

Laboratory	Ecomen Laboratories Pvt. Ltd., Flat No. 5-8, IInd Floor, Arif Chamber V, Sector-H, Aliganj, Lucknow, Uttar Pradesh		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Chemical Testing	Issue Date	25.07.2014
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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I. WATER				
1.	Drinking Water	pH	IS 3025 (Part 11):1983 Reaffirmed 2002	0.1 to 13.9
		Turbidity	IS 3025 (Part 10):1984 Reaffirmed 2002	0.5 NTU to 100 NTU
		Total Dissolved Solids	IS 3025 (Part 15):1984 Reaffirmed 2003	10 mg/l to 10000 mg/l
		Sulphate	IS 3025 (Part 24):1986 Reaffirmed 2003 (Turbidity Method)	1.0 mg/l to 200 mg/l
		Nitrate Nitrogen	IS 3025 (Part 34):1988 Reaffirmed 2003	0.5 mg/l to 100 mg/l
		Alkalinity	IS 3025 (Part 23):1986 Reaffirmed 2003	1 mg/l to 500 mg/l
		Chloride	IS 3025 (Part 32):1988 Reaffirmed 2007 (Argentometric Method)	4.0 mg/l to 1000 mg/l
		Fluoride	IS 3025 (Part 60):2008 (Ion Selective Electrode Method)	0.02 mg/l to 10 mg/l
		Nitrite	APHA, 22nd Ed. 2012, 4500NO ₂ A+C, 4-120 to 4-120	0.002 mg/l to 1.0 mg/l
		Free Residual Chlorine	IS 3025 (Part 26):1986 Reaffirmed 2003 (Idometric Method)	0.1 mg/l to 5 mg/l

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Drinking Water	Calcium	IS 3025 (Part 40):1991 Reaffirmed 2003	1 mg/l to 1500 mg/l
		Magnesium	IS 3025 (Part 46):1994 Reaffirmed 2003	1 mg/l to 1500 mg/l
		Total Hardness	IS 3025 (Part 21):2009	1 mg/l to 1000 mg/l
		Sulphide	IS 3025 (Part 29):1986 Reaffirmed 2003 (Methyl Blue Method)	0.04 mg/l to 10 mg/l
		Boron	IS 3025 (Part 57) :2005 (Curcumin Method)	0.2 mg/l to 2 mg/l
		Iron	IS 3025 (Part 53):2003 Reaffirmed 2009	0.02 mg/l to 100 mg/l
		Colour	IS 3025 (Part 4) :1983 Reaffirmed 2002 (Platinum Cobalt Method)	5 to 100 H. unit or CU
		Odour	IS 3025 (Part 6) :1983 Reaffirmed 2002	Qualitative
		Arsenic	IS 3025 (Part 37):1988	0.008 mg/l to 2mg/l
		Cadmium	IS 3025 (Part 41):1992 Reaffirmed 2003	0.0019 mg/l to 2 mg/l

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Drinking Water	Total Chromium	IS 3025 (Part 52):2003 Reprint 2007	0.04 mg/l to 10 mg/l
		Copper	IS 3025 (Part 42):1992 Reaffirmed 2003	0.04 mg/l to 5 mg/l
		Lead	IS 3025 (Part 47):1994 Reaffirmed 2003	0.009 mg/l to 1 mg/l
		Mercury	IS 3025 (Part 48):1994 Reaffirmed 2003	0.001 mg/l to 1 mg/l
		Nickel	IS 3025 (Part 54):2003 Reprint 2006	0.019 mg/l to 5 mg/l
		Zinc	IS 3025 (Part 49):1994 Reaffirmed 2003	0.02 mg/l to 100 mg/l
		Manganese	IS 3025 (Part 59):2006	0.09 mg/l to 5 mg/l
2.	Surface & Ground Water	Temperature	APHA, 22nd Ed. 2012, 2550 A+B, 2-69 to 2-70	1 °C to 100°C
		Conductivity	APHA, 22nd Ed. 2012, 2510-A + B, 2-52 to 2-55	1 µs/cm to 2000 µs/cm
		pH	APHA, 22nd Ed. 2012, 4500H+ A+B, 4-91 to 4-95	0.1 to 13.9
		Turbidity	APHA, 22nd Ed. 2012, 2130-A+B, 2-12 to 2-14	0.5 NTU to 100 NTU

