



## SCOPE OF ACCREDITATION

Element Materials Technology Canada Inc.  
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Accredited Laboratory No. 604  
(Conforms with requirements of ISO/IEC 17025:2005)

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CLIENTS SERVED: All interested parties

FIELDS OF TESTING: Chemical/Physical

PROGRAM SPECIALTY AREA: Environmental

INITIAL ACCREDITATION: 2006-07-05

MOST RECENT ACCREDITATION: 2018-06-24

ACCREDITATION VALID TO: 2022-07-05

### **ENVIRONMENTAL AND OCCUPATIONAL HEALTH AND SAFETY**

#### **Environmental**

##### **Soil**

Soil (Organic)

##### **(Barium -Soil)**

B.C. Environmental Lab Manual, Section C: Metals  
TM DW 007-93 Soluble Barium by Calcium Chloride Extraction (Prescriptive) (TM DW 007-93) Soluble Barium  
Barium in Soil by ICP-MS  
(Alberta Environment Soil Remediation Guidelines for Barite)



Modified)  
Extractable Barium

**(Organic Matter by Loss of Ignition)**

TM AG 002-93                      Organic Matter in Soil by Loss on Ignition (MSS Method 3.8 Modified)  
% Organic Matter

**Soil/Sediment**

**(BTEX/VPH - Soil)**

TM ORG 001-93                      BTEX/VPH in Soil & Water by GC FID/MSD (B.C. Environmental Lab Manual, Monocyclic Aromatic Hydrocarbons /Volatile Hydrocarbons in Solids Modified)  
Benzene  
Ethylbenzene  
m/p - Xylene  
Methyl tert butyl ether (MTBE)  
O - Xylene  
Styrene  
Toluene  
Volatile Hydrocarbons (C6-C10)  
Volatile Petroleum Hydrocarbons (C6-C10 - BTEX)

**(Extractable Petroleum Hydrocarbons-Soil)**

TM TEH 001-93                      Extractable Petroleum Hydrocarbons in Soil and Water by GC FID (BC Environmental Lab Manual, Extractable Petroleum Hydrocarbons in Solids Modified)  
EPH 10-19  
EPH 19-32

**(Metals - Soil)**

B.C. Environmental Lab              Strong Acid Leachable Metals (SALM) in Soil – Prescriptive (TM Manual, Section C: Metals) MET 001-93)  
Aluminum  
Antimony  
Arsenic  
Barium  
Beryllium



Cadmium  
Chromium  
Cobalt  
Copper  
Iron  
Lead  
Lithium  
Manganese  
Mercury  
Molybdenum  
Nickel  
Selenium  
Silver  
Strontium  
Thallium  
Tin  
Uranium  
Vanadium  
Zinc

B.C. Environmental Lab Manual, Section C: Metals

Boron, Hot Water Soluble (Prescriptive) (TM MET 001-93)

Boron

**(Particle Size Analysis - Solids)**

TM AG 003-93 Particle Size Analysis of Soil by Hydrometer (SSMA 55.3 Modified)  
Clay  
Sand  
Silt

TM AG 005-93 Particle Size Analysis by Wet Sieve (ASTM C117-04 Modified)  
% Retained 75  $\mu$  sieve

**(pH - Soil)**

TM AG 004-93 pH in Soil by 0.01M Calcium Chloride (MSS 3.11 Modified)  
pH

**(Polycyclic Aromatic Hydrocarbons (PAH) - Soil)**

TM ORG 002-93 Polycyclic Aromatic Hydrocarbons in Soil and Water by GC MSD  
(B.C. Environmental Lab Manual, PAH Solids Modified)  
1-Methylnapthalene



2-Methylnapthalene  
Acenaphthene  
Acenaphthylene  
Anthracene  
Benzo (a) anthracene  
Benzo (a) pyrene  
Benzo (b) fluoranthene  
Benzo (g,h,i) perylene  
Benzo (k) fluoranthene  
Chrysene  
Dibenzo (a,h) anthracene  
Fluoranthene  
Fluorene  
Indeno (1,2,3-cd) pyrene  
Naphthalene  
Phenanthrene  
Pyrene

