

ATTACHMENT I

WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER AND WASTE MANAGEMENT

List of Certified Parameters
for

ALS ENVIRONMENTAL - HOLLAND, MI
HOLLAND, MICHIGAN

PARAMETERS CERTIFIED

NONPOTABLE WATER INORGANIC NONMETALS

<u>ANALYTE</u>	<u>METHOD</u>	<u>TECHNOLOGY</u>
Acidity	SM2310 B-11	Titrimetric
Alkalinity	SM2320 B-11	Titrimetric
Ammonia	EPA350.1 Rev 2.0-1993	Spectrophotometric
Ammonia	SM4500-NH3 G-11	Spectrophotometric
Bromide	EPA300.0 Rev 2.1-1993	IC
Bromide	SW9056A	IC
Carbon, Total Organic (TOC)	SM5310 C-11	Oxidation
Carbon, Total Organic (TOC)	SW9060A	Oxidation
Chloride	EPA300.0 Rev 2.1-1993	IC
Chloride	SM4500-Cl C-11	Titrimetric
Chloride	SM4500-Cl E-11	Spectrophotometric
Chloride	SW9056A	IC
Chromium VI, Dissolved	SM3500-Cr B-11	Spectrophotometric
Chromium VI, Dissolved	SW7196A	Spectrophotometric
Conductance, Specific	SM2510 B-11	Probe
Conductance, Specific	SW9050A	Probe
Cyanide, Amenable to Chlorination	SM4500-CN E-11	Spectrophotometric
Cyanide, Amenable to Chlorination	SM4500-CN G-11	Digestion
Cyanide, Available	OIA-1677	FI/LE
Cyanide, Free	OIA-1677	FI
Cyanide, Total	EPA335.4 Rev 1.0-1993	Spectrophotometric
Cyanide, Total	Kelada-01	Colorimetric
Cyanide, Total	SM4500-CN C-11	Distillation
Cyanide, Total	SM4500-CN E-11	Spectrophotometric
Cyanide, Total	SW9012B	Spectrophotometric
Cyanide, Weak Acid Dissociable	SM4500-CN E-11	Spectrophotometric
Cyanide, Weak Acid Dissociable	SM4500-CN I-11	Distillation
Fluoride	EPA300.0 Rev 2.1-1993	IC
Fluoride	SW9056A	IC
Hardness, Total	SM2340 B-11	Calculation
Hardness, Total	SM2340 C-11	Titrimetric
Nitrate	EPA300.0 Rev 2.1-1993	IC
Nitrate	EPA353.2 Rev 2.0-1993	Calculation

Nitrate	SM4500-NO3 F-11	Calculation
Nitrate	SW9056A	IC
Nitrate-Nitrite	EPA300.0 Rev 2.1-1993	Calculation
Nitrate-Nitrite	EPA353.2 Rev 2.0-1993	Spectrophotometric
Nitrate-Nitrite	SM4500-NO3 F-11	Spectrophotometric
Nitrate-Nitrite	SW9056A	Calculation
Nitrite	EPA300.0 Rev 2.1-1993	IC
Nitrite	EPA353.2 Rev 2.0-1993	Spectrophotometric
Nitrite	SM4500-NO2 B-11	Spectrophotometric
Nitrite	SM4500-NO3 F-11	Spectrophotometric
Nitrite	SW9056A	IC
Nitrogen, Total Kjeldahl (TKN)	SM4500-NH3 B-11	Distillation
Nitrogen, Total Kjeldahl (TKN)	SM4500-NH3 G-11	Spectrophotometric
Oil & Grease	EPA1664 A	Gravimetric
Oxygen Demand, Biochemical (BOD)	SM5210 B-11	Probe
Oxygen Demand, Carbonaceous Biochemical (CBOD)	SM5210 B-11	Probe
Oxygen Demand, Chemical (COD)	EPA410.4 Rev 2.0-1993	Spectrophotometric
Phenolics, Total	EPA420.4 Rev 1.0-1993	Spectrophotometric
Phosphorus, Ortho	EPA365.1 Rev 2.0-1993	Spectrophotometric
Phosphorus, Ortho	SM4500-P E-11	Spectrophotometric
Phosphorus, Total	EPA365.1 Rev 2.0-1993	Spectrophotometric
Phosphorus, Total	SM4500-P E-11	Spectrophotometric
Solids, Dissolved	SM2540 C-11	Gravimetric
Solids, Settleable	SM2540 F-11	Imhoff
Solids, Suspended	SM2540 D-11	Gravimetric
Solids, Total	SM2540 B-11	Gravimetric
Solids, Volatile	EPA160.4	Gravimetric
Solids, Volatile	SM2540 E-11	Gravimetric
Sulfate	EPA300.0 Rev 2.1-1993	IC
Sulfate	SM4500-SO4 E-11	Turbidimetric
Sulfate	SW9056A	IC
Sulfide	SM4500-S F-11	Titrimetric
Sulfide	SW9030B	Distillation
Sulfide	SW9034	Titrimetric
Surfactants (MBAS)	SM5540 C-11	Spectrophotometric
Turbidity	SM2130 B-11	Turbidimetric

