-Trichloroethane
1,2-Dichloroethane
Tetrachloromethane
1,1,2-Trichloroethane
Tetrachloroethene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane

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Appendix 3: Volatile Organic Compounds, VOCs and Solvents

S/N	Compound	Method
1	Methylene Chloride	USEPA 8260D
2	Trichloroethylene (TCE)	USEPA 8260D
3	1,1,1-trichloroethane	USEPA 8260D
4	Perchloroethylene (PCE)	USEPA 8260D
5	Tetrachloromethane	USEPA 8260D
6	1,1,2-Trichloroethane	USEPA 8260D
7	Toluene	USEPA 8260D
8	Styrene	USEPA 8260D
9	Methyl tert-butyl-ether (MTBE)	USEPA 8260D
10	Nonane	USEPA 8260D
11	Decane	USEPA 8260D
12	Ethylbenzene	USEPA 8260D
13	Xylenes (o,m,p)	USEPA 8260D
14	Hexane	USEPA 8260D
15	Heptane	USEPA 8260D
16	Octane	USEPA 8260D
17	1,2,4-Trimethylbenzene	USEPA 8260D
18	Furan	USEPA 8260D
19	Tetrahydrofuran (THF)	USEPA 8260D
20	N,N-Dimethylformamide (DMF)	USEPA 1666 Rev A
21	Benzene	USEPA 8260D
22	Turpentine (<i>as alpha- & beta-Pinene</i>)	USEPA 8260D
23	Isobutanol	USEPA 8260D
24	Methyl Ethyl Ketone (MEK)	USEPA 8260D
25	Methyl Isobutyl Ketone (MIBK)	USEPA 8260D
26	Isopropyl ether	USEPA 8260D
27	Diethyl ether	USEPA 8260D
28	Dimethyl Sulphide	USEPA 8260D
29	Dimethyl Sulphoxide (DMSO)	USEPA 1666 Rev A
30	Cyclopentanone	USEPA 8260D

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Appendix 4: Semi-Volatile Organic Compounds, SVOC (USEPA 8270E)

Compounds

PHENOLS

Phenol
2-Chlorophenol
2-Nitrophenol
2,4-Dimethylphenol
2,4-Dichlorophenol
4-Chloro-3-methylphenol
2,4,6-Trichlorophenol
2,4-Dinitrophenol
4-Nitrophenol
Tetrachlorophenol
Pentachlorophenol
Cresoles
Catechol
Resorcinol
Hydroquinone

CHLORINATED HYDROCARBONS

1,3-Dichlorobenzene
1,4-Dichlorobenzene
1,2-Dichlorobenzene
1,2,4-Trichlorobenzene
Tetrachlorobenzene
Pentachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachlorobenzene
Chloroanilines

POLYNUCLEAR AROMATICS HC

Naphthalene
2-Chloronaphthalene
Anthracene
Acenaphthylene
Acenaphthene
Fluorene
Phenanthrene
Fluoranthene
Benzo(a)anthracene
Pyrene
Chrysene
Benzo(a)pyrene
Dibenz(a,h)anthracene
Benzo(ghi)pyrene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Indeno(123cd)pyrene

POLYCHLORINATED BIPHENYLS

PCB 28 (2,4,4'-Trichlorobiphenyl)
PCB 52 (2,2',5,5'-Tetrachlorobiphenyl)
PCB 101 (2,2',4,5,5'-Pentachlorobiphenyl)
PCB 118 (2,3',4,4',5-Pentachlorobiphenyl)
PCB 138 (2,2',3,4,4',5-Hexachlorobiphenyl)
PCB 153 (2,2',4,4',5,5'-Hexachlorobiphenyl)
PCB 180 (2,2',3,4,4',5,5'-Heptachlorobiphenyl)

PHTHALATE ESTERS

Dimethyl phthalate
Diethyl phthalate
Di-n-butyl phthalate
Butyl Benzyl phthalate
Bis(2-ethylhexyl)phthalate
Di-n-octyl phthalate

NITROAMINES

Pyridine
N-Nitrosodi-n-propylamine
N-Nitrosodiphenylamine
N-Nitrosodimethylamine

Dimethylacetamide (DMAc)

PESTICIDES

DDT
DDE
DDD
Aldrin
Dieldrin
Endrin
alpha-BHC
beta-BHC
gamma-BHC
delta-BHC
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Endrin ketone
Heptachlor
Heptachlor epoxide
Methoxychlor
Carbaryl
Carbofuran
Atrazine
Maneb

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Appendix 5: Metals by ICP-OES (APHA 3120B, USEPA 6010D)

Elements

1.	Silver as Ag
2.	Aluminium as Al
3.	Arsenic as As
4.	Gold as Au
5.	Boron as B
6.	Barium as Ba
7.	Beryllium as Be
8.	Bismuth as Bi
9.	Calcium as Ca
10.	Cadmium as Cd
11.	Cobalt as Co
12.	Chromium as Cr
13.	Copper as Cu
14.	Iron as Fe
15.	Gallium as Ga
16.	Mercury as Hg
17.	Indium as In
18.	Potassium as K
19.	Lithium as Li
20.	Magnesium as Mg
21.	Manganese as Mn
22.	Molybdenum as Mo
23.	Sodium as Na

24.	Niobium as Nb
25.	Nickel as Ni
26.	Phosphorus as P
27.	Lead as Pb
28.	Palladium as Pd
29.	Platinum as Pt
30.	Rhodium as Rh
31.	Antimony as Sb
32.	Selenium as Se
33.	Silicon as Si
34.	Tin as Sn
35.	Sulfur as S
36.	Strontium as Sr
37.	Tantalum as Ta
38.	Tellurium as Te
39.	Titanium as Ti
40.	Thallium as Tl
41.	Vanadium as V
42.	Tungsten as W
43.	Zinc as Zn
44.	Rubidium as Rb

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Appendix 6: Pesticides, PCBs, Toxaphene (USEPA 8081B, 8082A, 8270E) Test Parameter

PESTICIDES (USEPA 8081B)

Aldrin
a-BHC
b-BHC
d-BHC
g-BHC (Lindane)
cis-Chlordane
Trans-Chlordane
Chlorpyrifos
DDD
DDE
DDT
Dieldrin
Endrin
Endosulfan I
Endosulfan II
Endosulfan Sulphate
Endrin Aldehyde
Heptachlor
Heptachlor Epoxide (Isomer B)
Methoxychlor
Mirex

PCB AROCLORS (USEPA 8082A, 8270E)

Aroclor 1016
Aroclor 1221
Aroclor 1232
Aroclor 1242
Aroclor 1248
Aroclor 1254
Aroclor 1260
Aroclor 1262
Aroclor 1268

TOXAPHENE (USEPA 8081B, 8270E)