

RE: CHARTERS ROAD - STREETSCAPE - T02-2023 -ADDENDUM #6

June 28, 2023

TO WHOM IT MAY CONCERN:

The following is an addendum to all bidders. **Bidders are to reference receipt of Addendum #6 in their submission.**

Please note the following, clarifications, additions, and revisions for the above noted Tender are to be known as Addendum No. 6. The following clarifications, changes, and additions are to apply to all documents, and shall be considered by the bidders in preparing their submissions.

Additions, Revisions, and Clarifications

1. Add to the Instructions to Tenderers.

Contaminated Soils have been identified within the project extents. A soil assessment memorandum has been included in Schedule 1 of the Contract Documents.

2. Add to Schedule 1 - Schedule of Contract Documents

Technical Memo: Soil Assessment for the Charters Road Project, Sooke, BC" Prepared By McElhanney Ltd.

3. Add payment items to the Form of Tender

Add quantities for the disposal premium related to contaminated soils.

4. Add Supplemental Specification

Supplemental Specifications added to include contaminated soil disposal under Division 31.

Attachments

Form of Tender – Appendix 1 - Addendum #6 Schedule 1 – Schedule of Contract Documents – Addendum #6

Supplementary Specifications – Addendum #6

Technical Memo: Soil Assessment for the Charters Road Project, Sooke, BC" Prepared By McElhanney Ltd.

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APPENDIX 1 SCHEDULE OF QUANTITIES AND PRICES

(SEE PARAGRAPH 5.3.1 OF THE INSTRUCTIONS TO TENDERERS - PART II)

(All prices and *Quotations* including the *Contract Price* shall include all *Taxes*, but shall not include *GST*. *GST* shall be shown separately.)

Any work called for in these Contract Documents, shown on the plans, or which is necessary for the completion of the Work called for in these Contract Documents and which is not specifically listed as a separate payment item in this Appendix shall be deemed incidental to the performance of the Work and to the general purpose of the Contract; no separate payment will be made on account of any such Work, but the costs of any such incidental Work shall be included in the Unit and Lump Sum Prices.

CHARTERS ROAD - STREETSCAPE

Summary Sheet									
Division 01:	General Requirements	\$							
Division 03:	Concrete	\$							
Division 26:	Electrical	\$							
Division 31:	Earthworks	\$							
Division 32:	Roads and Site Improvements	\$							
Division 33:	Utilities	\$							
TOTAL TEND	ER PRICE	\$							
	GST (5%)	\$							
TENDER PRIC	CE plus GST	\$							

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DIVISION 1	- GENER	AL REQUIREMENTS				
Item No.	Section	Specification Title	Unit	Qty	Unit Price	Amount
01 10 00SS		General Requirements				
1.1	1.2S	Layout Survey, Quantity Survey, Volume Calculations and Record Survey	Lump Sum	1		
01 51 01		Temporary Utilities and Lighting				
1.2	1.6.1	Supporting Utilities Underground/Overhead	Lump Sum	1		
01 52 01		Temporary Structures				
1.3	1.6.2S	Mobilization/Demobilization	Lump Sum	1		
01 53 01		Temporary Facilities				
1.4	1.9.2S	By-Pass Pumping Sanitary System	Lump Sum	1		
01 55 00		Traffic Control, Vehicle Access and Parking				
1.5	1.5.2\$	Traffic Control, Vehicle Access and Parking	Lump Sum	1		
01 57 01		Environmental Protection				
1.6	1.6.2S	Environmental Protection	Lump Sum	1		
_			Sub-Tota	al	\$	

DIVISION	3 - CONCF	RETE				
Item No.	Section	Specification Title	Unit	Qty	Unit Price	Amount
03 30 20		Concrete Walks, Curb And Gutter				
2.1	1.4.3	Hand Formed / Machine Laid Curb and Gutter Barrier Concrete Barrier - MMCD Type C4 - Including Granular Base, Driveway Drops, & Let Downs.	Lineal Metre	1075		
2.2	1.4.5S	Concrete Sidewalks, Infill Strips and Walkways Including Ramps Where Applicable. MIN. 100mm Thickness c/w 100mm Base.	Square Metre	1685		
2.3	1.4.5S	Pattern Concrete Sidewalks, Infill Strips and Walkways Including Ramps Where Applicable. MIN. 100mm Thickness c/w 100mm Base.	Square Metre	85		
2.4	1.4.6	Driveways and Driveway Crossings 150 mm Thickness c/w Granular Base. Crossings To Be c/w Ramps.	Square Metre	415		
2.5	1.4.8	Adjustments Adjustments To Frames, Covers, Lids, Valve, Junction Boxes, Catch basins, Inspection Chambers.	Each	20		
03 30 53		Cast-In-Place Concrete				
2.6	1.5.6S	Mortared Rock Wall - Optional	Square Meters	200		

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03 40 01		Pre-Cast Concrete			
2.7	1.4.3	Redi-Rock Wall Blocks Excavation and Backfill under 31 23 01	Square Metre	650	
2.8	1.4.5\$	Concrete No-Post Barrier Removal and Disposal Offsite	Lump Sum	1	
			Sub-Tota	al	\$

DIVISION 26 - ELECTRICAL								
Item No.	Section	Specification Title	Unit	Qty	Unit Price	Amount		
26 56 01		Roadway Lighting						
3.1	1.9.1/ 34 41 13 1.9.1	Roadway Lighting	Lump Sum	1				
			Sub-	Γotal		\$		

Item No.	Section	Specification Title	Unit	Otiv	Unit	Amount
item No.	Section	Specification Title	Unit	Qty	Price	Amount
31 11 01		Clearing and Grubbing				
4.1	1.4.1, 1.4.2	Clearing and Grubbing	Lump Sum	1		
4.2	1.4.1, 1.4.2	Isolated Stump Removal	Each	36		
4.3	1.4.1, 1.4.2	Isolated Tree Removal	Each	12		
31 22 01		Site Grading				
4.4	1.4.1	Topsoil Stripping and Disposal/Reuse	Cubic Metre	200		
31 22 16		Reshaping Granular Roadbed				
4.5	1.4.1	Reshaping Granular Roadbed	Square Metre	3076		
31 23 01		Excavating, Trenching and Backfilling				
4.6	1.10.3	Over excavating - Optional Including Backfilling	Cubic Metre	275		
31 23 17		Rock Removal				
4.7	1.6.3	Mass Rock - Optional	Cubic Metre	50		
31 24 13		Roadway Excavation, Embankment and Compaction				
4.8	1.8.4	Remove Existing Asphalt Pavement, Sidewalks, Utility Strips, Driveways (Including Saw cutting)	Square Metre	4800		
4.9	1.8.4	Remove Existing Concrete Curbs and Gutters	Lineal Metres	60		
4.10	1.8.5	Common Excavation - Gravels On-Site Re-Use	Cubic Metre	225		
4.11	1.8.5	Common Excavation Off-Site Disposal	Cubic Metre	3500		
4.12	1.8.14S	Removal of Existing Driveway Culverts	Lineal Metres	214		
4.13	1.8.15S	Removal of Existing Throup Stream Culverts	Lineal Metres	50		
4.14	1.8.16S	Asbestos Cement Pipe Removal and Disposal	Lineal Metres	90		

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UNIT	CHARTERS ROAD - STREETSCAPE
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4.15	1.8.17\$	Common Excavation Off-Site Disposal of IL+ Chloride Ions Contaminated material. Premium for Common Excavation and Utility Trenching	Tonne	8400	
4.16	1.8.17S	Common Excavation Off-Site Disposal of IL+ Metals Contaminated material. Premium for Common Excavation and Utility Trenching	Tonne	790	
31 32 19		Geosynthetics			
4.17	1.6.1	Geogrid Strips for Wall Tieback	Square Metre	4480	
4.18	1.6.1	Non-woven Geotextile Ditch Infill	Square Metre	763	
31 37 10		RipRap			
4.19	1.4.1	250kg to 500kg Rip Rap - Wall Armouring	Tonne	16	
4.20	1.4.1	450-650mm Rip Rap - Including non-woven geotextile - Channel	Tonne	42	
4.21	1.4.1	300-500mm Boulder filled with 50-150mm Coho Gravel - Channel	Tonne	40	
4.22	1.4.1	Washed Round River 40- 140mm Coho Gravel	Tonne	20	
4.23	1.4.1	150-300mm Rip Rap - Channel	Tonne	20	
4.24	1.4.1	800mm - 1200mm - Rip Rap - Including non-woven geotextile - Weir	Tonne	26	
4.25	1.4.1	100mm-200mm Rip Rap - Including non-woven geotextile - Swale	Tonne	8	
			Sub-1	otal	\$

DIVISION 3	DIVISION 32 - ROAD AND SITE IMPROVEMENTS						
Item No.	Section	Specification Title	Unit	Qty	Unit Price	Amount	
32 11	16.1	Granular Sub-Base					
5.1	1.4.2	Granular Sub-Base - Roadway Variable Thickness for Roads or Sidewalks	Cubic Metre	2000			
5.2	1.4.2	25mm Clear Crush Rock - Including Non-Woven Geotextile Wall - Block Infill	Tonne	220			
5.3	1.4.2	75mm Select, Well Graded, Crushed Rock Wall - Leveling Pad	Tonne	170			
5.4	1.4.2	150 - 300mm Minus Well Graded Crush Rock Wall	Tonne	8000			
5.5	1.4.2	75 - 450mm Minus Well Graded Crush/Blast Rock Wall	Tonne	3500			
5.6	1.4.2	Pit Run Gravel - Roadway Variable Thickness for Roads or Sidewalks	Tonne	275			
32 11 23		Granular Base					
5.7	1.4.1	Granular Base Roadway Variable Thickness for Roads or Sidewalks	Tonne	1732			

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32 12 13.1		Asphalt Tack Coat			
5.8	1.5.1	Asphalt Tack Coat	Square Metres	6670	
32 12 13.2		Asphalt Prime	Wietree		
5.9	1.5.1	Asphalt Prime	Square Metres	6670	
32 12 16		Hot-Mix Asphalt Concrete Paving	Wietree		
5.10	1.5.1S, 1.5.2	Asphalt Pavement - Base Course LC#1 (40mm Compacted Thickness)	Square Metres	6670	
5.11	1.5.1S, 1.5.2	Asphalt Pavement - Upper Course UC #1 (40mm Compacted Thickness)	Square Metres	6670	
5.12	1.5.3	Asphalt Sidewalk 50mm Thick Hot Mix Asphalt, Including Ramps	Square Metres	100	
5.13	1.5.3	Asphalt Driveway 50mm Thickness Hot Mix Asphalt	Square Metres	100	
5.14	1.5.4	Extruded Asphalt Curb (Optional)	Lineal Metres	50	
32 17 23		Painted Pavement Markings			
5.15	1.5.3	Thermoplastic Pavement Markings	Lump Sum	1	
32 31 13		Chain Link Fences & Gates			
5.16	1.5.4S	MoTi Steel Sidewalk Fencing	Lineal Metres	130	
5.17	1.5.4S	Mortar Rock Hand Railing - MMCD C14 - Optional	Lineal Metres	200	
32 91 21		Topsoil and Finish Grading			<u>.</u>
5.18	1.4.1S	Growing Medium (Topsoil 150mm)	Square Metres	1480	
32 92 20		Seeding			
5.19	1.8.1	Seeding	Square Metres	1480	
			Sub-T	otal	\$

DIVISION 3	3 - UTILITI	ES				
Item No.	Section	Specification Title	Unit	Qty	Unit Price	Amount
33 11 01		Waterworks			<u> </u>	
6.1	1.8.1, 1.8.1	Watermain DI 300 mm Diameter Depth of Main 0 - 2m. Imported Granular Backfill	Lineal Metres	13		
6.2	1.8.1, 1.8.2	Watermain PVC 250 mm Diameter Depth of Main 0 - 2m. Imported Granular Backfill	Lineal Metres	470		
6.3	1.8.1, 1.8.2	Watermain PVC 200 mm Diameter Depth of Main 0 - 2m. Imported Granular Backfill	Lineal Metres	17		
6.4	1.8.1, 1.8.3	Watermain PVC 150 mm Diameter Depth of Main 0 - 2m. Imported Granular Backfill	Lineal Metres	3		

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i 					
6.5	1.8.3	Gate Valves 200 mm c/w Mechanical Restraints	Each	2	
6.6	1.8.3	Gate Valves 250 mm c/w Mechanical Restraints	Each	9	
6.7	1.8.3	Gate Valves 300 mm c/w Mechanical Restraints	Each	2	
6.8	1.8.3	Bend 250mm diameter, 45 Degree, PVC c/w mechanical restraints and thrust blocks	Each	2	
6.9	1.8.3	Tee 250x250x150mm Diameter	Each	1	
6.10	1.8.3	Tee 250x250x200mm Diameter	Each	2	
6.11	1.8.3	Tee 300x300x250mm Diameter	Each	1	
6.12	1.8.3	Reducer 250mm X 200mm diameter c/w mechanical restraints	Each	1	
6.13	1.8.3	Permanent Capping 200mm Diameter, Existing AC	Each	4	
6.14	1.8.3	Blind Flange Cap 300mm diameter (DI) c/w Mechanical restrains and thrust blocks	Each	1	
6.15	1.8.4S	Water Service Connections 19mm	Each	10	
6.16	1.8.4S	Water Service Connections 50mm	Each	2	
6.17	1.8.5S, 1.8.6S	Air-Release Valve & Chamber per CRD Standard Drawing 1.1	Each	2	
6.18	1.8.12	Watermain Tie -In Pipework by Contractor. Couplers & fittings Supplied By Contractor. Tie in completed by CRD Forces	each	2	
6.19	1.8.14S, 1.8.2	Hydrant Assembly Per CRD STD DWG 1.3	Each	5	
6.20	1.8.16S	Hydrant Removal Offsite disposal	Each	4	
6.21	1.8.17S	Cap and Abandon Existing Watermains and Valves	Lump Sum	1	
6.22	1.8.18S	Cap with Flush Assembly as Per CRD STD DWG 1.5 and MMCD W8	Each	2	
33 34 01		Sewage Force mains			
6.23	1.8.2, 1.8.3	Force main Pipe HDPE 100mm Diameter	Lineal Metres	194	
6.24	1.8.3	100mm Gate Valve	Each	4	
6.25	1.8.3	100mm x 100mm X 100mm Tee	Each	2	
6.26	1.8.3	Caps 100mm HDPE	Each	5	
6.27	1.8.3	Bend 100mm Degree of Bend. 45 Degree HDPE	Each	2	
6.28	1.8.5	Air Valve As per DoS STD DWG SD-SS02	Each	1	
6.29	1.8.5	Reinstate Low Point Drain Valve	Each	1	

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6.30	1.8.10	Force main Tie -In 100mm Diameter Into Existing 100mm Diameter Sanitary Sewer or Existing Manhole	Each	3		
33 40 01	Storm Sewers					
6.31	1.6.1, 1.6.2	Drainage Pipe PVC SDR 200mm Diameter, Installed at Depth of 1-3m c/w Imported Backfill, 100mm - 19mm Granular Base and 250mm - 75mm Minus Pit Run Gravel.	Lineal Metres	220		
6.32	1.6.1, 1.6.2	Drainage Pipe PVC SDR Perforated 150mm Diameter, Installed at Depth of 1-3m c/w Imported Backfill, 100mm - 19mm Granular Base and 250mm - 75mm Minus Pit Run Gravel.	Lineal Metres	170		
6.33	1.6.1, 1.6.2	Drainage Pipe PVC SDR 300mm Diameter, Installed at Depth of 0-2m c/w Imported Backfill , 100mm - 19mm Granular Base and 250mm - 75mm Minus Pit Run Gravel.	Lineal Metres	265		
6.34	1.6.1, 1.6.2	Drainage Pipe PVC SDR 250mm Diameter, Installed at Depth of 1-3m c/w Imported backfill, 100mm - 19mm Granular Base and 250mm - 75mm Minus Pit Run Gravel.	Lineal Metres	45		
6.35	1.6.3, 1.6.2	Drainage Service Connections 100mm & 150mm Diameter Services per Service Connection Detail. Including Excavation, Disposal, Supply of Units, Cast In Place Concrete, Pipes, Fittings, Related Materials, Bedding, Backfill, Cleaning, Tie-In To Existing, Surface All Other Related Works To Be Included.	Each	8		
6.36	1.6.5	Catch basin Lead 150mm Diameter	Lineal Metres	75		
6.37	1.6.12S	Concrete filled Jute Sack Headwall	Each	1		
33 42 13		Pipe Culvert				
6.38	1.5.1, 1.5.2	1.8m X1.8m Concrete Box Culvert - Includes 19mm Minus Crush and Coho Gravel as per Contract Drawings (Alternate sizes include 2.1m x 1.8m, 2.1m x 2.1m & 2.4mx2.1m)	Lineal Metres	21		
33 44 01		Manholes and Catch basins				
6.39	1.5.1.18	Manhole Base, Lid, Slab, Cover, Riser, Frame, and All Other Components of a Complete Manhole 1050mm Diameter. Excavation, Fill.	Each	10		
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6.40	1.5.1.1S	Manhole Base, Lid, Slab, Cover, Riser, Frame, and All Other Components of a Complete Manhole 1200mm Diameter. Excavation, Fill.	Each	1	
6.41	1.5.2	Top Inlet Catch Basin Standard Drawing S11	Each	13	
6.42	1.5.3	Inspection Chamber Standard Drawing S9,S12	Each	8	
			Sub-To	otal	\$

TENDER T02-2023 CHARTERS ROAD STREETSCAPE, SOOKE, B.C. FORM OF AGREEMENT

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SCHEDULE 1 – SCHEDULE OF CONTRACT DOCUMENTS

The following is an exact and complete list of the *Contract Documents*, as referred to in Article 2.1 of the Agreement.

NOTE: The documents noted with "*" are contained in the "Master Municipal Construction Documents – General Conditions, Specifications and Standard Detail Drawings", Platinum Edition dated 2019. All sections of this publication are included in the *Contract Documents*.

- 1. Agreement, including all Schedules
- 2. Supplementary General Conditions
- 3. General Conditions*
- 4. Supplementary Specifications
- 5. District of Sooke Bylaw 404, Subdivision and Development Standards Bylaw
- Specifications*
- 7. Supplementary Standard Detail Drawings
- 8. Supplementary Standard Detail Drawings as per Bylaw 404
- 9. Standard Detail Drawings*
- 10. Executed Form of Tender, including all Appendices
- 11. Contract Drawings listed in Schedule 2 to the Agreement "List of Contract Drawings";
- 12. Instructions to Tenderers Part I
- Instructions to Tenderers Part II*
- 14. Environmental Management Plan for Throup Stream/Charters Road Culvert Replacement
- 15. Charters Road and Church Road Constructions Traffic Management Strategy, District of Sooke" prepared by ISL Engineering Ltd, May 2023
- Appendix A Approved Products List (Capital Regional District Integrated Water Systems)
- 17. Capital Regional District Engineering Specifications and Standard Drawings
- 18. Geotechnical Design Memorandum February 3, 2022
- 19. Chance Find Protocol for Archaeological Sites
- 20. Technical Memo: Soil Assessment for the Charters Road Project, Sooke, BC" Prepared By McElhanney Ltd.

21.	The following Addenda (if any):						

TENDER T02-2023 CHARTERS ROAD STREETSCAPE, SOOKE, B.C. SUPPLEMENTARY SPECIFICATIONS

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Revise the following Master Municipal Specifications 2019 Edition:

SECTION	SUB SECTI	TITLE	SUPPLEMENTARY SPECIFICATION
	ON		
01 10 00SS		General Requirements	
	1.0	General	Add Clause 1.1: "Section 01 10 00SS addresses additional measurement and payment clauses which do not apply to other specification sections"
	1.2	Payment	Add Clause 1.2: " .1 Payment shall be based on the Lump Sum bid in the Schedule of Quantities and Unit Prices as measured and accepted by the Contract Administrator. Payment shall be accepted as full compensation for everything furnished and done. .2 Payment of the lump sum bid will be paid in equal amounts each month. .3 The Contractor is responsible for all staking and survey layout and quantity calculations required for the completion of all Work, as shown on the Contract Drawings, and to affect incidental field adjustments. .4 The unit price bid shall include, but not be limited to; all survey layout, staking, cross sections, calculations of volumes required for tender items, coordination required for the completion of the work, record survey, and all other work and materials incidental and necessary to complete the Work to provide a functional system. Grade sheets, digital RAW and CAD file data is to be provided to the Contract Administrator 10 Days prior to executing the work. .5 Any calculations necessary shall be performed by the Contractor and shall be provided to the Contract Administrator at any time upon request. Information shall include both text files and any CAD drawings."
01 52 01		Temporary Structures	
	1.1	Section Includes	Add Clause 1.1.4: "Mobilization/Demobilization."

Unit
PRICE
CONTRACT

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	1.6	Payment	Add Clause 1.6.2: "Payment for mobilization and demobilization shall include all the Contractor costs of mobilization at the beginning of the project and the cost of demobilization at the end of the project. 1. Included in the mobilization are such items as bonding, insurance, permits, moving personnel, equipment and materials to the site, setting up temporary facilities and all preparation for performing the Work. 2. Included in demobilization are preparation and submission of record drawings, operation and maintenance manuals, removal of all personnel, equipment and materials and cleanup of the Site and the Work. 3. The lump sum price bid for this work shall be relative to the costs involved but shall not exceed ten percent of the Tender Price. 4. Payment shall be made as follows, as approved by the Contract Administrator: 1. 60% of the lump sum bid will be included in the first progress payment certificate. 2. 40% of the lump sum bid will be included in the final progress payment certificate. 5. The Contract Administrator may at their discretion authorize partial payment if mobilization or demobilization is not complete. 6. The cost of other items specified under General Requirements shall be considered incidental to the work and separate payment will not be made for any other items in the General Requirements unless specifically noted in the Schedule of Quantities and Prices."
01 53 01		Temporary Facilities	
	1.1	Section Includes	Add Clause 1.1.5: "Temporary Utility Pole Support During Construction."
	1.9	Payment	Add Clause 1.9.2: "Payment for all work related to the management of sanitary flows (noise attenuating by-pass pumping isolation, blocking, diverting, etc.) including preparation of a approved bypass plan, and the supply installation, maintenance and removal of the temporary system. The Contractor will be entitled to 50% of the payment item on the first progress payment after the bypass system is in place and 50% on the first progress payment following dismantling and removal of the bypass system."