NONPOTABLE WATER TRACE METALS

<u>METAL</u>	<u>METHOD</u>	<u>TECHNOLOGY</u>
Aluminum	EPA200.7 Rev 4.4-1994	ICP
Aluminum	EPA200.8 Rev 5.4-1994	ICP-MS
Aluminum	SW6010D	ICP
Aluminum	SW6020B	ICP-MS
Antimony	EPA200.7 Rev 4.4-1994	ICP
Antimony	EPA200.8 Rev 5.4-1994	ICP-MS
Antimony	SW6010D	ICP
Antimony	SW6020B	ICP-MS
Arsenic	EPA200.7 Rev 4.4-1994	ICP
Arsenic	EPA200.8 Rev 5.4-1994	ICP-MS
Arsenic	SW6010D	ICP
Arsenic	SW6020B	ICP-MS

Barium	EPA200.7 Rev 4.4-1994	ICP
Barium	EPA200.8 Rev 5.4-1994	ICP-MS
Barium	SW6010D	ICP
Barium	SW6020B	ICP-MS
Beryllium	EPA200.7 Rev 4.4-1994	ICP
Beryllium	EPA200.8 Rev 5.4-1994	ICP-MS
Beryllium	SW6010D	ICP
Beryllium	SW6020B	ICP-MS
Boron	EPA200.7 Rev 4.4-1994	ICP
Boron	EPA200.8 Rev 5.4-1994	ICP-MS
Boron	SW6010D	ICP
Boron	SW6020B	ICP-MS
Cadmium	EPA200.7 Rev 4.4-1994	ICP
Cadmium	EPA200.8 Rev 5.4-1994	ICP-MS
Cadmium	SW6010D	ICP
Cadmium	SW6020B	ICP-MS
Calcium	EPA200.7 Rev 4.4-1994	ICP
Calcium	EPA200.8 Rev 5.4-1994	ICP-MS
Calcium	SW6010D	ICP
Calcium	SW6020B	ICP-MS
Chromium	EPA200.7 Rev 4.4-1994	ICP
Chromium	EPA200.8 Rev 5.4-1994	ICP-MS
Chromium	SW6010D	ICP
Chromium	SW6020B	ICP-MS
Cobalt	EPA200.7 Rev 4.4-1994	ICP
Cobalt	EPA200.8 Rev 5.4-1994	ICP-MS
Cobalt	SW6010D	ICP
Cobalt	SW6020B	ICP-MS
Copper	EPA200.7 Rev 4.4-1994	ICP
Copper	EPA200.8 Rev 5.4-1994	ICP-MS
Copper	SW6010D	ICP
Copper	SW6020B	ICP-MS
Iron	EPA200.7 Rev 4.4-1994	ICP
Iron	EPA200.8 Rev 5.4-1994	ICP-MS
Iron	SW6010D	ICP
Iron	SW6020B	ICP-MS
Lead	EPA200.7 Rev 4.4-1994	ICP
Lead	EPA200.8 Rev 5.4-1994	ICP-MS
Lead	SW6010D	ICP
Lead	SW6020B	ICP-MS
Magnesium	EPA200.7 Rev 4.4-1994	ICP
Magnesium	EPA200.8 Rev 5.4-1994	ICP-MS
Magnesium	SW6010D	ICP
Magnesium	SW6020B	ICP-MS
Manganese	EPA200.7 Rev 4.4-1994	ICP
Manganese	EPA200.8 Rev 5.4-1994	ICP-MS
Manganese	SW6010D	ICP
Manganese	SW6020B	ICP-MS
Mercury	EPA1631 E	CVAF
Mercury	EPA245.1 Rev 3.0-1994	CVAA
Mercury	SW7470A	CVAA
Metals	SW3005A	Digestion
Molybdenum	EPA200.7 Rev 4.4-1994	ICP
Molybdenum	EPA200.8 Rev 5.4-1994	ICP-MS