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Surface & Ground Water	Total Dissolved Solids	APHA, 22nd Ed. 2012, 2540-C, 2-65	10 mg/l to 10000 mg/l
		Total Suspended Solids	APHA, 22nd Ed. 2012, 2540-D, 2-66	5 mg/l to 5000 mg/l
		Total Solids	APHA 2540-B, 2-56 to 2-64	10 mg/l to 10000 mg/l
		Sulphate	APHA, 22nd Ed. 2012, 4500-SO42- E, 4-190	1.0 mg/l to 200 mg/l
		Nitrate Nitrogen	APHA, 22nd Ed. 2012, 4500-NO3,- B, 4-122 to 4-124	0.5 mg/l to 100 mg/l
		Alkalinity	APHA, 22nd Ed. 2012, 2320 A+ B, 2-34 to 2-36	1 mg/l to 500 mg/l
		Acidity	APHA, 22nd Ed. 2012, 2310 B, 2-31 to 2-33	1 mg/l to 500 mg/l
		Chloride	APHA, 22nd Ed. 2012, 4500 Cl B, 4-72 to 4-73	4.0 mg/l to 1000 mg/l
		Fluoride	APHA, 22nd Ed 2012, 4500-FD, 4-87 to 4-88 & APHA 4500-FC, 4-85 to 4-87	0.02 mg/l to 10 mg/l
		Phosphate	APHA, 22nd ed. 2012, 4500-PD, 4-148 to 4-151	0.1 mg/l to 100 mg/l
	Dissolved Oxygen	APHA, 22nd Ed. 2012, 4500 A+C, 4-135 to 4-137	0.1 mg/l to 10 mg/l	

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Surface & Ground Water	Free Residual Chlorine	APHA, 22nd Ed. 2012, 4500-Cl B, 4-58 to 4-60	0.1 mg/l to 5 mg/l
		Calcium	APHA, 22nd Ed. 2012, 3500 Ca B, 3-67 to 3-68	1 mg/l to 1500 mg/l
		Magnesium	APHA, 22nd Ed. 2012, 2340 C, 3-68	1 mg/l to 1500 mg/l
		Total Hardness	APHA, 22nd Ed. 2012, 2340 C, 2-44 to 2-47	1 mg/l to 1000 mg/l
		Sodium	APHA, 22nd Ed. 2012, 3500 K B, 3-97	1 mg/l to 100 mg/l
		Potassium	APHA, 22nd Ed. 2012, 3500 K B, 3-87	1 mg/l to 100 mg/l
		Sulphide	APHA, 22 nd Ed. 2012, 4500 S ²⁻ F, 4-176	0.04 mg/l to 10 mg/l
		Phenolic Compound	APHA, 22nd Ed. 2012, 5530 A+C, 5-46 to 5-47 and 5-47 to 5-43	0.001 mg/l to 5 mg/l
		Total Kjeldahl Nitrogen	APHA, 22nd Ed. 2012, 4500Norg A+C, 4-131 to 4-133	0.1 mg/l to 100 mg/l
		Boron	APHA, 22nd Ed. 2012, 4500 B A+C, 4-25 to 4-27	0.2 mg/l to 2 mg/l

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	Surface & Ground Water	Iron	APHA, 22nd Ed. 2012, 3500 Fe B, 3-77 to 3-80 & 3111 A+B, 3-14 to 3-20	0.02 mg/l to 100 mg/l
		Colour	APHA, 22nd Ed. 2012, 2120 B, C, D, 2-2 to 2-6	5 to 100 H. unit or CU
		Odour	APHA, 22nd Ed. 2012, 2150 B, 2-16 to 2-17	Qualitative
		Fixed Solid	APHA, 22nd Ed. 2012, 2540 E, 2-67	2.5 mg/l to 200 mg/l
		Arsenic	APHA, 22nd ed. 2012, 3114 B, 3-34 to 3-38	0.008 mg/l to 2 mg/l
		Cadmium	APHA, 22nd Ed. 2012, 3111 A+B, 3-14 to 3-20	0.0019 mg/l to 2 mg/l
		Total Chromium	APHA, 22nd Ed. 2012, 3111A+B, 3-14to 3-20	0.04 mg/l to 10 mg/l
		Copper	APHA, 22nd Ed. 2012, 3111A+B, 3-14 to 3-20	0.04 mg/l to 5 mg/l
		Lead	APHA, 22nd Ed. 2012, 3111A+B, 3-14 to 3-20	0.009 mg/l to 1 mg/l
	Mercury	APHA, 22nd Ed. 2012, 3112A+B, 3-14 to 3-20	0.001 mg/l to 1 mg/l	