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UNIT	CHARTERS ROAD STREETSCAPE,
PRICE	Sooke, B.C.
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CONTRACT		3 01.1.EE.II	MENTART SPECIFICATIONS IVIAT 2023
	1.11	Temporary Utility Pole Support During Construction	Add Clause 1.11: "Temporary Utility Pole Support During Construction." Add Clause 1.11.1: "Provide temporary support for Utility Poles (both power and communications) during construction as required to allow for work adjacent to poles." Add Clause 1.11.2: "Contractors working on utility poles must be able to perform switching on the BC Hydro system."
01 55 00		Traffic Control, Vehicle Access and Parking	
	1.4	Traffic Management	Add Clause 1.4.14.1: "The Contractor to prepare a Traffic Management Plan in accordance with the provided "Charters Road and Church Road Constructions Traffic Management Strategy" prepared by ISL."
	1.5	Payment	Add Clause 1.5.2: "Payment for traffic control will be progressed monthly using a percentage based on the overall completion of the project as determined by the Contract Administrator and Baseline Construction Schedule"
01 57 01		Environmental	
		Protection	Add Clause 1.4.4:
	1.4	Environmental Protection	"Archaeological Assessment Compliance: 1. Portions of the Work are located in areas considered to have high archaeological potential and require considerations prior to and during construction. 2. Construction monitoring by the Archaeological Consultant and representatives from Indigenous communities (that have interests in the area) will be conducted during the Work in the areas considered to have high archaeological potential. This work will be conducted under an Heritage Conservation Act (HCA) permit obtained by the Archaeological Consultant on behalf of the Owner. a. Any work requiring First Nation representatives will require at least five business days of notification prior to fieldwork. b. The Archaeological Consultant and First Nation representative's services and related costs will be provided and paid for by the Owner."
	1.4	Environmental Protection	Add Clause 1.4.5: "Archaeological Excavation Methods: The following applies for portions of the project alignment, identified during monitoring, to have the potential to contain buried archaeological materials (e.g. buried soil horizons): 1. Toothed buckets may be used to remove obstructions

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(pavement, boulders, etc.) prior to reaching potentially culture-bearing sediments. Potentially culture-bearing sediments will be removed with a finishing bucket, in maximum 10 cm vertical lifts, to allow the archaeologist to observe any exposed features or intact deposits and collect artifact provenience in the most precise manner possible. The horizontal extent of lifts will not exceed 3 m. Deposits containing, or with the potential to contain, archaeological materials (i.e., archaeological deposits, or suspected archaeological deposits), will be cast to the side of the trench separately (as practical) from non-archaeological deposits, so that they can be inspected by the archaeological crew. 2. In the event that intact archaeological deposits or features are identified, mechanical excavation will cease in the vicinity of the discovery and excavation will proceed by hand or other methods in consultation with the Branch. The Field Director may use discretion to determine the amount of material to hand excavate. Typically, 10% of intact archaeological deposits will be hand excavated. Other sample sizes may be determined in consultation with the Branch. If more than 20 cubic metres of archaeological deposits are identified, the Branch and Indigenous groups will be contacted. Work may not proceed without Branch approval. 3. 100% of displaced intact archaeological deposits will be screened through 6 mm (0.25 in.) mesh and/or hand sorted using a trowel or rake. Minimally, 25% of displaced disturbed archaeological deposits are identified, the Branch and sorted using a trowel or take. Minimally, 25% of displaced disturbed archaeological deposits are identified.
4. No excavation work shall proceed in absence of a Stantec archaeologist unless arrangements have been
made in advance."

Unit
PRICE
CONTRACT

TENDER T02-2023 CHARTERS ROAD STREETSCAPE, SOOKE, B.C. SUPPLEMENTARY SPECIFICATIONS

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1.4	Environmental Protection	Add Clause 1.4.6: "Archaeological Materials: 1. In the event intact material, culture-bearing deposits, or features are identified by the Contractor and confirmed by the Archaeological Consultant, mechanical excavation will cease, and excavation may proceed by hand or other methods as provided under the guidance of the Archaeological Consultant. a. In the event cultural material is identified, no excavation work shall proceed in absence of the Archaeological Consultant unless arrangements have been made in advance. b. In the event cultural material is identified, the Contractor will provide an area within the HCA permit area to stockpile excavated materials for the archaeological team
		to process. c. In the event cultural material is identified this will be considered Change."
1.4	Environmental Protection	Add Clause 1.4.7: "Ancestral Remains: 1. If Ancestral remains are identified during any part of the Work, the Contractor must immediately cease work in the location of the remains and secure the area to prevent additional disturbance as instructed by the Archaeological Consultant. 2. The Archaeological Consultant will notify the Owner, First Nations, and the Archaeological Branch and RCMP (if necessary) to determine the appropriate next steps."
1.4	Environmental Protection	Add Clause 1.4.8: "Environmental Protection Plan to be prepared in accordance with "Environmental Management Plan for Throup Stream / Charter Road Culvert Replacement." prepared by Swell Environmental Consulting"
1.4	Environmental Protection	Add Clause 1.4.9: "Removal and disposal of Asbestos Cement pipe shall follow current WCB requirements."
1.6	Payment	Add Clause 1.6.2: "Environmental Protection Plan to be prepared in accordance with "Environmental Management Plan for Throup Stream / Charter Road Culvert Replacement." prepared by Swell Environmental Consulting. Payment for Environmental Protection Plan shall be lump sum and includes all work to prepare, deliver and enact an Environmental Management Plan prepared by a registered qualified environmental professional (QEP) that contains the following components: tree protection plan; sensitive ecosystem management plan; sediment and erosion control plan; invasive species management plan; waste disposal; storage areas and laydown area management plan; equipment idling control plan; hazardous material control and spill response plan."

TENDER T02-2023 CHARTERS ROAD STREETSCAPE, SOOKE, B.C. SUPPLEMENTARY SPECIFICATIONS

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DIVISION 3 -	CONCRE	TE	
03 30 20		Concrete Walks, Curbs and Gutters	
	1.4	Measurement and Payment	Revise Clause 1.4.5 to read: "Payment for infill concrete sidewalks, ramps, and medians includes the supply and placing of concrete, granular base and will cover all straight and curved sections and will be made separately for each specified type, thickness and finish as shown on the contract drawings."
03 40 01		Pre-Cast Concrete	
	1.4	Measurement and Payment	Revise clause 1.4.5 to read: "Payment for the removal and offsite disposal of the concrete no-post barriers along Charters Road will be made by lump sum and will include all materials, equipment and labour for the removal and offsite disposal of the barriers."
	3.0	Execution	Add Clause 3.2.3: " Contractor to confirm limits of retaining wall subgrade under the direction of the geotechnical engineer to confirm ultimate area of wall prior to submitting final order of redi-rock wall blocks for delivery to site."
03 30 53		Cast-In-Place Concrete	
	1.5	Measurement and Payment	Add Clause 1.5.6: "Payment for Mortared Rock Wall shall include, but not be limited to; supply and installation of the mortared rock retaining wall including the subgrade preparation, drain and grouted cap, drain rock, railing sleeves, concrete leveling cap, and all other work and materials incidental and necessary to complete the Work to provide a functional system all as shown on the Contract Drawings. Payment shall be based on the Unit Price per square meter bid for each wall height. Wall height is measured from finished grade to top of wall. Payment shall be accepted as full compensation for everything furnished and done."
DIVISION 31	- EARTH	WORK	
31 23 01		Excavation Trenching and Backfilling	
	1.10.9	Measurement and Payment	Add Clause 1.10.9: "The payment for the offsite disposal of contaminated soils will be paid for as an additional cost to the common excavation and utility installation under Division 33, ie the Contractor will be paid for common excavation (item 4.11) plus a premium per tonne of contaminated material (item 4.15 or 4.16). Tonnage of contaminated material is to be confirmed via the receiving facilities weigh scale. Payment will only be made following confirmation of tonnage received by the approved facility and sent to Contract Administrator with proof of weigh slips provided by the Contractor on a weekly basis."

Unit
PRICE
CONTRACT

TENDER T02-2023 CHARTERS ROAD STREETSCAPE, SOOKE, B.C. SUPPLEMENTARY SPECIFICATIONS

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31 24 13	3.3	Excavation Roadway Excavation, Embankment & Compaction	Clause 3.3.9 delete: "Provisions of Provincial Contaminated Sites Legislation" Replace with: "Provisions of Provincial Contaminated Sites Legislation and Technical Memo: Soil Assessment for The Charters Road Project, Sooke BC prepared by McElhanney Ltd."
	1.8	Measurement and Payment	Revised Clause 1.8.5 (1) to Read: "In-place volume will be calculated for payment from cross-sections at sufficient and equal intervals provided by the Contractor and submitted to the Contract Administrator monthly for review. Cross sections are to be provided in a DWG file containing all survey points, existing surface, cleared/ grubbed/ stripped surface, and surface, and bottom of excavation surface. A summary of calculations is to be provided with the submission of the cross-section information."
	1.8	Measurement and Payment	Delete Clause 1.8.5 (4)
	1.8	Measurement and Payment	Add Clause 1.8.14: " Payment for the removal of existing driveway and roadway culverts will be made by lineal meter of culvert removed as indicated on the contract drawings. Payment to include all labour, equipment and materials required for the offsite disposal of each culvert type."
	1.8	Measurement and Payment	Add Clause 1.8.15: " Payment for the removal of existing Throup Stream culverts will be made by lineal meter of culvert removed as indicated on the contract drawings. Payment to include all labour, equipment and materials required for the offsite disposal of each culvert type."
	1.8	Measurement and Payment	Add Clause 1.8.16: " Payment for the removal of asbestos cement pipe will be made by lineal meter of pipe removed as indicated on the contract drawings. Payment to include all labour, equipment and materials required for the offsite disposal following all work safe regulations, bylaws, laws, and best practices."
	1.8	Measurement and Payment	Add Clause 1.8.17: "The payment for the offsite disposal of contaminated soils will be paid for as an additional cost to the common excavation and utility installation under Division 33, ie the Contractor will be paid for common excavation (item 4.11) plus a premium per tonne of contaminated material (item 4.15 or 4.16). Tonnage of contaminated material is to be confirmed via the receiving facilities weigh scale. Payment will only be made following confirmation of tonnage received by the approved facility and sent to Contract Administrator with proof of weigh slips provided by the Contractor on a weekly basis."

TENDER T02-2023 CHARTERS ROAD STREETSCAPE, SOOKE, B.C. SUPPLEMENTARY SPECIFICATIONS

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31 32 19		Geosynthetics	
31 32 19		Geosynthetics	Add Clause 3.1.5: "Installation of geosynthetic material
	3.0	Execution	associated with MSE Redi-rock lock block wall is to conform to the contract drawings and redi-rock
			manufacturers recommendations as approved by then Contract Administrator."
DIVISION 32	- ROAD A	AND SITE IMPROV	EMENTS
32 11 16.1		Granular Subbase	
	2.1	Specified Materials	Add the following to end of clause 2.1.1: "(9) 25mm Clear Crush Rock (10) 75mm Select, Well Graded, Crushed Rock (11) 150 - 300mm Minus Well Graded Crush Rock (12) 75 - 450mm Minus Well Graded Crush/Blast Rock
32 12 16		Hot-Mix Asphalt Concrete Paving	
	1.5	Measurement and Payment	Revised Clause 1.5.1 to read: "Payment for asphaltic concrete paving includes all construction joint preparation, supply and placing of the asphaltic concrete, compaction, adjusting and cleaning of frames, covers and lids of all castings affected and taped temporary pavement markings. Measurement for asphaltic concrete paving will be by square meter of actual placed material as approved by the contract administrator."
32 31 13		Chain Link Fences & Gates	
	1.5	Measurement and Payment	Revise Clause 1.5.4 to include: "MOTI Drawing 2891-2 Standard Steel Bicycle Fence."
32 91 21		Topsoil and Finish Grading	
	1.4	Measurement and Payment	Revised Clause 1.4.1 to read: "Payment for growing medium and imported topsoil will be made separately for each type of growing medium and imported topsoil specified, and includes supply of materials, on-site handling, placement to thickness specified, application of fertilizers and finished grading. Payment for growing medium and topsoil will be made by actual area placed and compacted by landscape roller to the specified thickness as approved by the Contract Administrator."
DIVISION 33	- UTILITII	ES	
33 11 01		Waterworks	
	2.1	General	Add Clause 2.1.4 to read: "All Materials are to confirm to the latest version of the Capital Regional District's 'Appendix A Approved Materials' located on the CRD website."
	1.8	Measurement and Payment	Revise Clause 1.8.4: Replace references to Standard Drawings W2a and W2b with Capital Regional District Standard Drawings 2.4, 2.5, and 2.6.

	TENDER T02-2023
Unit	CHARTERS ROAD STREETSCAPE,
PRICE	SOOKE, B.C.
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	1	T	
	1.8	Measurement and Payment	Revise Clause 1.8.5: Replace reference to Standard Drawings W5 to W7 and W10 with Capital Regional District Standard Drawing 1.2 and 1.5."
	1.8	Measurement and Payment	Revise Clause 1.8.6: Replace reference to Standard Drawings W6 and W7 with Capital Regional District Standard Drawing 1.2.
	1.8	Measurement and Payment	Revise Clause 1.8.14: Replace reference to Standard Drawings W4 with Capital Regional District Standard Drawing 1.3.
	1.8	Measurement and Payment	Add Clause 1.8.16: "Payment for removal and offsite disposal of existing valve boxes and risers and fire hydrants includes excavation, backfilling and, where applicable, capping and temporary and permanent paving surface restoration to the satisfaction of the Contract Administrator."
	1.8	Measurement and Payment	Add Clause 1.8.17: "Payment for abandonment of existing valves identified on the contract drawings and abandonment of existing watermain will includer all labour, equipment, and materials required to complete the abandonment to the satisfaction of the Contract Administrator. Payment will be made by lump sum upon completion of the works."
	1.8	Measurement and Payment	Add Clause 1.8.18: "Payment for cap and flush valve assembly is to include the cap with 50mm diameter tap, tie rods, thrust blocks as outlined in standard drawing W8. The flush assembly piping, valves, boxes, and assembly is as per CRD standard drawing 1.5. Payment to include all labour, equipment, and materials required to complete a functional system to the satisfaction of the Contract Administrator."
33 40 01		Storm sewers	
	1.6	Measurement and Payment	Add Clause 1.6.12: "Payment for concrete filled jute sack headwall is to include all labour, materials, and equipment required including regrading of ditch."
34 44 01		Manholes and Catch Basins	
	1.5	Measurement and Payment	Revise Clause 1.5.1.1 to Read: "Payment for Manhole base, lid, slab, frame and cover includes all components shown on standard Detail Drawings for manholes including risers. Payment includes dewatering, base preparation, all in-situ concrete work and the submission of shop drawings showing the base, lid, risers, castings and grade rings required for installation to design grades."
DIVISION 34	- TRANSI	PORTATION	
34 41 13		Traffic Signals	
	1.9	Measurement and Payment	Add Clause 1.9.4: "Payment for supply, relocation, and installation of traffic signs, signposts, bases, and sleeves will be made per each as shown on the Contract Drawings."





Our File: 2241-20128-00 Task 2017

TECHNICAL MEMO

То	From
Jeff Carter, Director of Operations	Brian White, P.Eng, Task Lead
District of Sooke	McElhanney, Environmental Services
Re	Date
Soil Assessment for the Charters Road Project,	June 28, 2023
Sooke, BC	

1. Introduction

McElhanney Ltd. (McElhanney) was retained by the District of Sooke (the Client; the District) to complete a Soil Assessment program prior to construction activities along Charters Road in Sooke, BC (the Project). Refer to *Figure 1* for the approximate Project boundary in yellow. The purpose of the Soil Assessment was to characterize the quality of soils within the Project construction footprint (the Site) that are anticipated to be excavated as a result of planned construction activities.



Figure 1: Approximate Project Boundary (yellow line; imagery courtesy of Google Earth)

McElhanney

2. Background

McElhanney understands that the District is planning to complete water, storm, and sanitary system upgrades and road improvements along Charters Road from Throup Road to Sooke Road. There are also road improvements planned for Golledge Road and the north shoulder of Sooke Road.

2.1. PROJECT OBJECTIVES

The Soil Assessment aims to meet the following objectives:

- To investigate soils in areas of planned soil cuts for potential contamination from the roadway, unknown fill, or other historical activities;
- Characterize soils within the areas of planned soil cuts to determine future soil management and disposal options during construction; and,
- Provide recommendations and associated measures to manage the presence of contamination, if identified, in soil during construction phases of the work.

3. Scope of Work

McElhanney's Soil Assessment for the Site was developed using the ISL Issue for Tender drawings dated May 26, 2023 and the McElhanney Issued for Final Review drawings dated October 21, 2022. The sampling locations were chosen to target areas of greatest potential for soil disturbance and cuts during construction. The scope of work included:

- Project management, subcontractor coordination and Client communication.
- A desktop search of regulatory and historical databases to assess likelihood and potential sources of contamination including: aerial photographs, BC Contaminated Sites Registry, and Federal Contaminated Sites Inventory.
- A subsurface investigation work plan targeting soils within the Project footprint.
- A site-specific Health & Safety Plan completed by McElhanney field personnel and reviewed by its subcontractors.
- Application for District permits and retention of traffic control.
- Preliminary layout of all planned test hole locations using a handheld GPS
- Completion of a BC One Call and private utility locate of the proposed ground disturbance locations by a third-party subcontractor.
- Advancement of 7 test holes, to a maximum exploratory depth of 1.8 meters below ground surface (mbgs) using hydro vacuum truck (hydrovac).
- Advancement of 7 hand dug locations to a maximum exploratory depth of 0.2 mbgs using a shovel.



- Logging of each sample collected for soil type, colour, density, moisture content, staining, odour and other relevant observations in general accordance with McElhanney's Soil Classification Manual for Geotechnical Assessments (based on the modified Unified Soil Classification System).
- Collection of soil samples at regular depth intervals or where geological units changed, for analyses of Potential Contaminants of Concern (PCOCs). Headspace vapour analysis was completed through field screening on each sample collected for the presence or absence of volatiles organic compounds at the time of sample collection using a photoionization detector (PID).
- Collection of one blind field duplicate (BFD) sample at a rate of approximately 1 in 10 for quality assurance/quality control purposes.
- Submission of soil samples to a CALA certified laboratory, ALS Environmental, for analysis on a regular turnaround time.
- Evaluation of the soil analytical results to the current applicable BC Contaminated Sites
 Regulation (CSR) standards for Residential Low Density and Industrial Land Use (RLLD/IL).
- Confirm or refute the presence or absence of contamination and provide an estimate of the possible extent, magnitude, and variability of the contamination.
- Preparation of this Soil Assessment report outlining the results of historical searches, field
 activities, methodology, analytical results, discussion, an estimate of soil volumes by class and
 proposed receiving facilities, and conclusions.

4. Desktop Review

4.1. REGULATORY DATABASE REVIEW

4.1.1.BC Ministry of Environment & Climate Change Strategy (ENV) Site Registry Search

The iMapBC Environmental Remediation Sites layer, which is maintained by ENV, was used to perform a 500 m radius search from the edge of the Site for BC Site Registry listings. The Site Registry is a data repository maintained under the provisions of the Environmental Management Act (EMA) and CSR regarding information on activities with contamination causing potential. There were eight listings identified within the 500m search radius as shown on *Figure 2*. The nearest identified site was 425m west of the Project boundary. None of the Registered Sites are considered of environmental concern due to their distance from Site.





Figure 2: iMap BC BC Site Registry Search Results within 500m of the Project Footprint.

4.2. FEDERAL CONTAMINATED SITES INVENTORY

The Federal Contaminated Sites Inventory (FCSI), which is maintained by the Government of Canada, was used to perform a 500 m search from the edge of Site for all known federal contaminated sites. The FCSI includes information on all known federal contaminated sites under the custodianship of departments, agencies and consolidated Crown corporations as well as those that are being or have been investigated to determine whether they have contamination arising from past use that could pose a risk to human health or the environment. The inventory also includes non-federal contaminated sites for which the Government of Canada has accepted some or all financial responsibility (Government of Canada, 1903; 1911).

There was one suspected Federal Contaminated Site (Site 00004571 – Indigenous Services Canada) within the 500 m search area. The site was approximately 760m west of the Project boundary and is not considered of environmental concern due to the distance. Search results are presented on *Figure 3*.

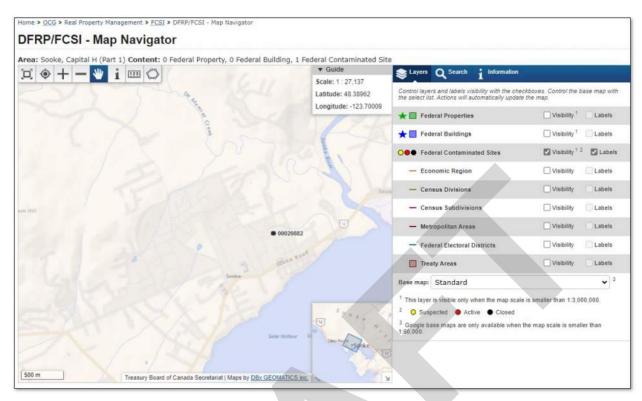


Figure 3: Federal Contaminated Sites Inventory Search results within 500 m of the Site.