Molybdenum	SW6010D	ICP
Molybdenum	SW6020B	ICP-MS
Nickel	EPA200.7 Rev 4.4-1994	ICP
Nickel	EPA200.8 Rev 5.4-1994	ICP-MS
Nickel	SW6010D	ICP
Nickel	SW6020B	ICP-MS
Potassium	EPA200.7 Rev 4.4-1994	ICP
Potassium	EPA200.8 Rev 5.4-1994	ICP-MS
Potassium	SW6010D	ICP
Potassium	SW6020B	ICP-MS
Selenium	EPA200.7 Rev 4.4-1994	ICP
Selenium	EPA200.8 Rev 5.4-1994	ICP-MS
Selenium	SW6010D	ICP
Selenium	SW6020B	ICP-MS
Silver	EPA200.7 Rev 4.4-1994	ICP
Silver	EPA200.8 Rev 5.4-1994	ICP-MS
Silver	SW6010D	ICP
Silver	SW6020B	ICP-MS
Sodium	EPA200.7 Rev 4.4-1994	ICP
Sodium	EPA200.8 Rev 5.4-1994	ICP-MS
Sodium	SW6010D	ICP
Sodium	SW6020B	ICP-MS
Strontium	EPA200.7 Rev 4.4-1994	ICP
Strontium	EPA200.8 Rev 5.4-1994	ICP-MS
Strontium	SW6010D	ICP
Strontium	SW6020B	ICP-MS
Thallium	EPA200.7 Rev 4.4-1994	ICP
Thallium	EPA200.8 Rev 5.4-1994	ICP-MS
Thallium	SW6010D	ICP
Thallium	SW6020B	ICP-MS
Tin	EPA200.7 Rev 4.4-1994	ICP
Tin	EPA200.8 Rev 5.4-1994	ICP-MS
Tin	SW6010D	ICP
Tin	SW6020B	ICP-MS
Titanium	EPA200.7 Rev 4.4-1994	ICP
Titanium	EPA200.8 Rev 5.4-1994	ICP-MS
Titanium	SW6010D	ICP
Titanium	SW6020B	ICP-MS
Vanadium	EPA200.7 Rev 4.4-1994	ICP
Vanadium	EPA200.8 Rev 5.4-1994	ICP-MS
Vanadium	SW6010D	ICP
Vanadium	SW6020B	ICP-MS
Zinc	EPA200.7 Rev 4.4-1994	ICP
Zinc	EPA200.8 Rev 5.4-1994	ICP-MS
Zinc	SW6010D	ICP
Zinc	SW6020B	ICP-MS