## **Waste**

### **(Bulk Density - Waste and Soil)**

TM DW 001-93      Bulk Density and Specific Gravity in Drilling Waste and Soil  
(American Society of Agronomy No.9. Method 13-2, AER Directive  
050 and SSMA 57.1 Modified)  
Bulk Density  
Specific Gravity

### **(Flash Point - Waste)**

TM LAND 007-93      Flash Point in Liquid and Soil by Pensky-Martens Closed Cup  
Tester (ASTM D93 Modified)  
Flash Point

### **(Free Liquids - Waste)**

TM LAND 009-93      Paint Filter Test (EPA 9095B Modified)  
Free Liquids - Waste

### **(Leachable BTEX - Waste)**

EPA 1311      Toxicity Characteristic Leachate Procedure  
Benzene



	Ethylbenzene m/p-xylene o-xylene Toluene
TM LAND 001-93	Leachable BTEX in Solids and Waste by GC FID/MSD (EPA 1311, 5021A/8260C Modified) Benzene Ethylbenzene m/p-xylene o-xylene Toluene

**(Leachate - Waste)**

TM LAND 002-93	Cyanide in Soil and Solid Waste Extract by Spectrophotometry (HACH Method 8027 Cyanide: Pyridine-Pyrazalone Method, SmartChem EPA 335.4 Modified), Colorimetric analysis Cyanide
TM LAND 003-93	Fluoride in Soil and Solid Waste Extract (APHA 4500-F- C Ion-Selective Electrode Method Modified), Selective ion electrode analysis Fluoride
TM LAND 004-93	Nitrate + Nitrite in Drilling Waste and Solid Waste Extract by Spectrophotometry (HACH Method 10020/ 8153, SmartChem EPA 353.2 Modified) (also for Salinity Analysis) Nitrate + Nitrite

**(Microtox - Waste)**

TM DW 003-93	Microtox -15 Minute Multiple Concentration Acute, Static (EPS1/RM/24, G50 Toxicity Protocols Appendix 4, BCMOE Microtox Photobacteria Bioassay, Solid Phase Microtox Photobacteria Bioassay Modified) Microtox EC 50 (15min)
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**(pH - Waste and Soil)**

TM LAND 010-93	pH, Electrical Conductivity, Total and Phenolphthalein Alkalinity in Water and Soil (MSS 4.12 Modified) EC pH
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**(Salinity - Waste and Soil)**



TM DW 004-93	Salinity, pH and EC in Water and in Soil & Waste by Saturated Paste (SSMA Ch 15, EPA 3005A Modified) % Saturation Calcium EC Magnesium pH Potassium SAR Sodium Sulfate
TM DW 005-93	Chloride in Aqueous Samples by Spectrophotometry (APHA 4500-Cl E., BCMOE Chloride, Colorimetric, HgSCN Modified) Chloride
TM DW 008-93	Soluble Ammonia-N in Aqueous Extracts by Spectrophotometry (HACH 10031 Nitrogen, Ammonia Salicylate Method, SmartChem Standard Methods 4500-NH3 G Modified)

**(Special Waste Oil & Grease - Waste)**

TM LAND 011-93	Special Waste Oil Determination by Petroleum Ether Extraction (Special Waste Regulations Act, BCMOE Determination of Waste Oil Content Modified) Oil and Grease Dried Basis  Oil as Received
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**(SWEP Modified Leachate -Waste)**

TM LAND 012-93	Metals by ICP-MS as prepared by SWEP (Modified SWEP) (Hazardous Waste Regulation, Reg 63/88, Modified Leachate Extraction Procedure Modified, APHA 3120 B Modified), ICP analysis Arsenic Barium Boron Cadmium Chromium Copper Lead Mercury Selenium Silver
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Uranium  
Zinc