4.3. HISTORICAL RECORDS REVIEW

4.3.1. Aerial Photograph Interpretation

Historical aerial photographs were obtained from UBC's Geographic Information Center and images from Google Earth. A selection of photographs available for review from the following years; 1946, 1951, 1962, 1972, 1980, 1990, 2004, 2013, 2017, 2021, and 2023. A summary of our review has been presented in Table 3 and copies of selected aerial photographs with a detailed review are provided in *Appendix A*.

Table 1: Aerial Photograph Interpretation.

Year	Photograph Reference	Site Area	Adjacent Properties
1946	BC.249;10	The Site is undeveloped.	Development is present west and south of the Site. Sooke Road was visible at the south boundary of the Site.
1951	BC1238;41	No significant changes	Trees had been cleared west and east of the Site.
1962	BC5055;115	The south end of Charters Road was developed. Golledge Avenue was constructed.	Residential properties to the west and south of the Site were developed.

Year	Photograph Reference	Site Area	Adjacent Properties
1972	BC7410NO271	No significant changes.	Additional residential development directly adjacent to the Site.
1980	30BC80082NO.171	The north side of the Site had been cleared of trees. A path leading east from the Site to a clearing in the woods was present.	Sports fields had been developed adjacent to the northwest side of the Site. Additional residential development west of the Site. A path with access to a small, cleared area east of the Site was observed. This area was not observed in the 1972 or 1990 Aerial Photos.
1990	15BCB90144NO.62	Throup and Charters Road had been developed on the north side of the Site. Regrowth was visible on the path and clearing in the woods.	Additional residential development west of the Site.
2004	Google Earth	The woods east of the north end of the Site had been partially cleared.	Additional residential development east of the Site. Field with current skate park developed to the north of the Site, and golf course developed to the north/northeast of the Site.
2013	Google Earth	The woods east of the north end of the Site had been cleared.	Additional residential development northwest and southwest of the Site.
2017	Google Earth	No significant changes.	Additional residential development northwest of the Site.
2021	Google Earth	No significant changes.	Additional residential development east of the Site adjacent to Charters Road.
2023	Google Earth	No significant changes.	A large residential building and parking was constructed east of the north end of the Site along Charters Road.

Based on the review of available aerial photographs, no on or off-Site concerns were identified.

4.3.2. Potential Contamination Sources Summary

Based on the findings of the desktop review, the main sources of potential contamination within the Project footprint are fill of unknown origins and road salting. The PCOCs are outlined in *Table 2*.

Table 2: Summary of Potential Contamination Sources and Potential Contaminants of Concern (PCOCs).

Location	Description	PCOCs
Project Footprint	Potential for fill of unknown origin and road salting on all road Right of Way (ROWs).	Chloride and sodium ions, LEPHs, HEPHs, PAHs, metals

PAHs - Polycyclic aromatic hydrocarbons in soil

LEPHs - Light extractable petroleum hydrocarbons in soil

HEPHs - Heavy extractable petroleum hydrocarbons in soil

Note that although not a Schedule 2 activity, road salting has been identified as a potential contamination causing activity as we understand that soils originating from trench excavation may be unsuitable for reuse during construction and off-site disposal will be necessary. To accommodate acceptance by local soil disposal dump sites, chloride and sodium ions were added as PCOCs for screening purposes.

5. Regulatory Framework

The investigations described within this report were completed in accordance with the BC EMA, and its associated regulation the BC CSR, the governing provincial legislation on the management and remediation of contaminated sites. Under the EMA, the BC CSR contains the relevant standards to characterize soil, vapour and groundwater quality.

5.1. APPLICABLE SOIL STANDARDS

Soil results were evaluated to the current BC CSR Schedule 3.1 standards. Road ROWs fall under the BC CSR Industrial Land Use (IL) definition and therefore these standards were applied for the Site. The majority of potential soil receiving facilities in the Duncan area require soils to meet BC CSR Residential Low Density (RLLD) Land Use standards. Considering current Site use and the goal of characterizing soils for relocation, standards for IL and RLLD Land uses were applied for the Site in this assessment.

The BC CSR Schedule 3.1 standards consist of the following three parts:

- Part 1 Matrix numerical soil standards;
- Part 2 Generic numerical soil standards to protect human health; and,
- Part 3 Generic numerical soil standards to protect environmental health.

For the matrix standards included in Part 1, the following Site-specific factors were considered applicable:

- Intake of contaminated soil (mandatory);
- Drinking water use (as per ENV Protocol 21);
- Toxicity to soil invertebrates and plants (mandatory); and,
- Groundwater flow to surface water used by freshwater and marine aquatic life.

Groundwater used for irrigation was not considered applicable as the potential receiving sites are not within 500m of agricultural land. Based on this assessment, when soils are relocated, any potential receiving soil sites **must be more than 500m from lands using groundwater for irrigation.** Regional background soil quality estimates for **Region 1** – Vancouver Island, as outlined in *ENV Protocol 4* –



Establishing Background Concentrations in Soil, were also considered, where applicable (BC ENV, 2021).

6. Methodologies

Field activities were completed June 6, 9 and 12, 2023. Investigation methods were conducted by qualified, trained staff and in general accordance to prescribed guidance documents such as the BC Field Sampling Manual parts A, D, and E (BC ENV, 2013 and 2020). When working on roadways, traffic control was used to ensure safe isolation of the work zone. A summary of the methods used during the completion of the field program are provided in the following subsections. Select Site photographs are included in *Appendix B*.

6.1. UTILITY LOCATING

Kelly's First Call Locating (First Call) met with McElhanney field staff on-Site June 6, 2023, to perform the utility clearances prior to ground disturbance activities. A BC One Call was completed by McElhanney prior to arriving on the Site. Available One Call information was reviewed during the utility clearance activities, and utility clearances were completed by use of Electromagnetic (EM) and Ground Penetrating Radar (GPR) scanning to identify any unmarked subsurface utilities or anomalous materials.

6.2. HYDROVAC AND HAND DUG INVESTIGATION

Hydroforce Excavating Ltd was retained to complete hydrovac activities at seven locations on June 9 and 12, 2023. Material removed during the hydrovac activities was transported to Environmental 360 Solutions Ltd.'s facility in Nanaimo for disposal. McElhanney advanced hand dug locations via shovel June 6 and 12, 2023. Material removed was placed back in-situ after samples were collected.

During test hole advancement, soils were logged for soil type, colour, density, moisture content, observed staining, odour, and other relevant observations in general accordance with McElhanney's *Soil Classification Manual for Geotechnical Assessments* (based on the modified Unified Soil Classification System). Select soil samples were collected directly from the hydrovac or hand dug hole, minimizing potential cross-contamination. Sample frequency depended on field observations, including changes in stratigraphy, and results of soil headspace readings. Soil samples were obtained from select depths for field screening and eight soil samples and one duplicate soil sample were submitted for laboratory analysis of PCOCs to ALS Environmental in Burnaby, BC under Chain of Custody. *Table 3* in *Section 7.2* provides a summary of analytical exceedances in soil and the PCOCs analyzed. All other analytical samples were placed on hold for further analysis if required.

Approximate locations of each test hole are presented on Figure 4.





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6.3. SOIL SAMPLING

During test hole advancement, select soil samples were collected. At each depth interval, the collected soil sample was divided into two portions: one for potential laboratory analysis and the other for field headspace analysis. Samples collected for laboratory analysis were placed in laboratory supplied 120mL sterilized glass jars and 40 mL pre-weighed methanol vials (using single use Terra-Cores™). Field headspace screening samples were placed into plastic sealable bags (approximately 40% full) and set aside for approximately seven to 10 minutes to allow semi-volatile and volatile organic compounds to partition to the vapour phase within the airspace contained within the bag. The headspace concentration was then measured using a PID in units of parts per million (ppm). All soil samples collected for laboratory analysis were placed into coolers with ice packs and shipped to ALS Laboratory in Burnaby, BC under Chain of Custody.

6.4. QUALITY ASSURANCE / QUALITY CONTROL

Several Quality Assurance/Quality Control (QA/QC) measures were employed during program sampling. Specifically, the following items identify both in-house and external QA/QC protocols applied:

- Duplicate samples were collected on an approximate 10% frequency and analyzed to evaluate laboratory accuracy.
- The field PID meter was calibrated with isobutylene of a known concentration and zero-calibrated with fresh air prior to use before each day.
- ALS is certified with the Canadian Association for Laboratory Accreditation (CALA) and performs its analytical services under auditable QA/QC standards.
- All activities were conducted by qualified and trained staff.
- The project was managed in accordance with McElhanney's certified ISO 9001 program.
- Soil samples were collected in accordance with the BC Field Sampling Manual.
 - Nitrile gloves were worn during sampling and replaced for each subsequent sample to minimize the potential for cross-contamination between samples.
 - Dedicated disposable Terra-cores were used to sample soils for VOC analysis.
 - o All soil samples were collected in laboratory-supplied sterile sampling jars, bottles.
- To preserve sample integrity, samples were shipped in coolers containing ice packs to ALS Laboratory in Burnaby, BC.
- All PCOCs were extracted within their laboratory-prescribed holding time; and
- Summary analytical tables prepared for this report were verified to be true with original analytical records.

7. Results

7.1. GEOLOGY

A general description of the Site's geology observed at the investigation locations is provided below:

- Asphalt at surface at thicknesses of approximately 0.07m 0.09m; underlain by
- Sand and Gravel in thicknesses of approximately 0.15m; underlain by
- Sand (fine grained), with varying amounts of silt (~estimated visually at 20-50%), trace clay, and trace gravel to maximum advanced depths of 2.1m.

The soil samples collected during this investigation were collected from the sidewalls of each test hole. No visible or olfactory indications of petroleum hydrocarbons were noted. Evidence of potential groundwater was noted at TH23-11 at a depth of 1.7 mbgs. Groundwater could not be confirmed due to the water used as part of the hydrovac advancement.

7.2. ANALYTICAL RESULTS

A summary of soil analytical exceedances from the test holes submitted for laboratory analyses are included in *Table 3* and on *Figure 5*. The detailed analytical results table is included in *Appendix C*. Laboratory Certificates of Analysis are included in *Appendix D*.

Table 3: Summary of Soil Exceedances.

Sample ID	Sample Depth (mbgs)	Soil Sample PID Headspace Reading	PCOCs	Results
TH23-09A	0.6 – 0.9	0.2	Chloride ion, sodium ion, PAHs, LEPHs, HEPHs, and metals	Chloride ion > BC CSR IL Standards
TH23-09B	1.8 – 2.0	0.3	Chloride ion and sodium ion	Chloride ion > BC CSR IL Standards
TH23-11A	0.3 – 0.6	0.3	Chloride ion, sodium ion, PAHs, LEPHs, HEPHs, and metals	Chloride ion > BC CSR IL Standards
TH23-13A / DUP B	0.3 – 0.6	0.5	Chloride ion, sodium ion, PAHs, LEPHs, HEPHs, and metals	Chloride ion > BC CSR IL Standards
TH23-14A	0.3 – 0.6	0.3	Chloride ion, sodium ion, PAHs, LEPHs, HEPHs, and metals	Chloride ion > BC CSR IL Standards
TH23-14B	1.2 – 1.5	0.2	Chloride ion and sodium ion	Chloride ion > BC CSR IL Standards

Sample ID	Sample Depth (mbgs)	Soil Sample PID Headspace Reading	PCOCs	Results
TH23-15A	0.3 – 0.6	0.3	Chloride ion, sodium ion, PAHs, LEPHs, HEPHs, and metals	Chloride ion > BC CSR IL Standards
TH23-15B	1.2 – 1.5	0.5	Chloride ion and sodium ion	Chloride ion > BC CSR IL Standards
HA23-04	0.07	0.1	Chloride ion, sodium ion, PAHs, LEPHs, HEPHs, metals, BTEXSM, and VPH	Lead and zinc > BC CSR IL Standards
HA23-05	0.07	0.0	Chloride ion, sodium ion, PAHs, LEPHs, HEPHs, metals, BTEXSM, and VPH	Zinc > BC CSR IL Standards

Notes:

Formatted Bold – Parameter exceeds applicable standard
PAHs – Polycyclic Aromatic Hydrocarbons
LEPH/HEPH – Light/Heavy Extractable Petroleum Hydrocarbons
VPH – Volatile Petroleum Hydrocarbons
BTEXSM – Benzene, Toluene, Ethylbenzene, Xylenes, Styrene, and MTBE

PPM – Parts per million IL – Industrial Land Use RLLD – Residential Low Density Land Use







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- +\GURYDF 7HVW +ROH 6DPSOH
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8. Analytical QA/QC

8.1. RELATIVE PERCENT DIFFERENCE (RPD)

Blind field duplicate (BFD) samples were collected during the investigation to assess laboratory precision. One duplicate soil sample was analyzed during the investigation.

Relative Percent Difference (RPD) calculations were conducted on select sample sets where duplicate samples were collected. Relative percent difference was calculated using laboratory result values of a select sample, its duplicate result, and the equation % $Difference = \frac{|E_1 - E_2|}{\frac{1}{2}(E_1 + E_2)} \cdot 100$. Descriptive statistics were applied to each duplicate sample.

The RPD results are considered less precise when the concentration of a given parameter is less than five times the analytical laboratory Reportable Detection Limit (RDL). Consequently, RPD values were not calculated in instances when the concentration of either the sample or duplicate sample are less than five times the RDL and/or either sample is reported at concentrations less than the RDL. Generally, the range of acceptable values for RPD is 20% to 50% with values under 20% considered with a higher degree of assurance. The sample duplicate RPD Data Quality Objectives (DQO) provided in the BC Environmental Laboratory Manual are summarized in *Table 4* for each of the PCOCs analyzed.

Table 4: Sample Duplicate Data Quality Objectives (BC Environmental Laboratory Manual).

Parameter Category	Recommended Laboratory DQOs (RPD %)
Organics in Soil	
Polycyclic Aromatic Hydrocarbons	50
Volatile Organics (including BTEX and VH)	40
Extractable Petroleum Hydrocarbons (EPH, LEPH, HEPH)	40
Most Other Typical Organic Parameters	40
Metals in Soil	
High Variability Metals	40
(Ag, Al, Ba, Hg, K, Mo, Na, Pb, Sn, Sr, Ti)	
Other Metals	30
Inorganics	
General Inorganics in Soil	30

RPD values were calculated in soil for parameters with concentrations greater than five times the RDL. Only inorganics (metals and salinity) parameters for the duplicate-sample pair met these criteria and results are summarized in *Table 5*. There were no instances where the calculated RPD values were greater than the DQO threshold.

In addition, ALS Laboratories implements internal QA/QC procedures and checks using certified reference materials, duplicates, method blanks and method spikes. McElhanney reviewed the laboratory QA/QC, and no issues were identified.



Table 5: Summary of RPD Calculations.

Sample ID / Duplicate ID	Parameter	Sample Size	Standard Deviation (%)	Upper 95% Confidence Limit	Average RPD (%)	RPD Range (%)
TH23-13A / DUP-B	Inorganics: metals, chloride ion, sodium ion	32	4.67	9.25	7.89	0 – 18.8

Based on the result of RPD calculations and our review of the ALS QA/QC report, McElhanney considers the results accurate and reliable for the purposes of this investigation.



9. Conclusions

Based on the findings of this Soil Assessment and the information available at the time of this investigation, McElhanney makes the following conclusions:

- The soil stratigraphy within the Project area is generally comprised of 0.07m 0.09m of asphalt, followed by sand with various amounts of silt to maximum explored depths of 2.0m.
- Chloride ion contaminated soils (concentrations greater than BC CSR IL standards) were identified at numerous locations along Charters Road and west on Throup Road. Concentrations were generally higher in the samples closer to the road surface and decreased with depth indicating that the source of chlorides may be historical road salting activities.
- Sodium ion concentrations greater than BC CSR RLLD standards were identified in soils at TH23-15.
- Select metals (lead and zinc) contaminated soils were identified on Golledge Avenue in surface soils (sample depths of 0.07m) at locations HA23-04 and HA23-05. These areas are currently graveled and/or vegetated parking areas. The source of metals is not known at this time but may potentially be due to wear from parked vehicles.
- Lateral extents of contaminants were estimated as halfway between a contaminated sample location and a clean sample location, with the exception of metals found on Golledge Avenue. Metals impacts were inferred to extend into all areas of Golledge Avenue planned for construction as samples were collected from opposite ends of Golledge Avenue and these areas are assumed to have experienced the same metals contamination-causing activity (unknown at this time).
- Metals concentrations along Charters Rd north and south of Golledge Avenue were below BC CSR RLLD standards, therefore metals impacted soils are not anticipated on Charters Rd.
- Potential groundwater was encountered at 1.7 mbgs at TH23-11 but could not be definitively identified due to water used for the hydrovac.
- Chloride ions and select metals (lead and zinc) were identified in soils as exceeding BC CSR IL
 standards. Sodium ions were identified at TH23-15 as exceeding BC CSR RLLD standards. Select soils
 within the Project footprint are of concern and will need to be managed appropriately during
 construction.

A summary of IL+ soil quality along the project alignment referring to construction stations in ISL Issue for Tender drawings dated May 26, 2023 and the McElhanney Issued for Final Review drawings dated October 21, 2022 and depths below existing ground surface is provided in *Table 6* and on *Figures 6A* through *6D*, created from the aforementioned drawing sets.



Table 6: Summary of IL+ Soil Quality Along the Project Alignment.

General Location	Element	Soil Quality	Parameters Exceeding Applicable Standard	ISL Construction Stations		McElhanney Construction Stations		Depth Below Existing Ground Surface		Average Trench Depth for	Approximate Plane View Area	Preliminary Soil Volume
				From (m)	To (m)	From (m)	To (m)	From (m)	To (m)	Calculation (m)	1	Estimate (m³)
Throup Road	Roadway	IL+	Chloride ion	2+000	2+040		-	below asphalt	0.425	0.425	332	140
Charters Road	Roadway	IL+	Chloride ion	1+510	1+100	2+085	2+097.75	below asphalt	0.425	0.425	7178	3050
Golledge Avenue	Roadway	IL+	Metals		-	30+000	30+072	below asphalt	0.425	0.425	561	240
Golledge Avenue	Roadway	IL+	Metals		-	30+090	31+18.5	below asphalt	1.425	0.425	427	180
Throup Road	Storm main	IL+	Chloride ion	2+000	2+040	-	-	below asphalt	Trench Depth	1.9	48	90
Charters Road	SFM	IL+	Chloride ion	1+510	1+500	- /	-	below asphalt	Trench Depth	2.0	12	25
Charters Road	Storm main	IL+	Chloride ion	1+510	1+235			below asphalt	1.2	1.2	275	330
Charters Road	Storm main	IL+	Chloride ion	1+235	1+113.14	-	-	below asphalt	Trench Depth	1.6	146	229
Charters Road	Water main	IL+	Chloride ion	1+510	1+235			below asphalt	1.2	1.2	275	330
Charters Road	Water main	IL+	Chloride ion	1+235	1+105		-	below asphalt	Trench Depth	1.4	156	218
Charters Road	Culvert	IL+	Chloride ion	1+020	1+050	-	-	below asphalt	Trench Depth	6.3	33	205

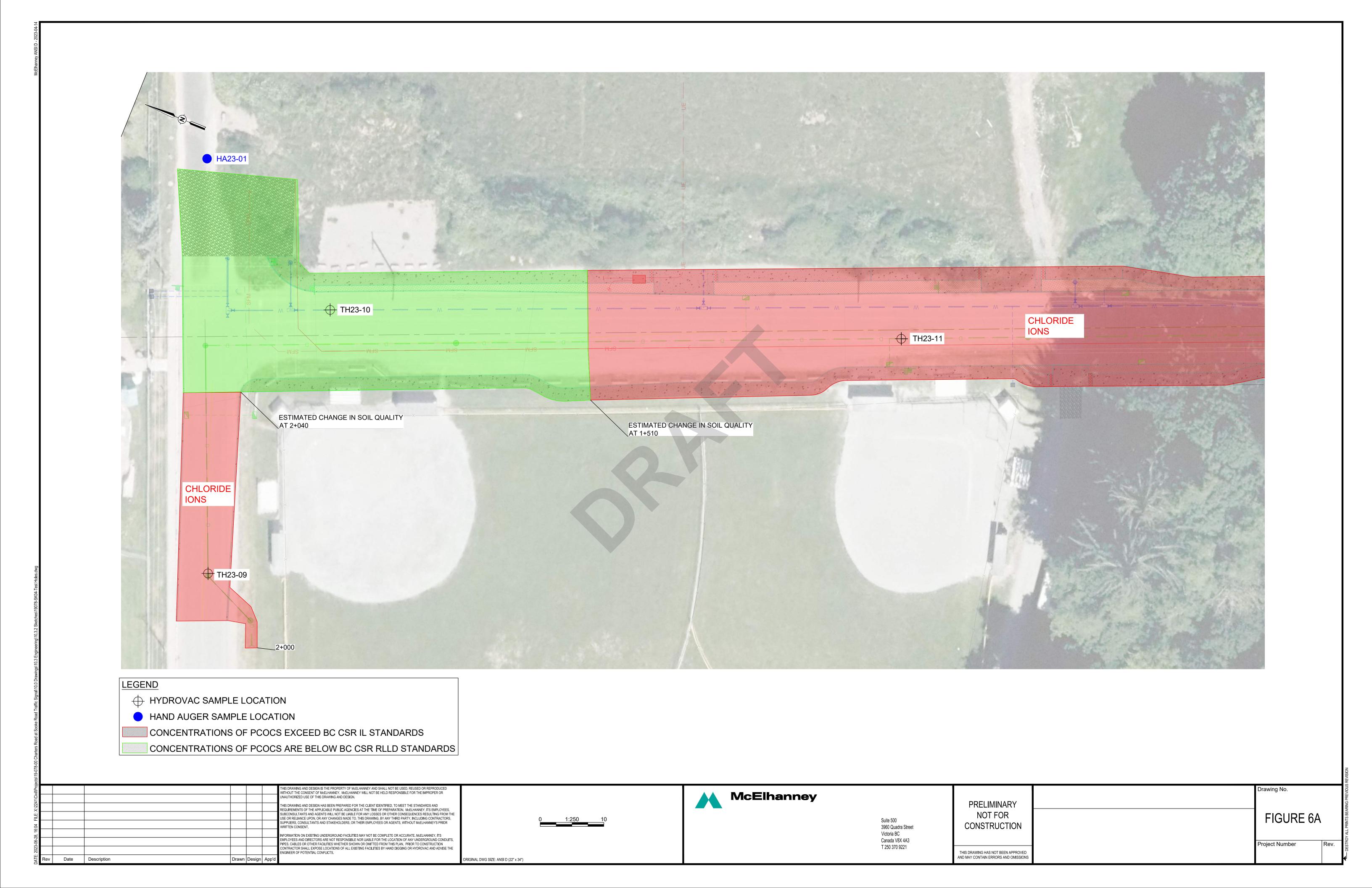
Notes:

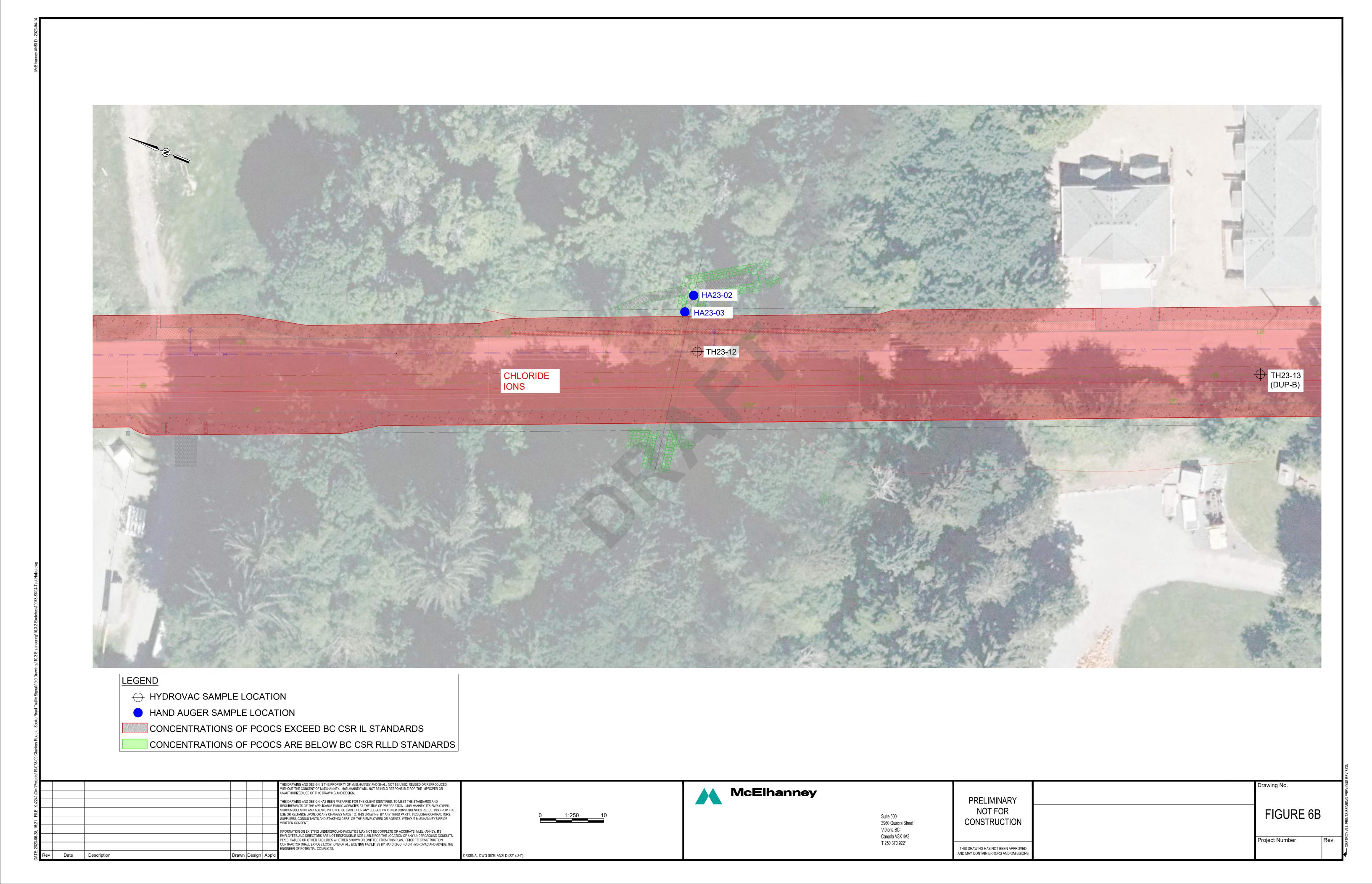
L+: Concentrations of parameters in soil are greater than BC CSR Industrial land use standards.

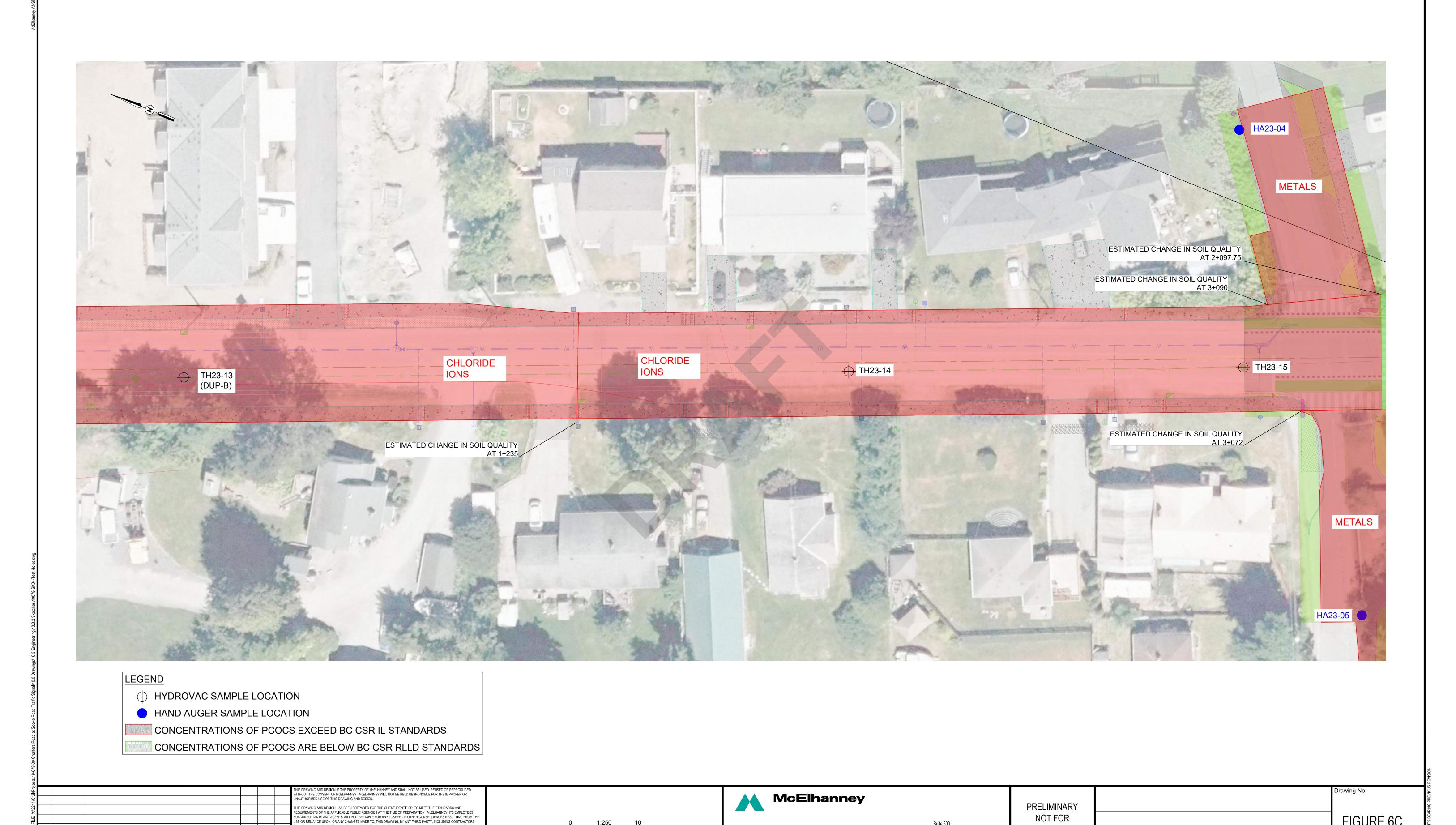
All other soils are less than BC CSR Residential Low Density standards and are not included in the summary.

Construction stations are as per ISL Issue for Tender drawings dated May 26, 2023 and the McElhanney Issued for Final Review drawings dated October 21, 2022

Concentrations of chloride ions were between 40-100 ug/g in certain areas. All residential quality soils must be taken to a facility that accepts chloride ions up to 100ug/g. Residential quality soils cannot be relocated to an area within 500m of a groundwater well used for irrigation.







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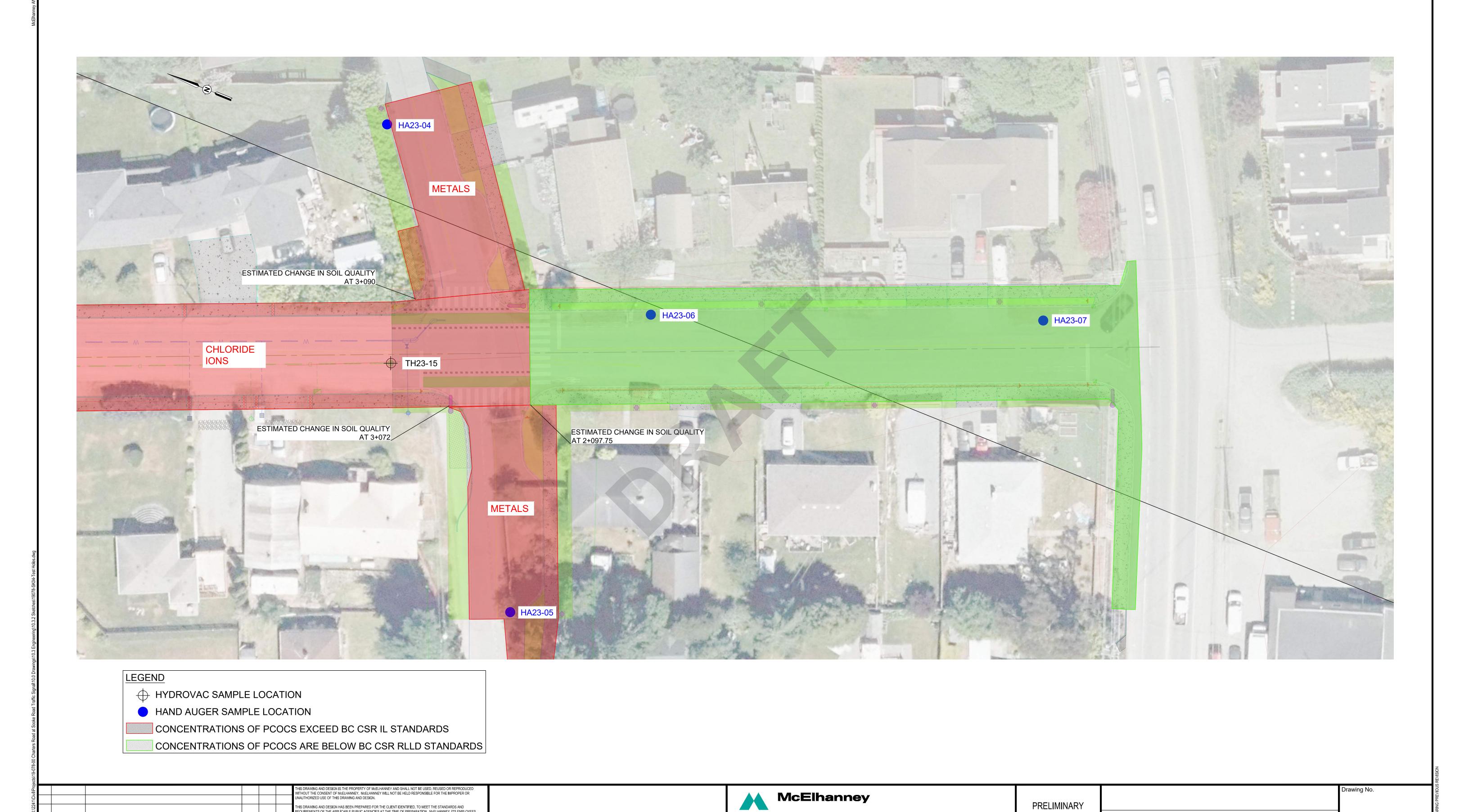
Suite 500

3960 Quadra Street Victoria BC

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CONSTRUCTION

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FIGURE 6D

A preliminary estimate of neat soil volumes for each soil quality identified is provided in *Table 7*.

Table 7: Preliminary Estimate of IL+ Neat Soil Volumes for Each Soil Quality Class.

Soil Quality	Preliminary Soil Volume Estimate (m³)	Relocation / Disposal	Potential Disposal Facilities
IL+ Chloride Ions	4,605	Soils are considered a waste and must be disposed of at a permitted facility.	GRT Facility Duke Point Nanaimo, BC 250-883-1124 https://www.grtenv.com/contact-us
IL+ Metals	420	Soils are considered a waste and must be disposed of at a permitted facility.	GRT Facility Duke Point Nanaimo, BC 250-883-1124 https://www.grtenv.com/contact-us

Notes:

L: Concentrations of parameters in soil are greater than BC CSR Industrial land use standards.

All other soils are less than BC CSR Residential Low Density standards and are not included in the summary. Construction stations are as per ISL Issue for Tender drawings dated May 26, 2023 and the McElhanney Issued for Final Review drawings dated October 21, 2022

Concentrations of chloride ions are between 40-100 ug/g in certain areas. All residential quality soils must be taken to a facility that accepts chloride ions up to 100ug/g. Residential quality soils cannot be relocated to an area within 500m of a groundwater well used for irrigation.

Volumes were estimated using the ISL Issue for Tender drawings dated May 26, 2023 and the McElhanney Issued for Final Review drawings dated October 21, 2022 and the following assumptions:

- Assumptions in soil volume estimate calculations include:
 - Average trench width of 1.2m;
 - Average trench width for the culvert of 2.2m;
 - Neat soil volumes provided are in-situ and do not account for any soil bulking factors;
 - Calculations are based on ISL Issue for Tender drawings dated May 26, 2023 and the McElhanney Issued for Final Review drawings dated October 21, 2022, and include main lines only;
 - o Depth of soils that will be disturbed in roadway improvement areas of 425mm; and,
 - o Bedding under the pipe invert of 150mm.

10. Recommendations

Given the findings of the Soil Assessment completed at the Site, McElhanney recommends the following:

- Complete step-out sampling at approximately 10m-20m spacing from identified contaminated locations to further delineate and potentially reduce IL+ soil volumes. This sampling can be deferred following tender closing when the contract has been awarded during utility locating or potholing activities by the successful proponent.
- A Soil Management Plan (SMP) is recommended for the proposed construction of the Project. The SMP will define roles and responsibilities for the work, identify soil handling, transport, and disposal procedures, outline reporting requirements, and inform crews of visual cues that will assist with the identification of potential chance finds for contaminants during the execution of the project. The SMP would reference the findings of this report and speak to the contractor's requirements for off-site disposal.
- Review of the analytical results by a Qualified Professional upon selection of a receiving Site for disposal to confirm assumptions made within are applicable to the disposal location.
- Remediation of soil beyond the areas that will be disturbed as a result of construction is not required. The District is not required at this time to chase or remediate the impacts of the historical contamination within the roadway as there is an exemption from doing so by BC ENV. However, it is conceivable that future work and maintenance in this area will be required. The District should make third parties and staff aware of the environmental concerns during future permitting requests. Any and all future work should include consideration of the contaminants of concern as identified herein.



11. Professional Statement and Closure

In conformance with applicable regulations, we confirm that:

- This Soil Assessment has been prepared in accordance with the applicable standards; and
- The undersigned have demonstrable experience in investigation of the type of contamination at the Site for which this statement applies and are familiar with the investigation carried out at the Site.

McElhanney appreciates the opportunity to provide environmental services to the District of Sooke and we look forward to working with you for the duration of this assignment. If you have any questions regarding the information within, please do not hesitate to contact the undersigned.

Yours Truly,

McELHANNEY LTD.

Prepared by:

Reviewed by:

DRAFT

DRAFT

Victoria Amson, EIT Environmental Engineer (in training) vamson@mcelhanney.com Rani Wiedemann, MEnvSc, PAg Senior Project Manager rjwiedemann@mcelhanney.com

12. Limitations of Report

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Investigation and Subsurface Risks. The environmental characterization data was collected in general accordance with the standards and methods identified in the document by experienced professionals. Subsurface conditions between boreholes, monitoring wells, and sampling locations have been based, by necessity, on assumptions of what exists between the actual locations sampled or investigated and may vary significantly from actual site conditions. Interpretations of groundwater levels and flow direction are based on water level measurements at selected monitoring well locations and are expected to fluctuate. Borehole and monitoring well observations indicate the approximate subsurface conditions at those locations only. Even a comprehensive sampling and testing program, implemented in accordance with appropriate equipment by experienced personnel, may fail to detect certain conditions. Actual conditions may vary significantly between the points investigated and all persons making use of this report should be aware of, and accept, this risk. Subsurface sampling may result in unavoidable contamination of certain subsurface areas not known to be previously contaminated such as, but not limited to, a geologic formation, the groundwater or other hydrous body. McElhanney is not responsible for such contamination.

Information from Client and Third Parties. McElhanney has relied in good faith on information provided by the Client and third parties noted in this report and has assumed such information to be accurate, complete, reliable, non-fringing, and fit for the intended purpose without independent verification.

McElhanney accepts no responsibility for any deficiency, misstatements or inaccuracy contained in this report as a result of omissions or errors in information provided by third parties or for omissions, misstatements or fraudulent acts of persons interviewed.

Independent Judgments. McElhanney will not be responsible for the independent conclusions, interpretations, interpolations and/or decisions of the Client, or others, who may come into possession of this report, or any part thereof. This restriction of liability includes decisions made to purchase, finance or sell land.

Effect of Changes. All evaluations and conclusions stated in this report are based on facts, observations, site specific details, legislation and regulations as they existed at the time of the investigation. Some



conditions are subject to change over time and the Client recognizes that the passage of time, natural occurrences, and direct or indirect human intervention at or near the site may substantially alter such evaluations and conclusions. Regulatory statutes are also subject to change and interpretation, which may change over time. McElhanney should be requested to re-evaluate the conclusions of this report and to provide amendments as required prior to any reliance upon the information presented herein upon any of the following events: a) any changes (or possible changes) as to the site or regulatory requirements upon which this report was based, or b) new information is discovered in the future during site excavations, building demolition or other activities, or c) additional subsurface investigations or testing conducted by others.



13. References

- BC Ministry of the Environment and Climate Change Strategy. (BC ENV). 2013 and 2020. *British Columbia Field Sampling Manual For Continuous Monitoring Plus the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples.*
- BC Ministry of the Environment and Climate Change Strategy. (BC ENV). 2021. *Contaminated Sites Regulation*, BC Reg. 375/96, includes Stage 10/11 Housekeeping Amendments, March 2021.
- BC Ministry of the Environment and Climate Change Strategy. (BC ENV). 2004. *Environmental Management Act*, Current to September 1, 2021.
- BC Ministry of the Environment and Climate Change Strategy. (BC ENV). 2021. Protocol 4 Establishing Background Concentrations in Soil
- BC Ministry of the Environment and Climate Change Strategy. (BC ENV). 2017. Protocol 21 Water Use Determinations
- Government of Canada. (2022). Federal Contaminated Sites Inventory Map Navigator. Retrieved from Treasury Board of Canada Secretariat: https://map-carte.tbs-sct.gc.ca/map-carte/fcsi-rscf/map-carte.aspx?Language=EN&backto=www.tbs-sct.gc.ca/fcsi-rscf/home-accueil-eng.aspx



APPENDIX A – AERIAL PHOTOGRAPHS



Photograph Year: 2023 Interpreted by: MM/SM

Reviewed by: VA

For ease of reference the Site has been outlined in red.

The Site: No significant changes.

The Surrounding Area: A large residential building and parking was constructed east of the north end of the Site along Charters Road.





Photograph Year: 2021 Interpreted by: MM/SM

Reviewed by: VA

For ease of reference the Site has been outlined in red.

<u>The Site:</u> No significant changes.

<u>The Surrounding Area:</u> Additional residential development east of the Site adjacent to Charters Road.





Photograph Year: 2017 Interpreted by: MM/SM

Reviewed by: VA

For ease of reference the Site has been outlined in red.

<u>The Site:</u> No significant changes.

<u>The Surrounding Area:</u> Additional residential development northwest of the Site.