NONPOTABLE WATER VOLATILE ORGANIC CHEMICALS

<u>GROUP</u>	<u>METHOD</u>	<u>TECHNOLOGY</u>
Purge & Trap For Aqueous Samples	SW5030B	Extraction
Purgeables	EPA624.1	GC/MS
Total Petroleum Hydrocarbons (GRO)	SW8015C	GC/FID

Volatile Organic Compounds

SW8260D

GC/MS

NONPOTABLE WATER EXTRACTABLE AND SEMI-VOLATILE ORGANIC CHEMICALS

<u>GROUP</u>	<u>METHOD</u>	<u>TECHNOLOGY</u>
Base/Neutrals & Acids	EPA625.1	GC/MS
Carbonyl Compounds	SW8315A	HPLC
Chlorinated Herbicides	SW8151A	GC
EDB & DBCP	SW8011	GC/ECD
Glycols	SW8015C	GC/FID
Microextraction	SW3511	Extraction
Organochlorine Pesticides & PCBs	EPA608.3	GC
Organophosphorus Compounds	SW8141B	GC
Per- & Poly-fluoralkyl Substances (PFA)	ASTM D7979-19	LC/MS/MS
Per- & Poly-fluoralkyl Substances (PFA)	SW8327	LC/MS/MS
Polychlorinated Biphenyls	SW8082A	GC
Semivolatile Organic Compounds	SW8270E	GC/MS
Separatory Funnel Liquid-Liquid	SW3510C	Extraction
Total Petroleum Hydrocarbons (DRO)	SW8015C	GC/FID
Total Petroleum Hydrocarbons (ORO)	SW8015C	GC/FID

HAZARDOUS WASTE CHARACTERISTICS

<u>PROCEDURE</u>	<u>METHOD</u>	<u>TECHNOLOGY</u>
Corrosivity	SW9045D	Electrode
Paint Filter Test	SW9095B	Gravimetric
SPLP- Metals & Organics	SW1312	Extraction

SOLID AND CHEMICAL INORGANIC NONMETALS

<u>ANALYTE</u>	<u>METHOD</u>	<u>TECHNOLOGY</u>
Ammonia	SM4500-NH3 B-11	Distillation
Ammonia	SM4500-NH3 G-11	Spectrophotometric
Bromide	EPA300.0 Rev 2.1-1993	IC
Bromide	SW9056A	IC
Carbon, Total Organic (TOC)	Walkley-Black	
Chloride	EPA300.0 Rev 2.1-1993	IC
Chloride	SW9056A	IC
Chromium VI, Dissolved	SW3060A	Digestion
Chromium VI, Dissolved	SW7196A	Spectrophotometric
Cyanide, Total	SW9012B	Spectrophotometric
Fluoride	EPA300.0 Rev 2.1-1993	IC
Fluoride	SW9056A	IC
Nitrate	EPA300.0 Rev 2.1-1993	IC
Nitrate	SW9056A	IC
Nitrate-Nitrite	EPA300.0 Rev 2.1-1993	IC
Nitrate-Nitrite	SW9056A	Calculation
Nitrogen, Total Kjeldahl (TKN)	SM4500-NH3 B-11	Distillation
Nitrogen, Total Kjeldahl (TKN)	SM4500-NH3 G-11	Spectrophotometric
Nitrogen, Total Kjeldahl (TKN)	SM4500-Norg B-11	Digestion
Oil & Grease	SW9071B	Gravimetric

Phenolics, Total	SW9066	Colorimetric
Solids, Total, Fixed, & Volatile	SM2540 G-11	Gravimetric
Sulfate	EPA300.0 Rev 2.1-1993	IC
Sulfate	SW9056A	IC
Sulfide	SW9030B	Distillation
Sulfide	SW9034	Titrimetric