**(TCLP Leachate - Waste)**

EPA 1311	Toxicity Characteristic Leachate Procedure Antimony Arsenic Barium Beryllium Boron Cadmium Chromium Cobalt Copper Iron Lead Mercury Nickel Selenium Silver Thallium Uranium Vanadium Zinc Zirconium
TM LAND 013-93	Metals by ICP-MS as prepared by TCLP in Liquid, Solid and Waste Samples (EPA 1311 Toxicity Characteristic Leachate Procedure Modified), ICP analysis Antimony Arsenic Barium Beryllium Boron Cadmium Chromium Cobalt Copper Iron Lead Mercury Nickel Selenium



Silver  
Thallium  
Uranium  
Vanadium  
Zinc  
Zirconium

**Water (Inorganic)**

**(pH - Water)**

TM LAND 010-93      pH and Electrical Conductivity, Total and Phenolphthalein Alkalinity  
in Water and Soil (APHA 4500-H<sup>+</sup> B, APHA 2510 B, BCMOE  
Alkalinity, Total, Titrimetric pH 4.5 Modified)  
Alkalinity  
EC  
pH

**(Salinity - Water)**

TM DW 004-93      Salinity, pH and EC in Water and in Soil & Waste by Saturated  
Paste (SSMA Ch 15, EPA 3005A Modified)  
% Saturation  
Calcium  
EC  
Magnesium  
pH  
Potassium  
SAR  
Sodium  
Sulfate

**Water (Organic)**

**(Extractable Petroleum Hydrocarbons - Water)**

TM TEH001-93      Extractable Petroleum Hydrocarbons in Soil and Water by GC FID  
(BC Environmental Lab Manual, Extractable Petroleum  
Hydrocarbons in Water Modified)  
EPH 10-19  
EPH 19-32

**(Petroleum Hydrocarbon (PHC/BTEX) - Water)**





TM ORG 001-93            BTEX/VPH in Soil & Water by GC FID/MSD (B.C. Environmental Lab Manual, Monocyclic Aromatic Hydrocarbons /Volatile Hydrocarbons in Water, Modified)  
Benzene  
Ethylbenzene  
m/p - Xylene  
Methyl tert butyl Ether (MTBE)  
o - Xylene  
Styrene  
Toluene  
Volatile Hydrocarbons (C6-C10)  
Volatile Petroleum Hydrocarbons (C6-C10 - BTEX)

**(Polycyclic Hydrocarbons (PAH) - Water)**

TM ORG 002-93            Polycyclic Aromatic Hydrocarbons in Soil and Water by GC MS (B.C. Environmental Lab Manual, PAH in Water, Modified)  
1-Methylnaphthalene  
Acenaphthalene  
Acenaphthylene  
Acridine  
Anthracene  
Benzo (a) anthracene  
Benzo (a) pyrene  
Benzo (b) fluoranthene  
Benzo (g,h,i) perylene  
Benzo (k) fluoranthene  
Chrysene  
Dibenzo (a,h) anthracene  
Fluoranthene  
Fluorene  
Indeno (1,2,3 - cd) pyrene  
Naphthalene  
Phenanthrene  
Pyrene  
Quinoline

**Notes:**



**Conseil canadien des normes**  
**Standards Council of Canada**

ASTM: American Society of Testing and Materials  
ISO/IEC 17025: General Requirements for the Competence of Testing and Calibration Laboratories  
TM XXXX #:Exova in-house Test Methods.  
MSA: Methods of Soil Analysis, SSSA Book Series no. 5, 1996  
MSS: Manual on Soil Sampling and Methods of Analysis - J.A. McKeague, 1978  
SSMA: Soil Sampling and Methods of Analysis, Martin R. Carter, 2008  
EPA: Environmental Protection Agency  
BCMOE: British Columbia Ministry of Environment  
EPS: Environmental Protection Series  
APHA: American Public Health Association  
AER: Alberta Energy Regulator

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Elias Rafoul, Vice President  
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