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	Surface & Ground Water	Nickel	APHA, 22nd Ed. 2012, 3111A+B, 3-14 to 3-20	0.019 mg/l to 5 mg/l
		Zinc	APHA, 22nd Ed. 2012, 3111A+B, 3-14 to 3-20	0.02 mg/l to 100 mg/l
		Manganese	APHA, 22nd Ed. 2012, 3111A+B, 3-14 to 3-20	0.09 mg/l to 5 mg/l
II.	POLLUTION & ENVIRONMENT			
1.	Liquid Effluent	Temperature	APHA, 22nd Ed. 2012, 2550 A+B, 2-69 to 2-70	1 °C to 100 °C
		Conductivity	APHA, 22nd Ed. 2012, 2510-A + B, 2-52 to 2-55	2 µs/cm to 2000 µs/cm
		pH	APHA, 22nd Ed. 2012, 4500H+ A+B, 4-91 to 4-95	0.1 to 13.9
		Turbidity	APHA, 22nd Ed. 2012, 2130-A+B, 2-12 to 2-14	0.5 NTU to 100 NTU
		Total Dissolved Solids	APHA, 22nd Ed. 2012, 2540-C, 2-65	10 mg/l to 10000 mg/l
		Total Suspended Solids	APHA, 22nd Ed. 2012, 2540-D, 2-66	5 mg/l -500 mg/l
		Total Solids	APHA 2540-B, 2-56 to 2-64	10 mg/l to 200 mg/l, 200 mg/l to 500 mg/l

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	Liquid Effluent	Phosphate	APHA, 22nd ed. 2012, 4500-PD,4-148 to 4-151	0.1 mg/l to 100 mg/l
		Dissolved Oxygen	APHA, 22nd Ed. 2012, 4500 A+C, 4-135 to 4-137	0.1 mg/l to 10 mg/l
		Sulphate	APHA, 22nd Ed. 2012, 4500-SO42- E, 4-190	1.0 mg/l to 200 mg/l
		Nitrate Nitrogen	APHA, 22nd Ed. 2012, 4500-NO3,- B, 4-122 to 4-124	0.5 mg/l to 100 mg/l
		Alkalinity	APHA, 22nd Ed. 2012, 2320 A+ B, 2-34 to 2-36	1 mg/l to 500 mg/l
		Acidity	APHA, 22nd Ed. 2012, 2310 B, 2-31 to 2-33	1 mg/l to 500 mg/l
		Chloride	APHA, 22nd Ed. 2012, 4500 Cl B, 4-72 to 4-73	0.5 mg/l to 1000 mg/l
		Fluoride	APHA, 22nd Ed 2012, 4500-FD, 4-87 to 4-88 & APHA 4500-FC, 4-85 to 4-87	0.02 mg/l to 10 mg/l
		Free Residual Chlorine	APHA, 22nd Ed. 2012, 4500 Cl B, 4-58 to 4-60	0.1 mg/l to 5 mg/l
		Calcium	APHA, 22nd Ed. 2012, 3500 CaB, 3-67 to 3-68	1 mg/l to 1500 mg/l