Photograph Year: 2013 Interpreted by: MM/SM

Reviewed by: VA

For ease of reference the Site has been outlined in red.

<u>The Site:</u> The woods east of the north end of the Site had been cleared.

The Surrounding Area: Additional residential development northwest and southwest of the Site.





Photograph Year: 2004 Interpreted by: MM/SM

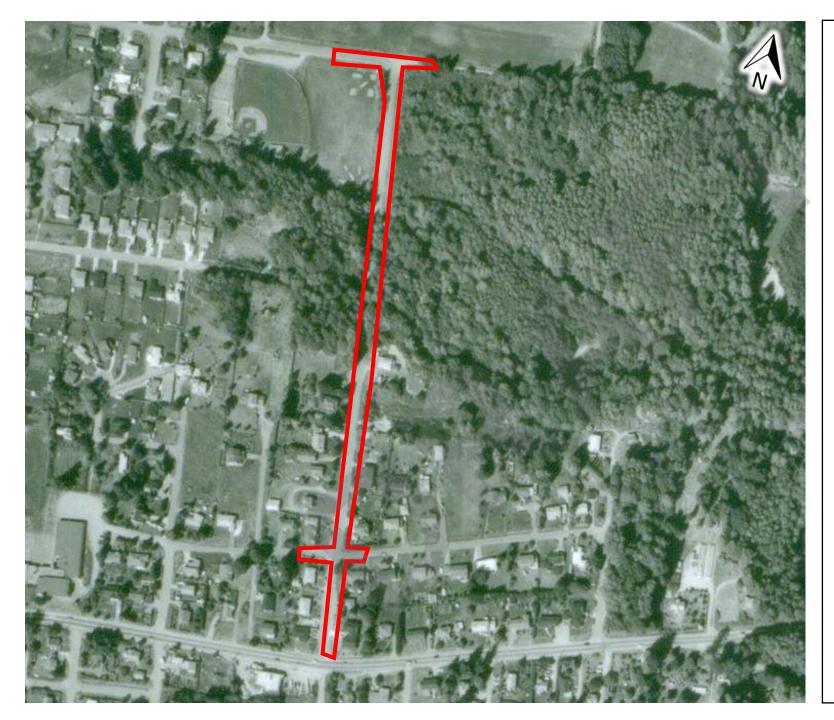
Reviewed by: VA

For ease of reference the Site has been outlined in red.

<u>The Site:</u> The woods east of the north end of the Site had been partially cleared.

The Surrounding Area: Additional residential development east of the Site. Field with current skate park developed to the north of the Site, and golf course developed to the north/northeast of the Site.





Photograph Reference: 15BCB90144NO.62

Photograph Year: 1990 Interpreted by: MM/SM

Reviewed by: VA

For ease of reference the Site has been outlined in red.

<u>The Site:</u> Throup and Charters Road had been developed on the north side of the Site. Regrowth was visible on the path and clearing in the woods.

<u>The Surrounding Area:</u> Additional residential development west of the Site.





Photograph Reference: 30BC80082NO.171

Photograph Year: 1980 Interpreted by: MM/SM

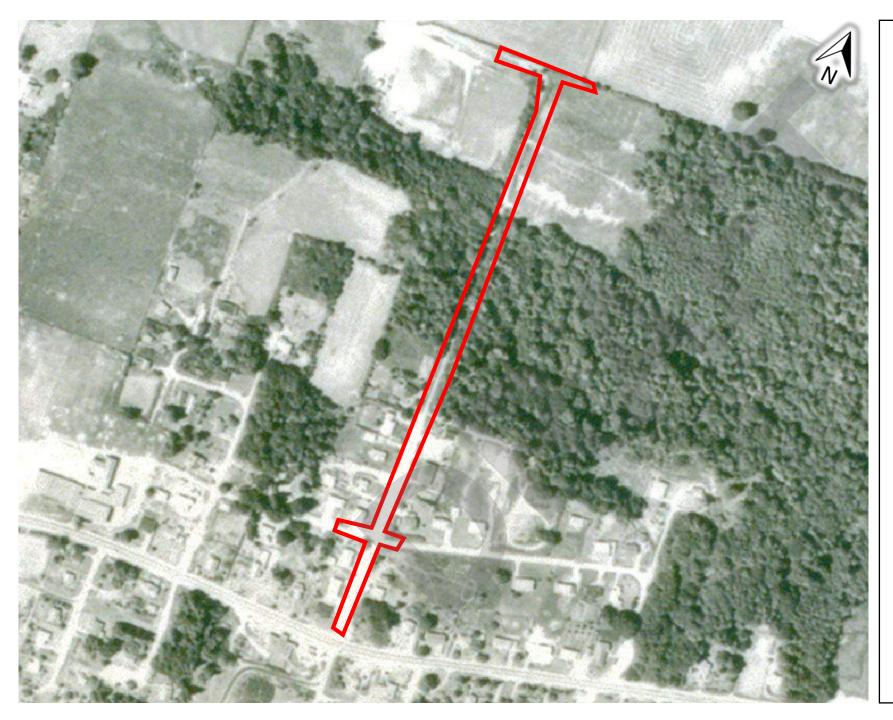
Reviewed by: VA

For ease of reference the Site has been outlined in red.

<u>The Site:</u> The north side of the Site had been cleared of trees. A path leading east from the Site to a clearing in the woods was present.

The Surrounding Area: Sports fields had been developed adjacent to the northwest side of the Site. Additional residential development west of the Site. A path with access to a small cleared area east of the Site was observed. This area was not observed in the 1972 or 1990 Aerial Photos.





Photograph Reference: BC7410NO271

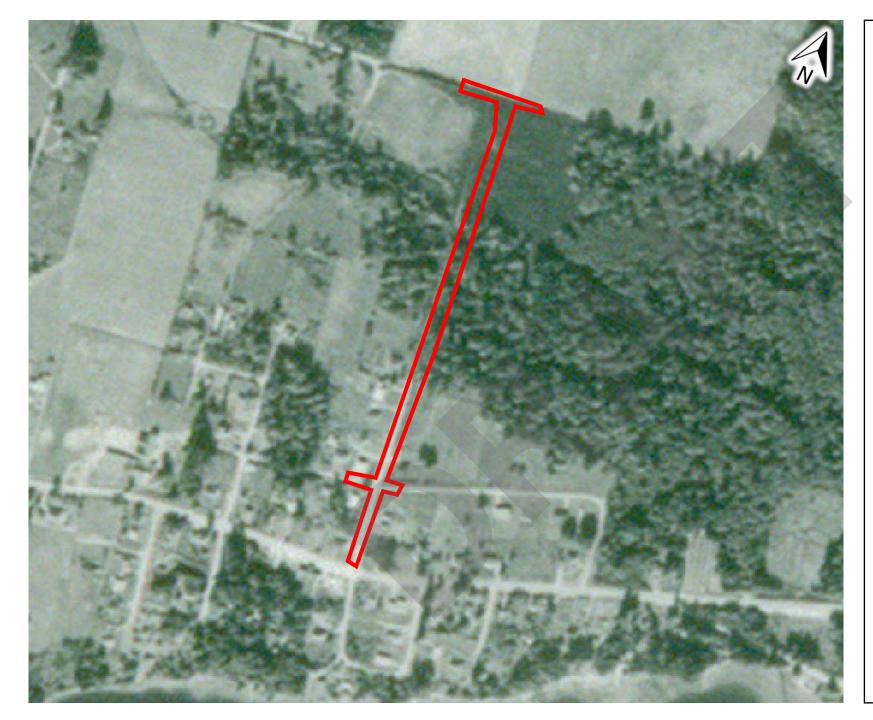
Photograph Year: 1972 Interpreted by: MM/SM

Reviewed by: VA

For ease of reference the Site has been outlined in red.

<u>The Site:</u> No significant changes.

<u>The Surrounding Area:</u> Additional residential development directly adjacent to the Site.



Photograph Reference: BC5055;115

Photograph Year: 1962 Interpreted by: MM/SM

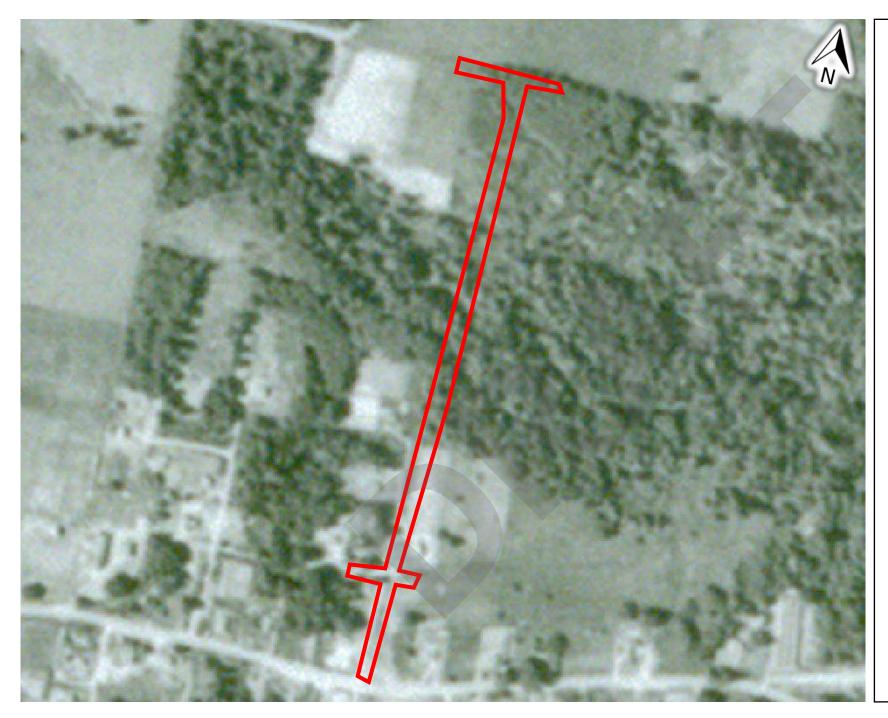
Reviewed by: VA

For ease of reference the Site has been outlined in red.

<u>The Site:</u> The south end of Charters Road was developed. Golledge Avenue was constructed.

<u>The Surrounding Area:</u> Residential properties to the west and south of the Site were developed.





Photograph Reference: BC1238;41

Photograph Year: 1951 Interpreted by: MM Reviewed by: VA

For ease of reference the Site has been outlined in red.

<u>The Site:</u> No significant changes.

<u>The Surrounding Area:</u> Trees had been cleared west and east of the Site.



Photograph Reference: BC.249;10

Photograph Year: 1946 Interpreted by: MM/SM

Reviewed by: VA

For ease of reference the Site has been outlined in red.

<u>The Site:</u> The Site is undeveloped.

The Surrounding Area: Development is present west and south of the Site. Sooke Road was visible at the south boundary of the Site.



APPENDIX B — SELECT SITE PHOTOGRAPHS



Photograph 1: View of the low area on Charters Road corresponding to the current Photograph 2: View of hydrovac activities at test hole location TH23-11 culvert locations and closed off due to a washout in November 2021





Photograph 3: View of the steel culvert and location of sample HA23-03



Photograph 4: View of the sample collected at TH23-09A



Photograph 5: View of test hole TH23-14



Photograph 6: View of test hole TH23-15

APPENDIX C - ANALYTICAL TABLES



Laboratory: ALS				BC CSR Sci	hedule 3.1 Part	ts 1, 2 and 3 Indus	strial Land Use (I	IL) ¹		TH23-09A	TH23-09B	TH23-10A	TH23-11A	TH23-11B	TH23-12B	TH23-13A	DUP B	TH23-13B	TH23-14A	TH23-14B	TH23-15A	TH23-15B	HA23-01	HA23-02
Sample Collection Date			-	~ <u>_</u>	₽	>	≥ 0		듈	09-Jun-23	09-Jun-23	09-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	06-Jun-23	12-Jun-23
Lab Work Order	Units	DL	Intake of intaminated Soil²	ng Wate	Toxicity to soil nvertebrates and plants ⁴	GW Flow to SM Freshwater Aquatic Life ⁵	GW Flow to SW Marine Aquatic Life ⁶	ıan Health Soil ⁷	gical Heal Soil ⁸	VA23B3174- 005	VA23B3174- 006	VA23B3174- 007	VA23B3448- 001	VA23B3448- 002	VA23B3448- 004	VA23B3448- 005	VA23B3448- 015	VA23B3448- 006	VA23B3448- 007	VA23B3448- 010	VA23B3448- 009	VA23B3448- 010	VA23B3105- 013	
Analyte			Cont	Drinki	Toxic nvertel pl	GW FI Fres Aqua	GW FI Marin	Huma	goloo	Soil	BFD of TH23- 13A	Soil	Soil	Soil	Soil	Soil	Soil	Soil						
Sample Collection Depth	m	-				-	-			0.6-0.9	1.8-2	0.3-0.6	0.3-0.6	1.2-1.5	1.1-1.4	0.3-0.6	0.3-0.6	1.2-1.5	0.3-0.6	1.2-1.5	0.3-0.6	1.2-1.5	0.07	0.2
PID (field)	ppm	-	-	-	-	-	-	-	-	0.2	0.3	0.3	0.3	0.3	0.2	0.5	0.5	0.4	0.3	0.2	0.3	0.5	0.2	0.1
Moisture	%	0.25	-	-	-	-	-	-	-	38	-	31.9	25.8	-	12	32.7	30.2	-	36.5	-	25.7	-	12.1	24.5
Saturation	%	1	-	-	-	-	-	-	-	99.8	-	78.4	67.4	66.8	23.2	69.2	71.7	51.2	91.1	54.2	64.3	107	38.7	55.3
pH (Lab)	pН	0.1	-	-	-	-	-	-	-	6.27	-	4.89	5.87	-	6.31	5.56	5.47	-	4.7	-	5.37	-	5.25	6.91
Metals:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum	ug/g	50	-	-	-	-	-	250,000	- 40	36,900	-	29,100	34,200	-	22,600	34,000	32,300	-	39,200	-	37,200	-	19,700	29,100 0.37
Antimony	ug/g	0.1	400	10	40	10	10	40,000	40	0.15 5.27	-	0.14 5.73	0.17 6.83	-	0.16 4.37	0.13 3.43	0.11 3.14	-	0.14 5.34	-	0.16 4.41	-	0.2 3.06	7.11
Arsenic Barium	ug/g ug/g	0.1	>1,000,000	350	1,500	3,500	1,500	-	-	61.2	-	57.4	89.6	-	4.37	80.6	78.7	-	112	-	138	-	59.4	94.8
Beryllium	ug/g ug/g	0.3	15,000	1 ^a	350	3,300	85 ^a	-		0.5	-	0.36	0.44	-	0.25	0.66	0.7	-	0.54	-	0.44	-	0.33	0.41
Bismuth	ug/g	0.2	-	-	-	-	-	-	-	<0.2	-	<0.2	<0.2	-	<0.2	<0.2	<0.2	-	<0.2	-	<0.2	-	<0.2	<0.2
Boron	ug/g	5	-	-	-	-	-	>1,000,000	-	<5	-	<5	<5	-	<5	<5	<5	-	<5	-	<5	-	<5	<5
Cadmium	ug/g	0.02	3,500	1 ^a	75	1 ^a	1ª	-	-	0.052	-	0.034	0.034	-	0.08	0.123	0.109	-	0.097	-	0.068	-	0.084	0.101
Calcium	ug/g	50	-	-	-	-	-	-	-	4,820	-	4,400	4960	-	6910	5110	5680	-	5230	-	5990	-	7,060	7760
Chromium (Total)	ug/g	0.5	20,000	60 ^b , >1,000,000 ^c	250	60 ^b , 300,000 ^c	60 ^b , >1,000,000)° -	-	56.9	-	46.2	57.3	-	47.7	54.1	47.7	-	53.3	-	55.9	-	31.7	51.5
Cobalt	ug/g	0.1	2,000	25	200	25	25	-	-	15.9	-	11.4	15	-	13.5	10.4	10.1	-	14.6	-	14.6	-	12.7	21.6
Copper	ug/g	0.5	700,000	250 ^a	300	75ª	75 ^a	-	-	26.8	-	24.4	27.1	-	44.2	38.1	35	-	32.7	-	24.7	-	45.2	39.5
Iron	ug/g	50	-	-	-	-	-	150,000	-	35,200	-	28,500	34,500	-	31,000	28,900	27,400	-	34,300	-	37,000	-	27,800	39,700
Lead	ug/g	0.5	4,000	120 ^a	1,000	200 ^a	120 ^a	- 450	-	4.48	-	3.89	4.71	-	3.53	4.4	4.26	-	5.53	-	5.04	-	5.08	5.35
Lithium	ug/g	20	-	-	-	-	-	450	-	9,230	-	9,060	17.9 9220	-	13.5 11,000	7520	13.2 7340	-	17.2 9240	-	17.8 10,300	-	10.5 8,300	15.4 11,000
Magnesium Manganese	ug/g ug/g	1	>1,000,000	2,000	2,000	-	-	-	-	452	-	363	547		754	704	665	-	741	-	818	-	658	1040
Mercury	ug/g	0.05	2,000	2,000	75	-	-	-	-	0.0505	-	<0.05	<0.05		<0.05	0.0604	0.052	_	0.0815	-	0.0541	_	<0.05	<0.05
Molybdenum	ug/g	0.1	35,000	15	150	650	650	-		0.61	-	0.51	0.55	-	0.4	0.53	0.64	_	0.8	-	0.41	-	0.42	0.46
Nickel	ug/g	0.5	80,000	70 ^a	250	90°	70 ^a	-	-	37	-	34.4	37.5	-	33	31	29.9	-	37.5	-	45.6	-	24.4	39.2
Phosphorus	ug/g	50	-	-	-	-	-	-	-	604	-	347	588	-	564	575	519	-	482	-	440	-	769	558
Potassium	ug/g	100	-	-	-	-	-	-	-	840	-	560	610	-	580	690	590	-	820	-	790	-	520	730
Selenium	ug/g	0.2	35,000	1	2	1	1	-	-	0.64	-	0.52	0.42	-	<0.2	0.8	0.68	-	0.7	-	0.32	-	0.21	0.27
Silver	ug/g	0.1	-	-	-	-	-	35,000	40	0.11	-	0.12	0.13	-	<0.1	0.14	0.13	-	0.12	-	<0.1	-	<0.1	<0.1
Sodium	ug/g	50	-	-	-	-	-	-	-	338	-	239	474	-	196	279	256	-	280	-	569	-	316	224
Strontium	ug/g	0.5	-	-	-	-	-	150,000	-	27	-	23.1	31.4	-	27	32.6	34.8	-	35.7	-	42.3	-	29.7	36.4
Sulphur as S	ug/g	1000	-	-	-	-	-	-	- 25	<1000	-	<1000	<1000	-	<1000	<1000	<1000	-	<1000	-	<1000	-	<1000	<1000
Thallium Tin	ug/g	0.05 2	-	-	-	-	-	>1,000,000	25 300	0.084	-	0.073	0.086	-	<0.05 <2	0.08	0.076	-	0.097 <2	-	0.081 <2	-	<0.05 <2	0.053
Titanium	ug/g ug/g	1	-	-	-	-	-	>1,000,000	300	1,100	-	1,070	1460	-	1360	1410	1310	-	1580	-	1800	-	1,240	1650
Tungsten	ug/g ug/g	0.5	-	-	-	-	-	200	-	<0.5		<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	-	<0.5	<0.5
Uranium	ug/g	0.05	20,000	30	2.000	150	150	200		0.593	-	0.434	0.425	-	0.266	0.678	0.678	-	0.618	-	0.405	-	0.291	0.35
Vanadium	ug/g	0.2	35,000	100	300	-	-	-		84.2	-	79.9	104	-	74.1	81.7	75.8	-	86.8	-	95.1	-	72.6	97.7
Zinc	ug/g	2	>1,000,000		450	150 ^a	150 ^a	-	-	69.4	-	46.6	56.6	-	53.4	49.8	47.7	-	69.5	-	65.4	-	57.8	145
Zirconium	ug/g	1	-	-	-	-	- /	-	-	1.7	-	1.4	1.4	-	1.6	1.8	1.9	-	1.7	-	2	-	2	2.7
Salinity:								4		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	ug/g		>1,000,000		2,500	600	600	-	-	240	106	32.1	144	56.1	32.9	112	119	56.3	230	147	502	503	<7.7	<11.1
Sodium Ion	ug/g	4.34	>1,000,000	15,000	1,000	-	-	-	-	113	56.9	18	102	31.5	14.1	39.5	42.2	24.7	81.1	49.9	248	287	<7.75	<11.1
Petroleum Hydrocarbons:	1									-	-		-	-	-	-	-	-	-	-	-	-	-	-
EPH C10-C19	ug/g	200	-	-	-	-	-	-		<200	-	<200	<200	-	<200	<200	<200	-	<200	-	<200	-	<200	<200
EPH C19-C32	ug/g	200	-	-	-	-	-	- 5,000	-	<200	-	<200	<200	-	<200	<200	<200	-	<200	-	<200	-	<200	<200
HEPH	ug/g	200	-	-	-	-	-	5,000	5,000	<200	-	<200	<200	-	<200	<200	<200	-	<200	-	<200	-	<200	<200
Volatile Hydrocarbons (V6-10)	ug/g	200 10	-	-	-	-	-	2,000	2,000	<200	-	<200	<200	-	<200	<200	<200	-	<200	-	<200	-	<200 <10	<200
VPHs	ug/g ug/g	10	-	-	-	-	-	200	200	-	-	-	-	-	-	-	-	-	-	-	-	-	<10	-
V1 115	l ug/g	10	-	-	-		-	200	200													_	_ \10	