SOLID AND CHEMICAL TRACE METALS

<u>METAL</u>	<u>METHOD</u>	<u>TECHNOLOGY</u>
Aluminum	SW6010D	ICP
Aluminum	SW6020B	ICP-MS
Antimony	SW6010D	ICP
Antimony	SW6020B	ICP-MS
Arsenic	SW6010D	ICP
Arsenic	SW6020B	ICP-MS
Barium	SW6010D	ICP
Barium	SW6020B	ICP-MS
Beryllium	SW6010D	ICP
Beryllium	SW6020B	ICP-MS
Boron	SW6010D	ICP
Boron	SW6020B	ICP-MS
Cadmium	SW6010D	ICP
Cadmium	SW6020B	ICP-MS
Calcium	SW6010D	ICP
Calcium	SW6020B	ICP-MS
Chromium	SW6010D	ICP
Chromium	SW6020B	ICP-MS
Cobalt	SW6010D	ICP
Cobalt	SW6020B	ICP-MS
Copper	SW6010D	ICP
Copper	SW6020B	ICP-MS
Iron	SW6010D	ICP
Iron	SW6020B	ICP-MS
Lead	SW6010D	ICP
Lead	SW6020B	ICP-MS
Lithium	SW6010D	ICP
Lithium	SW6020B	ICP-MS
Magnesium	SW6010D	ICP
Magnesium	SW6020B	ICP-MS
Manganese	SW6010D	ICP
Manganese	SW6020B	ICP-MS
Mercury	SW7471B	CVAA
Metals	SW3050B	Digestion
Molybdenum	SW6010D	ICP
Molybdenum	SW6020B	ICP-MS
Nickel	SW6010D	ICP
Nickel	SW6020B	ICP-MS
Potassium	SW6010D	ICP
Potassium	SW6020B	ICP-MS
Selenium	SW6010D	ICP
Selenium	SW6020B	ICP-MS
Silver	SW6010D	ICP

Silver	SW6020B	ICP-MS
Sodium	SW6010D	ICP
Sodium	SW6020B	ICP-MS
Strontium	SW6010D	ICP
Strontium	SW6020B	ICP-MS
Thallium	SW6010D	ICP
Thallium	SW6020B	ICP-MS
Tin	SW6010D	ICP
Tin	SW6020B	ICP-MS
Titanium	SW6010D	ICP
Titanium	SW6020B	ICP-MS
Vanadium	SW6010D	ICP
Vanadium	SW6020B	ICP-MS
Zinc	SW6010D	ICP
Zinc	SW6020B	ICP-MS

SOLID AND CHEMICAL VOLATILE ORGANIC CHEMICALS

<u>GROUP</u>	<u>METHOD</u>	<u>TECHNOLOGY</u>
Closed System Purge & Trap	SW5035	Extraction
Volatile Organic Compounds	SW8260D	GC/MS

SOLID AND CHEMICAL EXTRACTABLE AND SEMI-VOLATILE ORGANIC CHEMICALS

<u>GROUP</u>	<u>METHOD</u>	<u>TECHNOLOGY</u>
Carbonyl Compounds	SW8315A	HPLC
Chlorinated Herbicides	SW8151A	GC/ECD
Microwave Extraction	SW3546	Extraction
Polychlorinated Biphenyls	SW8082A	GC
Polyfluorinated Compounds (PFCs) in S	ASTM 7968-17a	LC/MS/MS
Semivolatile Organic Compounds	SW8270E	GC/MS
Silica Gel Cleanup	SW3630C	Cleanup
Soxhlet	SW3540C	Extraction
Soxhlet, Automated	SW3541	Extraction
Sulfur Cleanup	SW3660B	Cleanup
Sulfuric Acid/Permanganate Cleanup	SW3665A	Cleanup
Ultrasonic	SW3550C	Extraction
Waste Dilution	SW3580A	Dilution

This laboratory may test **ONLY** for those environmental parameters listed above for compliance reporting purposes. All testing must be by the test method cited in the current application for certification.

This Certification Expires November 30, 2021.

Certificate No 355

_____ Issued on August 31, 2021

Kelly Mayhew
Auditor

This certified parameter list supersedes all previously issued parameter lists for this certificate number.