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	Liquid Effluent	Magnesium	APHA, 22nd Ed. 2012, 2340 C, 3-68	1 mg/l -1500 mg/l
		Total Hardness	APHA, 22nd Ed. 2012, 2340 C, 2-44 to 2-47	1 mg/l -1000 mg/l
		Sodium	APHA, 22nd Ed. 2012, 3500 K B, 3-97	1 mg/l -100 mg/l
		Potassium	APHA, 22nd Ed. 2012, 3500 K B, 3-87	1 mg/l -100 mg/l
		Sulphide	APHA, 22 nd Ed. 2012, 4500 S ²⁻ F, 4-176	0.04 mg/l - 10 mg/l
		Phenolic Compound	APHA, 22nd Ed. 2012, 5530 A+C, 5-46 to 5-47 and 5-47 to 5-43	0.001 mg/l -5 mg/l
		Ammonical Nitrogen	APHA, 22nd Ed. 2012, 4500 NH3 A+F, 4-15 to 4-16	0.05 mg/l – 10 mg/l
		Boron	APHA, 22nd Ed. 2012, 4500 B A+C, 4-25 to 4-27	0.2 mg/l - 2 mg/l
		Iron	APHA, 22nd Ed. 2012, 3500 Fe B, 3-77 to 3-80 & 3111 A+B, 3-14 to 3-20	0.02 mg/l -100 mg/l
		Chemical Oxygen Demand	APHA, 22nd Ed. 2012, 5220 A+B, 5-16 to 5-18	2 mg/l - 50000 mg/l

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	Liquid Effluent	Biochemical Oxygen Demand (3 days)	IS 3025 (Part 58):2006	1 mg/l - 10000 mg/l
		Biochemical Oxygen Demand (5 days)	APHA, 22nd Ed. 2012, 5210 A+B, 5-4 to 5-9	5 mg/l - 10000 mg/l
		Oil & Grease	APHA, 22nd Ed. 2012, 5520 A+D, 5-38 to 5-39	5 mg/l - 1000 mg/l
		Total Kjeldahl Nitrogen	APHA, 22nd Ed. 2012, 4500Norg A+C, 4-131 to 4-133	0.1 mg/l - 100 mg/l
		Arsenic	APHA, 22nd ed. 2012, 3114 B, 3-34 to 3-38	0.008 mg/l - 2 mg/l
		Cadmium	APHA, 22nd Ed. 2012, 3111 A+B, 3-14 to 3-20	0.0019 mg/l - 2 mg/l
		Total Chromium	APHA, 22nd Ed. 2012, 3111A+B, 3-14 to 3-20	0.04 mg/l - 10 mg/l
		Copper	APHA, 22nd Ed. 2012, 3111A+B, 3-14 to 3-20	0.04 mg/l - 5 mg/l
		Lead	APHA, 22nd Ed. 2012, 3111A+B, 3-14 to 3-20	0.009 mg/l - 1 mg/l
		Mercury	APHA, 22nd Ed. 2012, 3112A+B, 3-14 to 3-20	0.001 mg/l - 1 mg/l

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	Liquid Effluent	Nickel	APHA, 22nd Ed. 2012, 3111A+B, 3-14 to 3-20	0.019 mg/l - 5 mg/l
		Chromium (Hexavalent)	APHA, 22nd Ed. 2012, 3111A+B, 3-14 to 3-20	0.1 mg/l - 100 mg/l
		Zinc	APHA, 22nd Ed. 2012, 3111A+B, 3-14 to 3-20	0.02 mg/l - 100 mg/l
		Aluminium	APHA, 22nd Ed. 2012, 3111A+B, 3-14 to 3-20	1 mg/l - 100 mg/l
		Manganese	APHA, 22nd Ed. 2012, 3111A+B, 3-14 to 3-20	0.09 mg/l - 5 mg/l
		Fixed Solid	APHA, 22nd Ed. 2012, 2540 E, 2-67	2.5 mg/l - 200 mg/l

III. AIR, GASES & ATMOSPHERE

1. Ambient Air	Particulate Matter (PM2.5)	Lab SOP (SOP No: A-15) Issue No.2, Rev. No.3, Issue Date-31.03.2011 (Based on NAAQS Guidelines Manual Vol.I, 2011)	2 µg/m ³ - 1000 µg/m ³
	Particulate Matter (PM10)	IS: 5182 (Part - 23):2006	2 µg/m ³ - 1000 µg/m ³
	Suspended Particulate Matter (SPM)	IS: 5182 (Part - 4):1999 Reaffirmed 2005	5 µg/m ³ - 1000 µg/m ³