Lab Werk Order Units Out Fig. Fig.	Laboratory: ALS				BC CSR S	chedule 3.1 Part	s 1, 2 and 3 Indus	strial Land Use (II	L) ¹		TH23-09A	TH23-09B	TH23-10A	TH23-11A	TH23-11B	TH23-12B	TH23-13A	DUP B	TH23-13B	TH23-14A	TH23-14B	TH23-15A	TH23-15B	HA23-01	HA23-02
Polyspic Armatic Hydrocathons	Sample Collection Date			70	7_	= <u>₽</u>	> 6	≥ .9	ے	ff.	09-Jun-23	09-Jun-23	09-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	06-Jun-23	12-Jun-23
Polyspic Aramatic Hydrocarbons	Lab Work Order	Units	DL	take of aminate Soil²	ng Wate	city to so brates a lants ⁴	2 # 5	low to S e Aquat Life ⁶	an Healt Soil ⁷	jical Hea Soil ⁸														VA23B3105- 013	VA23B3448- 011
Accompatitive Ugig 0.005 - - -	Analyte			ln Cont	Drinki	Toxic inverte p	GW F Free Aqu	GW F Marin	Hum	Ecolog	Soil	Soil	Soil	Soil	Soil	Soil	Soil		Soil	Soil	Soil	Soil	Soil	Soil	Soil
Achthechine uglg 0.006	Polycyclic Aromatic Hydro	carbons:		-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
Anthreame	Acenaphthene	ug/g	0.005	-	-	-	-	-	15,000	-	<0.0053	-	<0.005	<0.005	-	<0.005	<0.005	<0.005	-	<0.005	-	<0.005	-	<0.005	<0.005
Benzale purpose sug 0.01	Acenaphthylene	ug/g	0.005	-	-	-	-	-	-	-	<0.0053	-	<0.005	<0.005	-	<0.005	<0.005	<0.005	-	<0.005	-	<0.005	-	<0.005	<0.005
Benzo Pyteme Muly 0.01 5.0 70 	Anthracene	ug/g	0.004	1,000,000	-	30	-	-	-	-	<0.0053	-	<0.0048	<0.0041	-	<0.004	<0.0044	<0.0046	-	<0.0048	-	<0.0042	-	<0.004	<0.004
Benzo(p-) Jucranthene ug/g 0.01	Benz(a)anthracene	ug/g	0.01	-	-	-	-	-	500	10	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01
Benzo(ph-Hykllucramthene ug/g 0.015 - - - - - - - - -	Benzo(a) pyrene	ug/g	0.01	50	-	70	-	-	-	-	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01
Benzo(gh.h)perylene u.g/g 0.01	Benzo[b+j]fluoranthene	ug/g	0.01	-	-	-	-	-	500	10	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	-	<0.01	0.013
Benzence Ug/g 0.01	Benzo(b+j+k)fluoranthene	ug/g	0.015	-	-	-	-	-	-	-	<0.015	-	<0.015	<0.015	-	<0.015	<0.015	<0.015	-	<0.015	-	<0.015	-	<0.015	<0.015
Chypene	Benzo(g,h,i)perylene	ug/g	0.01	-	-	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01
Diberz(a,h)anthracene ug/g 0.005 - - - - 50 10 <0.0053 - - - 0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.005 <0.	Benzo(k)fluoranthene	ug/g	0.01	-	-	-	-	-	500	10	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01
Fluoranthene ugg 0.01 300,000 - 200	Chrysene	ug/g	0.01	-	-	-	-	-	4,500	-	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.014
Fluorene ug/g 0.01 9,500 0.01 - 0.01 - 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.	Dibenz(a,h)anthracene	ug/g	0.005	-	-	-	-	-	50	10	<0.0053	-	<0.005	<0.005	-	< 0.005	<0.005	<0.005	-	<0.005	-	<0.005	-	<0.005	<0.005
1-Methylnaphthalene	Fluoranthene	ug/g	0.01	300,000	-	200	-	-	-	-	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	-	<0.01	0.021
	Fluorene		0.01	-	-	-	-	-	9,500	-	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01
2-methylnaphthalene ug/g 0.01 950 0.01 0.01 - 0.01 - 0.01 - 0.01 - 0.01 - 0.01 - 0.01 - 0.01 - 0.01 - 0.01 0.01 -	1-Methylnaphthalene		0.01	-	-	-	-	-	1,000	-	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01
Indemo(1,2,3-c,d)pyrene ug/g 0.01 - - - - - 500 10 <0.01 - <0.01 <0.01 - <0.01 <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <	2-methylnaphthalene	ug/g	0.01	-	-	-	-	-	950	-	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01
Naphthalene	Indeno(1,2,3-c,d)pyrene		0.01	-	-	-	-	-	500	10	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01
Phenanthrene ug/g 0.01 -	Naphthalene		0.01	150.000	100	20	75	75	-	-	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	-	<0.01	<0.01
Pyrene ug/g 0.01 - - - - 200,000 100 <0.01 - <0.01 <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 - <0.01 <0.01 <0.01 -	Phenanthrene		0.01	-	-	-	-	-	300.000	50	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	-	<0.01	0.017
Quinoline ug/g 0.01 -	Pyrene		-	-	-	-	-	-	200,000			-	<0.01		-	<0.01			-		-	<0.01	-	<0.01	0.026
Acridine			_	-	-	-	-	-				-			-				-		-		-	<0.01	<0.01
Volatile Organic Compounds: -<				-	-	-	-	-		-		-	<0.01		-				-		-		-	<0.01	<0.01
Benzene ug/g 0.005 6,500 0.035 250 2.5 6.5	Volatile Organic Compoun		-	-	-	-	-	-	-	-	-	- 4		-	-	-	1		-	-	-	-	-		-
Ethylbenzene ug/g 0.015 700,000 15 650 200 200			0.005	6.500	0.035	250	2.5	6.5	-	-	-		-	-		_	_	_	-	-	-	-	_	<0.005	-
MTBE ug/g 0.2 20,000				-,						-	-	-				_	-	_	-	-	-	-	_	<0.015	-
				,						-	-	-				-	-	_	_		-	-	-	<0.2	-
	Styrene	ug/g	0.05	-	-	-	-	-	>1,000,000	50	-	-	_	-	-	_	_	_	_	_	_	_	_	<0.05	-
	,		-		6							-			-						-			<0.05	_
			_		-	-	- 0.0	200				<u> </u>				 	 	-			 	<u> </u>	 	<0.05	-
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Laboratory: ALS				BC CSR Sch	edule 3.1 Part	ts 1, 2 and 3 Indus	strial Land Use (II) ¹		HA23-03	HA23-04	HA23-05	HA23-06	HA23-07
Sample Collection Date			9	E_1	oil	≱ . ∞	Fi V	£	alth	12-Jun-23	06-Jun-23	06-Jun-23	12-Jun-23	12-Jun-23
Lab Work Order	Units	DL	Intake of Contaminated Soil ²	Drinking Water ³	Toxicity to soil invertebrates and plants ⁴	GW Flow to SW Freshwater Aquatic Life ⁵	GW Flow to SW Marine Aquatic Life ⁶	Human Health Soil ⁷	Ecological Health Soil ⁸	VA23B3448- 012	VA23B3105- 014	VA23B3105- 015	VA23B3448- 013	VA23B3448- 014
Analyte			S	Drink	Toxi invert	GW F Fre	GW F	Hum	Ecolo	Soil	Soil	Soil	Soil	Soil
Sample Collection Depth	m	-	-	-	-	-	-	-	-	0.2	0.07	0.07	0.2	0.2
PID (field)	ppm	-	-	-	-	-	-	-	-	0	0.1	0	0.1	0.1
Moisture	%	0.25	-	-	-	-	-	-	-	15.5	7.52	13.8	3.9	2.84
Saturation	%	1	-	-	-	-	-	-	-	36.7	80.5	79.2	58.1	31.3
pH (Lab)	pН	0.1	-	-	-	-	-	-	-	5.18	5.97	5.54	5.15	5.75
Metals:	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aluminum	ug/g	50	-	-	-	-	-	250,000	-	23,200	25,600	26,200	20,800	25,500
Antimony	ug/g	0.1	-	-	-	-	-	40,000	40	0.16	1.05	0.87	0.39	0.6
Arsenic	ug/g	0.1	400	10	40	10	10	-	-	3.94	4.32	5.48	3.88	8.01
Barium	ug/g	0.5	>1,000,000	350	1,500	3,500	1,500	-	-	49	142	149	48.5	70.4
Beryllium	ug/g	0.1	15,000	1 ^a	350	1 ^a	85 ^a	-	-	0.27	0.31	0.37	0.25	0.28
Bismuth	ug/g	0.2	-	-	-	-			-	<0.2	<0.2	<0.2	<0.2	<0.2
Boron	ug/g	5	-	-	-	-	-	>1,000,000	-	<5	<5	<5	<5	<5
Cadmium	ug/g	0.02	3,500	1 ^a	75	1 ^a	1 ^a	- 1,000,000		0.074	0.235	0.918	0.117	0.152
Calcium	ug/g	50	-	-	-	-	-	_	-	5840	8,780	7,840	7250	8210
Chromium (Total)	ug/g	0.5	20,000	60 ^b , >1,000,000 ^c	250	60 ^b , 300,000 ^c	60 ^b , >1,000,000 ^c	_	-	49	48.9	46.2	34.4	41.7
Cobalt	ug/g	0.1	2,000	25	200	25	25	_	-	12.7	15.2	13.4	12.9	12.3
Copper	ug/g	0.5	700,000	250 ^a	300	75 ^a	75 ^a		-	37.6	64.9	54.8	45.8	57.2
Iron		50	700,000	-	-	- 75	- 75	150,000	-	29,500	33,700	33,200	31,700	29,800
Lead	ug/g	0.5	4,000		1,000			150,000	-	6.87	143	115	38.5	40.8
Lithium	ug/g	2		120 ^a		200 ^a	120 ^a	450		13.8	12.3	14.8	12.2	11.6
	ug/g	20	-		-		-	450	-					
Magnesium	ug/g		- 1 000 000	- 2 000	- 2.000	-	-	-	-	10,000	11,200	9,350	11,100	9500
Manganese	ug/g	1	>1,000,000	2,000	2,000	-	-	-	-	614	688	860	574	634
Mercury	ug/g	0.05	2,000	-	75	-	-	-	-	<0.05	<0.05	0.09	<0.05	<0.05
Molybdenum	ug/g	0.1	35,000	15	150	650	650	-	-	0.53	0.84	0.76	0.76	0.42
Nickel	ug/g	0.5	80,000	70 ^a	250	90ª	70 ^a	-	-	31.7	33.9	31.8	25.5	29.2
Phosphorus	ug/g	50	-	-	-	-	-	-	-	598	769	1,880	678	1390
Potassium	ug/g	100	-	-	-	-	-	-	-	670	1,010	690	590	660
Selenium	ug/g	0.2	35,000	1	2	1	1	-	-	<0.2	0.21	0.23	<0.2	0.25
Silver	ug/g	0.1	-	-	-	-	-	35,000	40	<0.1	<0.1	0.14	<0.1	<0.1
Sodium	ug/g	50	-	-	-	-	-	-	-	143	292	250	403	203
Strontium	ug/g	0.5	-	-	-	-	-	150,000	-	24.8	36.1	37.5	30.1	39.3
Sulphur as S	ug/g	1000	-	-	-	-	-	-		<1000	<1000	<1000	<1000	<1000
Thallium	ug/g	0.05	-	-	-	-	-	-	25	<0.05	<0.05	0.058	<0.05	<0.05
Tin	ug/g	2	-	-	-	-	-	>1,000,000	300	<2	<2	3.4	<2	<2
Titanium	ug/g	1	-	-	-	-	-	-	-	1260	1,540	1,160	1590	1480
Tungsten	ug/g	0.5	-	-	-	-	-	200	-	<0.5	<0.5	<0.5	<0.5	<0.5
Uranium	ug/g	0.05	20,000	30	2,000	150	150	-	Í	0.26	0.261	0.4	0.265	0.3
Vanadium	ug/g	0.2	35,000	100	300	-	-	Z -		75.4	86.9	81	89.7	82.6
Zinc	ug/g	2	>1,000,000	200 ^a	450	150 ^a	150 ^a	-		124	191	242	77.2	88
Zirconium	ug/g	1	-	-	-	-	-7	-	-	1.2	2.3	<1	2.3	1.7
Salinity:										-		-	-	-
Chloride	ug/g	4.3	>1,000,000	100	2,500	600	600	-	-	7.7	<16.1	<15.8	<11.6	<6.3
Sodium Ion	ug/g	4.34	>1,000,000	15,000	1,000	-	-		-	<7.35	<16.1	<15.8	<11.6	<6.27
Petroleum Hydrocarbons:	3.3		, , , , , , ,	.,	,					7,00	-	-	-	-
EPH C10-C19	ug/g	200	-	-	-	-			-	<200	<200	<200	<200	<200
EPH C19-C32	ug/g	200	-	-	-	-	-			<200	<200	<200	<200	<200
HEPH	ug/g ug/g	200	-	-	-	-	-	5,000	5,000	<200	<200	<200	<200	<200
LEPH		200								<200	<200	<200	<200	<200
	ug/g		-	-	-	-	-	2,000	2,000			<200		+
Volatile Hydrocarbons (V6-10)	ug/g	10	-	-	-	-	-	- 200	- 200	-	<10		-	-
VPHs	ug/g	10	-	-	-	-	-	200	200	-	<10	<10	-	-

Data Tables - Results in Soil - Industrial Land Use Project No: 2241-20128-00 Task 2017 District of Sooke



Laboratory: ALS				BC CSR Sci	nedule 3.1 Parts	s 1, 2 and 3 Indus	strial Land Use (IL) ¹		HA23-03	HA23-04	HA23-05	HA23-06	HA23-07
Sample Collection Date			ъ		soil s and	SW es	≥ :5	_	ith	12-Jun-23	06-Jun-23	06-Jun-23	12-Jun-23	12-Jun-23
Lab Work Order	Units	DL	Intake of Contaminated Soil ²	Drinking Water ³	Toxicity to so invertebrates a plants ⁴	GW Flow to SW Freshwater Aquatic Life ⁵	GW Flow to SW Marine Aquatic Life ⁶	Human Health Soil ⁷	Ecological Health Soil ⁸	VA23B3448- 012	VA23B3105- 014	VA23B3105- 015	VA23B3448- 013	VA23B3448- 014
Analyte			Cont	Drink	Toxie inverte p	GW F Fre Aqu	GW F Marir	Hum	Ecolog	Soil	Soil	Soil	Soil	Soil
Polycyclic Aromatic Hydro	carbons:		-	-	-	-	-	-	-	-	-	-	-	-
Acenaphthene	ug/g	0.005	-	-	-	-	-	15,000	1	<0.005	<0.005	<0.005	<0.005	<0.005
Acenaphthylene	ug/g	0.005	-	-	-	-	-	-	-	<0.005	0.008	0.0138	<0.005	<0.005
Anthracene	ug/g	0.004	1,000,000	-	30	-	-	-	-	<0.004	<0.008	<0.012	<0.004	<0.004
Benz(a)anthracene	ug/g	0.01	-	-	-	-	-	500	10	<0.01	0.028	0.038	<0.01	<0.01
Benzo(a) pyrene	ug/g	0.01	50	-	70	-	-	-	-	<0.01	<0.05	0.044	<0.01	<0.013
Benzo[b+j]fluoranthene	ug/g	0.01	-	-	-	-	-	500	10	<0.01	0.077	0.066	0.018	0.015
Benzo(b+j+k)fluoranthene	ug/g	0.015	-	-	-	-	-	-	-	<0.015	0.1	0.085	0.018	0.015
Benzo(g,h,i)perylene	ug/g	0.01	-	-	-	-	-	-	-	<0.01	0.08	0.048	0.019	0.01
Benzo(k)fluoranthene	ug/g	0.01	-	-	-	-	-	500	10	<0.01	0.023	0.019	<0.01	<0.01
Chrysene	ug/g	0.01	-	-	-	-	-	4,500	-	<0.01	<0.07	<0.06	<0.015	<0.01
Dibenz(a,h)anthracene	ug/g	0.005	-	-	-	-	-	50	10	<0.005	0.0094	0.0087	<0.005	<0.005
Fluoranthene	ug/g	0.01	300,000	-	200	-	-	-	-	<0.01	0.092	0.073	0.022	0.014
Fluorene	ug/g	0.01	-	-	-	-	-	9,500	-	<0.01	<0.01	<0.01	<0.01	<0.01
1-Methylnaphthalene	ug/g	0.01	-	-	-	-	-	1,000	-	<0.01	<0.01	<0.01	<0.01	<0.01
2-methylnaphthalene	ug/g	0.01	-	-	-	-	-	950	-	<0.01	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-c,d)pyrene	ug/g	0.01	-	-	-	-	-	500	10	<0.01	0.052	0.042	0.012	<0.01
Naphthalene	ug/g	0.01	150,000	100	20	75	75	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
Phenanthrene	ug/g	0.01	-	-	-	-	-	300,000	50	<0.01	0.039	0.032	0.012	<0.01
Pyrene	ug/g	0.01	-	-	-	-	-	200,000	100	<0.01	0.08	0.073	0.019	0.014
Quinoline	ug/g	0.01	-	-	-	-	-	10	-	<0.01	<0.01	<0.01	<0.01	<0.01
Acridine	ug/g	0.01	-	-	-	-	-	-	-	<0.01	<0.01	<0.01	<0.026	<0.01
Volatile Organic Compoun	ds:	-	-	-	-	-	-	-	-	-	-		-	-
Benzene	ug/g	0.005	6,500	0.035	250	2.5	6.5		-	-	<0.005	<0.005	-	-
Ethylbenzene	ug/g	0.015	700,000	15	650	200	200	-	-	-	<0.015	<0.015	-	-
MTBE	ug/g	0.2	-	-	-	-	-	20,000	-	-	<0.2	<0.2	-	
Styrene	ug/g	0.05	-	-	-	-	-	>1,000,000	50	-	<0.05	<0.05	-	-
Toluene	ug/g	0.05	550,000	6	450	0.5	200	-	-	-	<0.05	<0.05	- A	-
Xylene (o)	ug/g	0.05	-	-	-	-	-	-	-	-	<0.05	<0.05	-	-
Xylene (m & p)	ug/g	0.05	-	-	-	-	-	-	-	-	<0.05	<0.05	-	-
Xylenes	ug/g	0.075	>1,000,000	6.5	600	20	20	-	-	-	< 0.075	< 0.075	-	-

Data Tables - Results in Soil - Industrial Land Use

Project No: 2241-20128-00 Task 2017

District of Sooke



Colour Key:

Exceeds Standard

Exceeds Standard but meets
Protocol 4

DL Exceeds Standard

Notes:

All values reported as ug/g unless otherwise indicated

- 1 Stage 12 Amendments to the BC CSR B.C Reg 179/2021375/96, effective July 7, 2021 Schedule 3.1 Parts 1, 2 and 3 for Industrial Land Use
- 2 Schedule 3.1 Part 1 Human health protection, intake of contaminated soil
- 3 Schedule 3.1 Part 1 Human health protection, groundwater used for drinking water applies as per Protocol 21
- 4 Schedule 3.1 Part 1 Environmental protection, toxicity to soil invertebrates and plants
- 5 Schedule 3.1 Part 1 Environmental protection, groundwater flow to surface water, used by aquatic life (freshwater) applies as per Protocol 21
- 6 Schedule 3.1 Part 1 Environmental protection, groundwater flow to surface water, used by aquatic life (marine) applies as per Protocol 21
- 7 Schedule 3.1 Part 2 Generic numerical soil standards to protect human health
- 8 Schedule 3.1 Part 3 Generic numerical soil standards to protect ecological health
- a Standard is pH dependent, and only the most stringent standard is shown
- b Standard is for chromium, hexavalent
- c Standard is for chromium, trivalent
- d Assumes hexavalent chromium standard applies as a conservative measure. Speciation analysis is required to determine true standard.
- e Concentration exceeds applicable standards, but is less than BC CSR Protocol 4: Establishing Background Concentrations in Soil for Region 1 Vancouver Island (200 ug/g for Vanadium). Protocol 4 values only apply if soil is to stay in this region.

BFD - Blind field duplicate

- "-" Not anlayzed or no standards apply
- "<" Less than the laboratory reportable detection limit (DL) indicated.
- DL Laboratory detection limit



Laboratory: ALS			ВС	C CSR Schedule 3.	1 Parts 1, 2 and	3 Residential Lov	w Density Land U	lse (RLLD)	1	TH23-09A	TH23-09B	TH23-10A	TH23-11A	TH23-11B	TH23-12B	TH23-13A	DUP B	TH23-13B	TH23-14A	TH23-14B	TH23-15B	TH23-15A	HA23-01	HA23-02	HA23-03
Sample Collection Date				~_	· · · · · · · · · · · · · · · · · · ·	≥	≥ .º	_		09-Jun-23	09-Jun-23	09-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	06-Jun-23	12-Jun-23	12-Jun-23
Campio Consolisti Zatis	Units	DL	of ate	Vate	o sc ates ates	o S\ iter _ife ⁸	o SI uati	ealtl	cal oil [®]	VA23B3174-	VA23B3174-	VA23B3174-	VA23B3448-	VA23B3448-	VA23B3448-	VA23B3448-	VA23B3448-	VA23B3448-	VA23B3448-	VA23B3448-	VA23B3448-	VA23B3448-	VA23B3105-	VA23B3448-	VA23B3448-
Lab Work Order			Intake of ontaminated Soil ²	ng W.	ity tebr tebr plar	ow t shwa itic I	ow t e Aq Life ⁶	ın H Soil ⁷	logi th S	005	006	007	001	002	004	005	015	006	007	010	010	009	013	011	012
Analyte			Conta	Drinkli	Toxicity to soi invertebrates and plants ⁴	GW Flow to SV Freshwater Aquatic Life ⁵	GW Flow to SW Marine Aquatic Life ⁶	Human Hea Soil ⁷	Ecologica Health Soi	Soil	Soil	Soil	Soil	Soil	Soil	Soil	BFD of TH23- 13A	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Collection Depth	m	-	-	-	-	-	-	-	-	0.6-0.9	1.8-2	0.6-0.9	1.8-2	0.3-0.6	0.3-0.6	1.2-1.5	1.1-1.4	0.3-0.6	0.3-0.6	1.2-1.5	0.3-0.6	1.2-1.5	0.3-0.6	1.2-1.5	0.2
PID (field)	ppm	-	-	-	-	-	-	-	-	0.2	0.3	0.3	0.3	0.3	0.2	0.5	0.5	0.4	0.3	0.2	0.3	0.5	0.2	0.1	0
Moisture	%	0.25	-	-	-	-	-	-	-	38	-	31.9	25.8	-	12	32.7	30.2	-	36.5	-	-	25.7	12.1	24.5	15.5
Saturation pH (Lab)	% pH	0.1	-	-	-	-	-	-	-	99.8	-	78.4 4.89	67.4 5.87	66.8	23.2 6.31	69.2 5.56	71.7 5.47	51.2	91.1 4.7	54.2	107	64.3 5.37	38.7 5.25	55.3 6.91	36.7 5.18
Metals:	Pii	0.1		-	-	-	-	-	-	0.21	-	4.09	3.07	_	0.51	3.30	3.47	_	4.7	-	-	3.37	3.23	0.91	3.10
Aluminum	ug/g	50		-	-	-	-	40,000	_	36,900	-	29,100	34,200	-	22,600	34,000	32,300	-	39,200	-	-	37,200	19,700	29,100	23,200
Antimony	ug/g	0.1		-	-	-	-	250	20	0.15	-	0.14	0.17	_	0.16	0.13	0.11	-	0.14	-	-	0.16	0.2	0.37	0.16
Arsenic	ug/g	0.1	15	10	25	10	10	-	-	5.27	-	5.73	6.83	-	4.37	3.43	3.14	-	5.34	-	-	4.41	3.06	7.11	3.94
Barium	ug/g	0.5	8,500	350	700	3,500	1,500	-	-	61.2	-	57.4	89.6	-	43	80.6	78.7	-	112	-	-	138	59.4	94.8	49
Beryllium	ug/g	0.1	85	1 ^a	150	1 ^a	85ª	-	-	0.5	-	0.36	0.44	-	0.25	0.66	0.7	-	0.54	-	-	0.44	0.33	0.41	0.27
Bismuth	ug/g	0.2	-	-	-	-	-	-	-	<0.2	-	<0.2	<0.2	•	<0.2	<0.2	<0.2	-	<0.2	-	-	<0.2	<0.2	<0.2	<0.2
Boron	ug/g	5	-	-	-	-	-	8,500	-	<5	-	<5	<5		<5	<5	<5	-	<5	-	-	<5	<5	<5	<5
Cadmium	ug/g	0.02	20	1 ^a	30	1 ^a	1ª	-	-	0.052	-	0.034	0.034	-	0.08	0.123	0.109	-	0.097	-	-	0.068	0.084	0.101	0.074
Calcium	ug/g	50	-	-	-	-	-	-	-	4,820	-	4,400	4960	-	6910	5110	5680	-	5230	-	-	5990	7,060	7760	5840
Chromium (Total)	ug/g	0.5	100	60 ^b , >1,000,000 ^c	200	60 ^b , 300,000 ^c	60 ^b , >1,000,000 ^c	-	-	56.9	-	46.2	57.3	-	47.7	54.1	47.7	-	53.3	-	-	55.9	31.7	51.5	49
Cobalt	ug/g	0.1	25	25	45	25	25	-	-	15.9	-	11.4	15	-	13.5	10.4	10.1	-	14.6	-	-	14.6	12.7	21.6	12.7
Copper	ug/g	0.5	3,500	250 ^a	150	75 ^a	75 ^a	- 25.000	-	26.8	-	24.4	27.1	-	44.2	38.1	35	-	32.7	-	-	24.7	45.2	39.5	37.6
Iron	ug/g	50	120	-	550	-	-	35,000	-	35,200 4.48	-	28,500 3.89	34,500 4.71	-	31,000 3.53	28,900	27,400 4.26	-	34,300 5.53	-	-	37,000 5.04	27,800	39,700 5.35	29,500 6.87
Lead Lithium	ug/g ug/g	0.5 2	-	120 ^a	- 550	200 ^a	120 ^a	30	-	17.4	-	16.3	17.9	-	13.5	4.4 14	13.2	-	17.2	-	-	17.8	5.08 10.5	15.4	13.8
Magnesium	ug/g	20	-	-	-	-	-	-	-	9,230	-	9,060	9220	-	11,000	7520	7340	-	9240	-	-	10,300	8,300	11,000	10,000
Manganese	ug/g	1	6,000	2,000	2,000	_	-	_	_	452	-	363	547	-	754	704	665	_	741	_	_	818	658	1040	614
Mercury	ug/g	0.05	10	-	40	-	-	-	-	0.0505	-	<0.05	<0.05	-	<0.05	0.0604	0.052	-	0.0815	-	-	0.0541	<0.05	<0.05	<0.05
Molybdenum	ug/g	0.1	200	15	80	650	650	-	-	0.61	-	0.51	0.55	-	0.4	0.53	0.64	-	0.8	-	-	0.41	0.42	0.46	0.53
Nickel	ug/g	0.5	450	70ª	150	90ª	70 ^a	-	-	37	-	34.4	37.5	-	33	31	29.9	-	37.5	-	-	45.6	24.4	39.2	31.7
Phosphorus	ug/g	50	-	-	-	-	-	-	-	604	-	347	588	ľ	564	575	519	-	482	-	-	440	769	558	598
Potassium	ug/g	100	-	-	-	-	-	-	-	840	-	560	610	-	580	690	590	-	820	-	-	790	520	730	670
Selenium	ug/g	0.2	200	1	1.5	1	1	-	-	0.64	-	0.52	0.42	-	<0.2	0.8	0.68	-	0.7	-	-	0.32	0.21	0.27	<0.2
Silver	ug/g	0.1	-	-	-	-	-	200	20	0.11	-	0.12	0.13	-	<0.1	0.14	0.13	-	0.12	-	-	<0.1	<0.1	<0.1	<0.1
Sodium	ug/g	50	-	-	-	-	-	-	-	338	-	239	474	-	196	279	256	-	280	-	-	569	316	224	143
Strontium	ug/g	0.5	-	-	-	-	-	9,500	-	27		23.1	31.4	-	27	32.6	34.8	-	35.7	-	-	42.3	29.7	36.4	24.8
Sulphur as S	ug/g	1000	-	-	-	-	-	-	-	<1000	-	<1000	<1000	-	<1000	<1000	<1000	-	<1000	-	-	<1000	<1000	<1000	<1000
Thallium Tin	ug/g	0.05	<u> </u>	-	-	-	-	25,000	9	0.084		0.073	0.086	-	<0.05	0.08	0.076 <2	-	0.097 <2	-	-	0.081 <2	<0.05 <2	0.053 <2	<0.05 <2
Titanium	ug/g ug/g	2	-	-	-	-	-	25,000	50	1,100	-	<2 1,070	1460	-	<2 1360	<2 1410	1310	-	1580	-	-	1800	1,240	1650	1260
Tungsten	ug/g ug/g	0.5	-	-	-	-	-	15	-	<0.5		<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	-	-	<0.5	<0.5	<0.5	<0.5
Uranium	ug/g	0.05	100	30	500	150	150	-		0.593	-	0.434	0.425	-	0.266	0.678	0.678	-	0.618	-	-	0.405	0.291	0.35	0.26
Vanadium	ug/g	0.2	200	100	150	-	-	-	-	84.2	-	79.9	104	_	74.1	81.7	75.8	-	86.8	-	-	95.1	72.6	97.7	75.4
Zinc	ug/g	2	10,000	200ª	450	150 ^a	150 ^a		-	69.4	-	46.6	56.6	-	53.4	49.8	47.7	-	69.5	-	-	65.4	57.8	145	124
Zirconium	ug/g	1	-	-	-	-	-	A	-	1.7		1.4	1.4	-	1.6	1.8	1.9	-	1.7	-	-	2	2	2.7	1.2
Salinity:														-				-		-	-				
Chloride	ug/g		>1,000,000		350	600	- 1	-	-	240	106	32.1	144	56.1	32.9	112	119	56.3	230	147	503	502	<7.7	<11.1	7.7
Sodium Ion	ug/g	4.34	>1,000,000	15,000	200	-	-	-	-	113	56.9	18	102	31.5	14.1	39.5	42.2	24.7	81.1	49.9	287	248	<7.75	<11.1	<7.35
Petroleum Hydrocarbons:														-				-		-	-				
EPH C10-C19	ug/g		-	-	-	-	-	-	-	<200	-	<200	<200	-	<200	<200	<200	-	<200	-	-	<200	<200	<200	<200
EPH C19-C32	ug/g		-	-	-	-	-	-	-	<200	-	<200	<200	-	<200	<200	<200	-	<200	-	-	<200	<200	<200	<200
HEPH	ug/g	200	-	-	-	-	-	1,000	1,000	<200	-	<200	<200	-	<200	<200	<200	-	<200	-	-	<200	<200	<200	<200
LEPH	ug/g	200	-	-	-	-	-	1,000	1,000	<200	-	<200	<200	-	<200	<200	<200	-	<200	-	-	<200	<200	<200	<200
Volatile Hydrocarbons (V6-10)	ug/g	10	-	-	-	-	-	-	-	-	-	-	1	-	 		1	-	1	-	-	1	<10		
VPHs	ug/g	10	-	-	-	-	-	200	200	-	-	-	1	-	<u> </u>	L	1	-	1	-	-	1	<10		



									1																
Laboratory: ALS			BC	CSR Schedule 3	3.1 Parts 1, 2 and	3 Residential Lo	w Density Land	Use (RLLD)		TH23-09A	TH23-09B	TH23-10A	TH23-11A	TH23-11B	TH23-12B	TH23-13A	DUP B	TH23-13B	TH23-14A	TH23-14B	TH23-15B	TH23-15A	HA23-01	HA23-02	HA23-03
Sample Collection Date			ed	er3	SS 4	SW SF	sw tic	ŧ	_ 8	09-Jun-23	09-Jun-23	09-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	12-Jun-23	06-Jun-23	12-Jun-23	12-Jun-23
Lab Work Order	Units	DL	Intake of ntaminate Soil²	ng Wat	Toxicity to soil invertebrates and plants ⁴	ow to SW hwater itic Life ⁵	ow to S e Aqua ife ⁶	ıan Heal Soil ⁷	cological salth Soil ⁸	VA23B3174- 005	VA23B3174- 006	VA23B3174- 007	VA23B3448- 001	VA23B3448- 002	VA23B3448- 004	VA23B3448- 005	VA23B3448- 015	VA23B3448- 006	VA23B3448- 007	VA23B3448- 010	VA23B3448- 010	VA23B3448- 009	VA23B3105- 013	VA23B3448- 011	VA23B3448- 012
Analyte			Int Conta	Drinkir	Toxici inveri and	GW Flow Freshwa Aquatic	GW Flow to SW Marine Aquatic Life ⁶	Huma	Eco	Soil	BFD of TH23- 13A	Soil													
Polycyclic Aromatic Hydrod	arbons:													-				-		-	-				
Acenaphthene	ug/g	0.005	-	-	-	-	-	950	-	<0.0053	-	<0.005	<0.005	-	<0.005	<0.005	<0.005	-	<0.005	-	-	<0.005	<0.005	<0.005	<0.005
Acenaphthylene	ug/g	0.005	-	-	-	-	-	-	-	<0.0053	-	< 0.005	< 0.005	-	<0.005	<0.005	<0.005	-	<0.005	-	-	<0.005	<0.005	<0.005	<0.005
Anthracene	ug/g	0.004	10,000	-	2.5	-	-	-	-	<0.0053	-	<0.0048	<0.0041	-	<0.004	<0.0044	<0.0046	-	<0.0048	-	-	<0.0042	<0.004	<0.004	<0.004
Benz(a)anthracene	ug/g	0.01	-	-	-	-	-	50	1	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	<0.01	<0.01
Benzo(a) pyrene	ug/g	0.01	5	-	20	-	-	-	-	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	<0.01	<0.01
Benzo[b+j]fluoranthene	ug/g	0.01	-	-	-	-	-	50	1	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	0.013	<0.01
Benzo(b+j+k)fluoranthene	ug/g	0.015	-	-	-	-	-	-	-	<0.015	-	<0.015	<0.015	-	<0.015	<0.015	<0.015	-	<0.015	-	-	<0.015	<0.015	<0.015	<0.015
Benzo(g,h,i)perylene	ug/g	0.01	-	-	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	<0.01	<0.01
Benzo(k)fluoranthene	ug/g	0.01	-	-	-	-	-	50	1	<0.01	-	<0.01	<0.01	- /	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	<0.01	<0.01
Chrysene	ug/g	0.01	-	-	-	-	-	200	-	<0.01	-	<0.01	<0.01	4	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	<0.014	<0.01
Dibenz(a,h)anthracene	ug/g	0.005	-	-	-	-	-	5	1	<0.0053	-	<0.005	<0.005	-	<0.005	<0.005	<0.005	-	<0.005	-	-	<0.005	<0.005	<0.005	<0.005
Fluoranthene	ug/g	0.01	1,500	-	50	-	-	-	-	<0.01	-	<0.01	<0.01		<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	0.021	<0.01
Fluorene	ug/g	0.01	-	-	-	-	-	600	-	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	<0.01	<0.01
1-Methylnaphthalene	ug/g	0.01	-	-	-	-	-	250	-	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	<0.01	<0.01
2-methylnaphthalene	ug/g	0.01	-	-	-	-	-	60	-	<0.01	-	<0.01	<0.01		<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-c,d)pyrene	ug/g	0.01	-	-	-	-	-	50	1	<0.01	-	<0.01	<0.01	- /	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	<0.01	<0.01
Naphthalene	ug/g	0.01	850	100	0.6	75	75	-	-	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	<0.01	<0.01
Phenanthrene	ug/g	0.01	-	-	-	-	-	1,500	5	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	0.017	<0.01
Pyrene	ug/g	0.01	-	-	-	-	-	1,000	10	<0.01	-	<0.01	< 0.01	-/	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	0.026	<0.01
Quinoline	ug/g	0.01	-	-	-	-	-	2.5	-	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	<0.01	<0.01
Acridine	ug/g	0.01	-	-	-	-	-	-	-	<0.01	-	<0.01	<0.01	-	<0.01	<0.01	<0.01	-	<0.01	-	-	<0.01	<0.01	<0.01	<0.01
Volatile Organic Compound	ds:													-				-		-	-				
Benzene	ug/g	0.005	150	0.035	100	2.5	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	-	-
Ethylbenzene	ug/g	0.015	4,000	15	200	200	200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.015	-	-
MTBE	ug/g	0.2	-	-	-	-	-	4,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-
Styrene	ug/g	0.05	-	-	-	-	-	8,500	5	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
Toluene	ug/g	0.05	3,500	6	150	0.5	200	-	-	-	-	-		-	-	-	-	-	-	-	-	-	<0.05	-	-
Xylene (o)	ug/g	0.05	-	-	-	-	-	-	-	-	-	-	7-	-	-	-	-	-	-	-	-	-	<0.05	-	-
Xylene (m & p)	ug/g	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-	-
Xylenes	ug/g	0.075	8,500	6.5	150	20	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.075	-	-



Laboratory: ALS			вс	CSR Schedule 3.1	Parts 1, 2 and	3 Residential Lo	w Density Land U	Ise (RLLD)	1	HA23-04	HA23-05	HA23-06	HA23-07
Sample Collection Date				e L ₃	lio si 1	۸ _ _ه _	tic %	£		06-Jun-23	06-Jun-23	12-Jun-23	12-Jun-23
Lab Work Order	Units	DL	Intake of Contaminated Soil ²	Drinking Water ³	Toxicity to soil invertebrates and plants ⁴	GW Flow to SW Freshwater Aquatic Life ⁵	GW Flow to SW Marine Aquatic Life ⁶	Human Health Soil ⁷	Ecological Health Soil ⁸	VA23B3105- 014	VA23B3105- 015	VA23B3448- 013	VA23B3448- 014
Analyte			Conta	Drinki	Toxicity inverteb and pla	GW FI Free Aqua	GW FI Marin	Hume	Ecc	Soil	Soil	Soil	Soil
Sample Collection Depth	m	-	-	-	-	-	-	-	-	0.07	0.07	0.2	0.2
PID (field)	ppm	-	-	-	-	-	-	-	-	0.1	0	0.1	0.1
Moisture	%	0.25	-	-	-	-	-	-	-	7.52	13.8	3.9	2.84
Saturation	%	1	-	-	-	-	-	-	-	80.5	79.2	58.1	31.3
pH (Lab)	pН	0.1	-	-	-	-	-	-	-	5.97	5.54	5.15	5.75
Metals:													
Aluminum	ug/g	50	-	-	-	-	-	40,000	-	25,600	26,200	20,800	25,500
Antimony	ug/g	0.1	-	-	-	-	-	250	20	1.05	0.87	0.39	0.6
Arsenic	ug/g	0.1	15	10	25	10	10	-	-	4.32	5.48	3.88	8.01
Barium	ug/g	0.5	8,500	350	700	3,500	1,500	-	-	142	149	48.5	70.4
Beryllium	ug/g	0.1	85	1 ^a	150	1 ^a	85 ^a	-	-	0.31	0.37	0.25	0.28
Bismuth	ug/g	0.2	-	-	-	-	-	-	-	<0.2	<0.2	<0.2	<0.2
Boron	ug/g	5	-	-	-	-	-	8,500	-	<5	<5	<5	<5
Cadmium	ug/g	0.02	20	1 ^a	30	1 ^a	1 ^a	-	-	0.235	0.918	0.117	0.152
Calcium	ug/g	50	-	-	-	-	-	-	-	8,780	7,840	7250	8210
Chromium (Total)	ug/g	0.5	100	60 ^b , >1,000,000 ^c	200	60 ^b , 300,000 ^c	60 ^b , >1,000,000 ^c	-	-	48.9	46.2	34.4	41.7
Cobalt	ug/g	0.1	25	25	45	25	25	-	-	15.2	13.4	12.9	12.3
Copper	ug/g	0.5	3,500	250ª	150	75 ^a	75 ^a	-	-	64.9	54.8	45.8	57.2
Iron	ug/g	50	-	-	-	-	-	35,000	-	33,700	33,200	31,700	29,800
Lead	ug/g	0.5	120	120ª	550	200 ^a	120 ^a	-	-	143	115	38.5	40.8
Lithium	ug/g	2	-	-	-	-	-	30	-	12.3	14.8	12.2	11.6
Magnesium	ug/g	20	-	-	-	-	-	-	-	11,200	9,350	11,100	9500
Manganese	ug/g	1	6,000	2,000	2,000	-	-	-	-	688	860	574	634
Mercury	ug/g	0.05	10	-	40	-	-	-	-	<0.05	0.09	<0.05	<0.05
Molybdenum	ug/g	0.1	200	15	80	650	650	-	-	0.84	0.76	0.76	0.42
Nickel	ug/g	0.5	450	70 ^a	150	90ª	70 ^a	-	-	33.9	31.8	25.5	29.2
Phosphorus	ug/g	50	-	-	-	-	-	-	-	769	1,880	678	1390
Potassium	ug/g	100	-	-	-	-	-	-	-	1,010	690	590	660
Selenium	ug/g	0.2	200	1	1.5	1	1	-	-	0.21	0.23	<0.2	0.25
Silver	ug/g	0.1	-	-	-	-	-	200	20	<0.1	0.14	<0.1	<0.1
Sodium	ug/g	50	-	-	-	-	-	-	-	292	250	403	203
Strontium	ug/g	0.5	-	-	-	-	-	9,500	-	36.1	37.5	30.1	39.3
Sulphur as S	ug/g	1000	-	-	-	-	-	-	/	<1000	<1000	<1000	<1000
Thallium	ug/g	0.05	-	-	-	-	-	-	9	<0.05	0.058	<0.05	<0.05
Tin	ug/g	2	-	-	-	-	-	25,000	50	<2	3.4	<2	<2
Titanium	ug/g	1	-	-	-	-	-	-	-	1,540	1,160	1590	1480
Tungsten	ug/g	0.5	-	-	-	-	-	15	-	<0.5	<0.5	<0.5	<0.5
Uranium	ug/g	0.05	100	30	500	150	150		·	0.261	0.4	0.265	0.3
Vanadium	ug/g	0.2	200	100	150	-	-	-	-	86.9	81	89.7	82.6
Zinc	ug/g	2	10,000	200 ^a	450	150 ^a	150 ^a		-	191	242	77.2	88
Zirconium	ug/g	1	-	-	-	-	-	-	-	2.3	<1	2.3	1.7
Salinity:	,	4.0		400	050	200				10.1	45.0	.11.0	
Chloride	ug/g	4.3	>1,000,000	100	350	600	-	-	- `	<16.1	<15.8	<11.6	<6.3
Sodium Ion	ug/g	4.34	>1,000,000	15,000	200	-	-	-	-	<16.1	<15.8	<11.6	<6.27
Petroleum Hydrocarbons:		000								.000		-000	1000
EPH C10-C19	ug/g	200	-	-	-	-	-	-	-	<200	<200	<200	<200
EPH C19-C32	ug/g	200	-	-	-	-	-	4.000	- 4.000	<200	<200	<200	<200
HEPH	ug/g	200	-	-	-	-	-	1,000	1,000	<200	<200	<200	<200
LEPH	ug/g	200	-	-	-	-	-	1,000	1,000	<200	<200	<200	<200
Volatile Hydrocarbons (V6-10)	ug/g	10	-	-	-	-	-	-	-	<10	<10		
VPHs	ug/g	10	-	-	-	-	-	200	200	<10	<10		