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	Ambient Air	Sulphur Dioxide (SO ₂)	IS: 5182 (Part-2):2001	5 µg/m ³ - 200 µg/m ³
		Oxides of Nitrogen (NO _x)	IS:5182 (Part-6): 2006	5 µg/m ³ - 200 µg/m ³
		Ozone	IS: 5182 (Part-9):1974	1 µg/m ³ - 200 µg/m ³
		Ammonia	APHA 401 (Indophenol method)	0.02 µg/m ³ - 700 µg/m ³
		Lead	IS:5182 (Part-22):2004/AAS method	1 µg/m ³ - 100 µg/m ³
		Nickel	Lab SOP (SOP No. 21) Issue No.2, Rev. No.3, Issue Date-31.03.2011 (Based on NAAQS Guidelines Manual Vol.I, 2011)	1 µg/m ³ - 100 µg/m ³
		Arsenic	Lab SOP (SOP N0. 22) Issue No.2, Rev. No.3, Issue Date-31.03.2011 (Based on NAAQS Guidelines Manual Vol.I, 2011)	1 ng/m ³ - 100 ng/m ³
		Chlorine	IS:5182 (Part-19):1982 Reaffirmed 2003	1.45 µg/m ³ - 2900 µg/m ³
		Total Fluoride	IS:5182 (Part-13):1991 Reaffirmed 2009	9 mg/m ³ - 95 mg/m ³

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2.	Stack Emission	Particulate Matter	IS: 11255 (Part-1): 1985 Reaffirmed 2003	10 mg/Nm ³ - 1000mg/Nm ³
		Oxide of Sulphur (SO _x)	IS:11255 (Part-2): 1985 Reaffirmed 2003	5 mg/Nm ³ -300 mg/Nm ³
		Oxides of Nitrogen (NO _x)	IS: 11255 (Part-7):2005	5 mg/Nm ³ -1000 mg/Nm ³
		Carbon Dioxide (CO ₂)	IS:13270:1992, Reaffirmed 2009	0.2% - 21%
		Oxygen (O ₂)	IS:13270:1992, Reaffirmed 2009	0.2% - 21%
		Carbon Monoxide (CO)	IS:13270:1992, Reaffirmed 2009	0.2% - 21%
IV	SOIL	pH	Lab SOP No. S-01, Issue No.02, Rev.01, Issue Date 01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	2 - 14
		Electrical Conductivity	Lab SOP No. S-02 }, Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	0.1 μS/cm - 20.0 μS/cm
		Sodium (Na)	Lab SOP No. S-11, Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	1.0 mg/kg - 100 mg/kg

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	Soil	Ava. Potassium (K ₂ O)	Lab SOP No. S-19 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	2.5 mg/kg - 100 mg/kg
		Available Phosphate	Lab SOP No. S-07 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	1 mg/kg - 50 mg/kg
		Bulk Density	Lab SOP No. S-09 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	Qualitative
		Moisture Content	Lab SOP No. S-20 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	1% - 90 %
		Organic Carbon	Lab SOP No. S-17 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	1% - above %
		Ash Content	Lab SOP No. S-21 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	1% - 90 %

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	Soil	Acid Insoluble Ash Content	Lab SOP No. S-22 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	1% - 90 %
		Chloride	Lab SOP No. S-04 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	0.5 mg/kg - 1000 mg/kg
		Sulphate	Lab SOP No. S-13 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	1.0 mg/kg - 100 mg/kg
		Boron	Lab SOP No. S-25 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	0.1 mg/kg - 100 mg/kg
		Calcium	Lab SOP No. S-26 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	0.1 mg/kg - 100 mg/kg
		Magnesium	Lab SOP No. S-27 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	0.1 mg/kg - 100 mg/kg

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Certificate Number T-2202 **Valid Until** 24.07.2016

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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Soil	Copper	Lab SOP No. S-31 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	1 mg/kg - 100 mg/kg
		Zinc	Lab SOP No. S-32 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	1 mg/kg - 100 mg/kg
		Iron	Lab SOP No. S-33 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	1 mg/kg -10000 mg/kg
		Nickel	Lab SOP No. S-34 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	1 mg/kg - 100 mg/kg
		Cadmium	Lab SOP No. S-35 Issue No.02, Rev.01, Issue Date-01.01.2011 {Based on Standard Book (Soil Chemical Analysis, M.L. Jackson)}	1 mg/kg - 100 mg/kg

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