Laboratory: ALS			ВС	CSR Schedule 3.1	Parts 1, 2 and	3 Residential Lo	w Density Land	Use (RLLD)	'	HA23-04	HA23-05	HA23-06	HA23-07
Sample Collection Date			pe		io 8 4	SW er fe ⁵	sw tic	ŧ	_ &	06-Jun-23	06-Jun-23	12-Jun-23	12-Jun-23
Lab Work Order	Units	DL	Intake of Contaminated Soil ²	Drinking Water³	Toxicity to soil invertebrates and plants ⁴	GW Flow to SW Freshwater Aquatic Life ⁵	GW Flow to SW Marine Aquatic Life ⁶	Human Health Soil ⁷	Ecological Health Soil ⁸	VA23B3105- 014	VA23B3105- 015	VA23B3448- 013	VA23B3448- 014
Analyte			Cont	Drinki	Toxic inver	GW FI Free Aqua	GW FI Marin	H H S	Есс	Soil	Soil	Soil	Soil
Polycyclic Aromatic Hydrod	carbons:												
Acenaphthene	ug/g	0.005	-	-	-	-	-	950	-	<0.005	<0.005	<0.005	<0.005
Acenaphthylene	ug/g	0.005	-	-	-	-	-	-	-	0.008	0.0138	<0.005	<0.005
Anthracene	ug/g	0.004	10,000	-	2.5	-	-	-	-	<0.008	<0.012	<0.004	<0.004
Benz(a)anthracene	ug/g	0.01	-	-	-	-	-	50	1	0.028	0.038	<0.01	<0.01
Benzo(a) pyrene	ug/g	0.01	5	-	20	-	-	-	-	<0.05	0.044	<0.01	<0.013
Benzo[b+j]fluoranthene	ug/g	0.01	-	-	-	-	-	50	1	0.077	0.066	0.018	0.015
Benzo(b+j+k)fluoranthene	ug/g	0.015	-	-	-	-	-	-	-	0.1	0.085	0.018	0.015
Benzo(g,h,i)perylene	ug/g	0.01	-	-	-	-	-	-	-	0.08	0.048	0.019	0.01
Benzo(k)fluoranthene	ug/g	0.01	-	-	-	-	-	50	1	0.023	0.019	<0.01	<0.01
Chrysene	ug/g	0.01	-	-	-	-	-	200	-	<0.07	<0.06	<0.015	<0.01
Dibenz(a,h)anthracene	ug/g	0.005	-	-	-	-	-	5	1	0.0094	0.0087	<0.005	<0.005
Fluoranthene	ug/g	0.01	1,500	-	50	-	-	-	-	0.092	0.073	0.022	0.014
Fluorene	ug/g	0.01	-	-	-	-	-	600	-	<0.01	<0.01	<0.01	<0.01
1-Methylnaphthalene	ug/g	0.01	-	-	-	-	-	250	-	<0.01	<0.01	<0.01	<0.01
2-methylnaphthalene	ug/g	0.01	-	-	-	-	-	60	-	<0.01	<0.01	<0.01	<0.01
Indeno(1,2,3-c,d)pyrene	ug/g	0.01	-	-	-	-	-	50	1	0.052	0.042	0.012	<0.01
Naphthalene	ug/g	0.01	850	100	0.6	75	75	-	-	<0.01	<0.01	<0.01	<0.01
Phenanthrene	ug/g	0.01	-	-	-	-	-	1,500	5	0.039	0.032	0.012	<0.01
Pyrene	ug/g	0.01	-	-	-	-	-	1,000	10	0.08	0.073	0.019	0.014
Quinoline	ug/g	0.01	-	-	-	-	-	2.5	-	<0.01	<0.01	<0.01	<0.01
Acridine	ug/g	0.01	-	-	-	-	-	-	-	<0.01	<0.01	<0.026	<0.01
Volatile Organic Compound	ds:												
Benzene	ug/g	0.005	150	0.035	100	2.5	6.5	-	-	<0.005	<0.005	-	-
Ethylbenzene	ug/g	0.015	4,000	15	200	200	200	-	-	<0.015	<0.015	-	
MTBE	ug/g	0.2	-	-	-	-	-	4,000	-	<0.2	<0.2	-	-
Styrene	ug/g	0.05	-	-	-	-	-	8,500	5	<0.05	<0.05	-	-
Toluene	ug/g	0.05	3,500	6	150	0.5	200	-	-	<0.05	<0.05	-	
Xylene (o)	ug/g	0.05	-	-	-	-	-	-	-	<0.05	<0.05		-
Xylene (m & p)	ug/g	0.05	-	-	-	-	-	-	-	<0.05	<0.05	-	-
Xylenes	ug/g	0.075	8,500	6.5	150	20	20	-	-	<0.075	<0.075	-	

Data Tables - Results in Soil - Residential Low Density Land Use

Project No: 2241-20128-00 Task 2017

District of Sooke



Colour Key:

Exceeds Standard

Exceeds Standard but meets
Protocol 4

DL Exceeds Standard

Notes:

All values reported as ug/g unless otherwise indicated

- 1 Stage 12 Amendments to the BC CSR B.C Reg 179/2021375/96, effective July 7, 2021 Schedule 3.1 Parts 1, 2 and 3 for Residential Low Density Use
- 2 Schedule 3.1 Part 1 Human health protection, intake of contaminated soil
- 3 Schedule 3.1 Part 1 Human health protection, groundwater used for drinking water applies as per Protocol 21
- 4 Schedule 3.1 Part 1 Environmental protection, toxicity to soil invertebrates and plants
- 5 Schedule 3.1 Part 1 Environmental protection, groundwater flow to surface water, used by aquatic life (freshwater) applies as per Protocol 21
- 6 Schedule 3.1 Part 1 Environmental protection, groundwater flow to surface water, used by aquatic life (marine) applies as per Protocol 21
- 7 Schedule 3.1 Part 2 Generic numerical soil standards to protect human health
- 8 Schedule 3.1 Part 3 Generic numerical soil standards to protect ecological health
- a Standard is pH dependent, and only the most stringent standard is shown
- b Standard is for chromium, hexavalent
- c Standard is for chromium, trivalent
- d Assumes hexavalent chromium standard applies as a conservative measure. Speciation analysis is required to determine true standard.
- e Concentration exceeds applicable standards, but is less than BC CSR Protocol 4: Establishing Background Concentrations in Soil for Region 1 Vancouver Island (70,000 ug/g for iron, and 200 ug/g for Vanadium). Protocol 4 values only apply if soil is to stay in this region.

BFD - Blind field duplicate

- "-" Not anlayzed or no standards apply
- "<" Less than the laboratory reportable detection limit (DL) indicated.
- DL Laboratory detection limit

APPENDIX D — LABORATORY CERTIFICATES OF ANALYSIS

ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order : VA23B3174 Page 1 of 5

: 1 Amendment

Client Laboratory : McElhanney Ltd. Vancouver - Environmental

: Victoria Amson Account Manager Dean Watt Contact

Address Address : # 500 - 3960 Quadra Street : 8081 Lougheed Highway

Victoria BC Canada V8X 4A3 Burnaby BC Canada V5A 1W9

Telephone : 250 370 9221 Telephone : +1 604 253 4188 Date Samples Received **Project** : 2241-20128-00 : 12-Jun-2023 11:50

PO **Date Analysis Commenced** : 16-Jun-2023

C-O-C number Issue Date : 22-Jun-2023 16:52 ----Sampler : LD. MM

----Quote number : BC/Yukon Standing Offer - 2022 update

No. of samples received : 8 No. of samples analysed : 5

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

Site

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia

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Work Order : VA23B3174 Amendment 1

Client : McElhanney Ltd.
Project : 2241-20128-00



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances LOR: Limit of Reporting (detection limit).

Unit	Description	
-	no units	
%	percent	
μg/g	micrograms per gram	
μg/L	micrograms per litre	
mg/kg	milligrams per kilogram	
pH units	pH units	

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

Additional data has been added.

Qualifiers

Qualifier	Description
DLHM	Detection Limit Adjusted: Sample has high moisture content.

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Work Order : VA23B3174 Amendment 1

Client : McElhanney Ltd.
Project : 2241-20128-00



Analytical Results

Sub-Matrix: Soil			Cl	ient sample ID	TH23-07A	TH23-08A	TH23-09A	TH23-09B	TH23-10A
(Matrix: Soil/Solid)									
			Client samn	ling date / time	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023
Anglista	CAS Number	Method/Lab	LOR	Unit	VA23B3174-001	VA23B3174-003	VA23B3174-005	VA23B3174-006	VA23B3174-007
Analyte	CAS Number	Metriod/Lab	LON	Onit	Result	Result	Result	Result	Result
Physical Tests					Result	Result	Result	Result	Result
% Saturation		E141/VA	1.0	%	80.6	222	99.8	62.4	78.4
Moisture		E144/VA	0.25	%	32.8	7.27	38.0		31.9
pH (1:2 soil:water)		E108/VA	0.10	pH units	5.55	6.29	6.27		4.89
Saturated Paste Extractables									
Chloride, soluble ion content	16887-00-6	EC239A.CI/V	1.0	µg/g	35.5	<44.4	240	106	32.1
		A							
Chloride, soluble ion content	16887-00-6		20000	μg/L	44000	<20000	240000	170000	41000
Sodium, soluble ion content	17341-25-2		1.00	µg/g	18.9	<44.4	113	56.9	18.0
Sodium, soluble ion content	17341-25-2	E442/VA	20000	μg/L	23400	<20000	113000	91200	23000
Metals									
Aluminum	7429-90-5		50	µg/g	30400	21300	36900		29100
Antimony	7440-36-0		0.10	μg/g	<0.10	0.12	0.15		0.14
Arsenic	7440-38-2		0.10	μg/g	2.06	5.37	5.27		5.73
Barium	7440-39-3		0.50	μg/g	133	31.3	61.2		57.4
Beryllium	7440-41-7	E440/VA	0.10	μg/g	0.55	0.24	0.50		0.36
Bismuth	7440-69-9		0.20	μg/g	0.38	<0.20	<0.20		<0.20
Boron	7440-42-8		5.0	μg/g	<5.0	<5.0	<5.0		<5.0
Cadmium	7440-43-9		0.020	μg/g	0.104	0.065	0.052		0.034
Calcium	7440-70-2		50	μg/g	5410	8580	4820		4400
Chromium	7440-47-3		0.50	μg/g	46.2	40.4	56.9		46.2
Cobalt	7440-48-4		0.10	μg/g	9.75	12.3	15.9		11.4
Copper	7440-50-8		0.50	μg/g	24.7	44.7	26.8		24.4
Iron	7439-89-6		50	μg/g	27000	30200	35200		28500
Lead	7439-92-1		0.50	μg/g	8.86	2.36	4.48		3.89
Lithium	7439-93-2		2.0	μg/g	17.3	12.5	17.4		16.3
Magnesium	7439-95-4		20	μg/g	5350	10100	9230		9060
Manganese	7439-96-5		1.0	μg/g	267	565	452		363
Mercury	7439-97-6	E510/VA	0.0500	μg/g	<0.0500	<0.0500	0.0505		<0.0500
Molybdenum	7439-98-7		0.10	μg/g	0.41	0.26	0.61		0.51
Nickel	7440-02-0	E440/VA	0.50	μg/g	31.9	27.4	37.0		34.4

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McElhanney Ltd. 2241-20128-00 Client Project



Analytical Results

Analytical Results								
Sub-Matrix: Soil		C	lient sample ID	TH23-07A	TH23-08A	TH23-09A	TH23-09B	TH23-10A
(Matrix: Soil/Solid)								
		Client samp	oling date / time	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023
Analyte	CAS Number Method/Lab	LOR	Unit	VA23B3174-001	VA23B3174-003	VA23B3174-005	VA23B3174-006	VA23B3174-007
			•	Result	Result	Result	Result	Result
Metals								
Phosphorus	7723-14-0 E440/VA	50	μg/g	272	519	604		347
Potassium	7440-09-7 E440/VA	100	μg/g	530	550	840		560
Selenium	7782-49-2 E440/VA	0.20	μg/g	<0.20	<0.20	0.64		0.52
Silver	7440-22-4 E440/VA	0.10	μg/g	0.20	<0.10	0.11		0.12
Sodium	7440-23-5 E440/VA	50	μg/g	280	170	338		239
Strontium	7440-24-6 E440/VA	0.50	μg/g	35.6	29.8	27.0		23.1
Sulfur	7704-34-9 E440/VA	1000	μg/g	<1000	<1000	<1000		<1000
Thallium	7440-28-0 E440/VA	0.050	μg/g	0.074	<0.050	0.084		0.073
Tin	7440-31-5 E440/VA	2.0	μg/g	<2.0	<2.0	<2.0		<2.0
Titanium	7440-32-6 E440/VA	1.0	μg/g	1030	1320	1100		1070
Tungsten	7440-33-7 E440/VA	0.50	μg/g	<0.50	<0.50	<0.50		<0.50
Uranium	7440-61-1 E440/VA	0.050	μg/g	0.536	0.250	0.593		0.434
Vanadium	7440-62-2 E440/VA	0.20	μg/g	82.4	80.0	84.2		79.9
Zinc	7440-66-6 E440/VA	2.0	μg/g	33.9	47.0	69.4		46.6
Zirconium	7440-67-7 E440/VA	1.0	μg/g	<1.0	2.3	1.7		1.4
Hydrocarbons								
EPH (C10-C19)	E601A/VA	200	μg/g	<200	<200	<200		<200
EPH (C19-C32)	E601A/VA	200	μg/g	<200	<200	<200		<200
HEPHs	EC600A/VA	200	μg/g	<200	<200	<200		<200
LEPHs	EC600A/VA	200	μg/g	<200	<200	<200		<200
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (EPH surrogate)	392-83-6 E601A/VA	1.0	%	96.1	94.4	93.9		97.9
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9 E641A-L/VA	0.0050	μg/g	<0.0050	<0.0050	<0.0053 DLHM		<0.0050
Acenaphthylene	208-96-8 E641A-L/VA	0.0050	μg/g	<0.0050	<0.0050	<0.0053 DLHM		<0.0050
Acridine	260-94-6 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010		<0.010
Anthracene	120-12-7 E641A-L/VA	0.0040	μg/g	<0.0048 DLHM	<0.0040	<0.0053 DLHM		<0.0048 DLHM
Benz(a)anthracene	56-55-3 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010		<0.010
Benzo(a)pyrene	50-32-8 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010		<0.010
Benzo(b+j)fluoranthene	n/a E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010		<0.010
Benzo(b+j+k)fluoranthene	n/a E641A-L/VA	0.015	μg/g	<0.015	<0.015	<0.015		<0.015

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Work Order : VA23B3174 Amendment 1

Client : McElhanney Ltd.
Project : 2241-20128-00



Analytical Results

Sub-Matrix: Soil				CI	ient sample ID	TH23-07A	TH23-08A	TH23-09A	TH23-09B	TH23-10A
(Matrix: Soil/Solid)										
				Client samp	ling date / time	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023	09-Jun-2023
Analyte	CAS Number	Method/La	b	LOR	Unit	VA23B3174-001	VA23B3174-003	VA23B3174-005	VA23B3174-006	VA23B3174-007
						Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons										
Benzo(g,h,i)perylene	191-24-2	E641A-L/VA		0.010	μg/g	<0.010	<0.010	<0.010		<0.010
Benzo(k)fluoranthene	207-08-9	E641A-L/VA		0.010	μg/g	<0.010	<0.010	<0.010		<0.010
Chrysene	218-01-9	E641A-L/VA		0.010	μg/g	<0.010	<0.010	<0.010		<0.010
Dibenz(a,h)anthracene	53-70-3	E641A-L/VA		0.0050	μg/g	<0.0050	<0.0050	<0.0053 DLHM		<0.0050
Fluoranthene	206-44-0	E641A-L/VA		0.010	μg/g	<0.010	<0.010	<0.010		<0.010
Fluorene	86-73-7	E641A-L/VA		0.010	μg/g	<0.010	<0.010	<0.010		<0.010
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L/VA		0.010	μg/g	<0.010	<0.010	<0.010		<0.010
Methylnaphthalene, 1-	90-12-0	E641A-L/VA		0.010	μg/g	<0.010	<0.010	<0.010		<0.010
Methylnaphthalene, 2-	91-57-6	E641A-L/VA		0.010	μg/g	<0.010	<0.010	<0.010		<0.010
Naphthalene	91-20-3	E641A-L/VA		0.010	μg/g	<0.010	<0.010	<0.010		<0.010
Phenanthrene	85-01-8	E641A-L/VA		0.010	μg/g	<0.010	<0.010	<0.010		<0.010
Pyrene	129-00-0	E641A-L/VA		0.010	μg/g	<0.010	<0.010	<0.010		<0.010
Quinoline	91-22-5	E641A-L/VA		0.010	μg/g	<0.010	<0.010	<0.010		<0.010
B(a)P total potency equivalents [B(a)P TPE]		E641A-L/VA		0.020	μg/g	<0.020	<0.020	<0.020		<0.020
IACR (CCME)		E641A-L/VA		0.150	-	<0.150	<0.150	<0.150		<0.150
Polycyclic Aromatic Hydrocarbons Surrogates			4							
Acridine-d9	34749-75-2	E641A-L/VA		0.1	%	76.6	102	105		95.5
Chrysene-d12	1719-03-5	E641A-L/VA		0.1	%	104	93.2	110		94.8
Naphthalene-d8	1146-65-2	E641A-L/VA		0.1	%	113	110	122		112
Phenanthrene-d10	1517-22-2	E641A-L/VA		0.1	%	109	107	116		109

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **VA23B3174** Page : 1 of 10

Amendment :

Client : McElhanney Ltd. Laboratory : Vancouver - Environmental

Contact : Victoria Amson : Dean Watt

:# 500 - 3960 Quadra Street Address : 8081 Lougheed Highway

Victoria BC Canada V8X 4A3

Burnaby, British Columbia Canada V5A 1W9

 Telephone
 : 250 370 9221
 Telephone
 : +1 604 253 4188

 Project
 : 2241-20128-00
 Date Samples Received
 : 12-Jun-2023 11:50

 PO
 : --- Issue Date
 : 22-Jun-2023 16:52

C-O-C number :---Sampler : LD, MM
Site :----

Quote number : BC/Yukon Standing Offer - 2022 update

No. of samples received :8
No. of samples analysed :5

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Address

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

• No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

• Quality Control Sample Frequency Outliers occur - please see following pages for full details.



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Work Order : VA23B3174 Amendment 1

Client : McElhanney Ltd.
Project : 2241-20128-00



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and/or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Soil/Solid					Evaluation: × =	Holding time excee	edance ; 🗸	= Within	Holding Time
Analyte Group	Method	Sampling Date	Ext	raction / Preparation	n		Analys	is	
Container / Client Sample ID(s)			Preparation	Holding Time	s Eval	Analysis Date	Holding	Times	Eval
			Date	Rec Actua	al		Rec	Actual	
Hydrocarbons : BC PHCs - EPH by GC-FID									
Glass soil jar/Teflon lined cap									
TH23-07A	E601A	09-Jun-2023	16-Jun-2023	14 8 day	s ✓	17-Jun-2023	40 days	1 days	✓
				days					
Hydrocarbons : BC PHCs - EPH by GC-FID									
Glass soil jar/Teflon lined cap									
TH23-08A	E601A	09-Jun-2023	16-Jun-2023	14 8 day	s ✓	17-Jun-2023	40 days	1 days	✓
				days					
Hydrocarbons : BC PHCs - EPH by GC-FID									
Glass soil jar/Teflon lined cap									
TH23-09A	E601A	09-Jun-2023	16-Jun-2023	14 8 day	s 🗸	17-Jun-2023	40 days	1 days	✓
				days					
Hydrocarbons : BC PHCs - EPH by GC-FID									
Glass soil jar/Teflon lined cap									
TH23-10A	E601A	09-Jun-2023	16-Jun-2023	14 8 day	s ✓	17-Jun-2023	40 days	1 days	✓
				days					
Metals : Mercury in Soil/Solid by CVAAS									
Glass soil jar/Teflon lined cap									
TH23-07A	E510	09-Jun-2023	17-Jun-2023			18-Jun-2023	28 days	9 days	✓
Metals : Mercury in Soil/Solid by CVAAS									
Glass soil jar/Teflon lined cap									
TH23-08A	E510	09-Jun-2023	17-Jun-2023			18-Jun-2023	28 days	9 days	✓
Metals : Mercury in Soil/Solid by CVAAS									
Glass soil jar/Teflon lined cap									
TH23-09A	E510	09-Jun-2023	17-Jun-2023			18-Jun-2023	28 days	9 days	✓
	-				_	•			

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Work Order : VA23B3174 Amendment 1

Client : McElhanney Ltd.
Project : 2241-20128-00



Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Sampling Date Analysis Analyte Group Method Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date **Holding Times** Eval Rec Actual Rec Actual Date Metals: Mercury in Soil/Solid by CVAAS Glass soil jar/Teflon lined cap E510 09-Jun-2023 17-Jun-2023 18-Jun-2023 28 days 9 days 1 TH23-10A Metals: Metals in Soil/Solid by CRC ICPMS Glass soil jar/Teflon lined cap ✓ TH23-07A E440 09-Jun-2023 17-Jun-2023 18-Jun-2023 180 9 days days Metals : Metals in Soil/Solid by CRC ICPMS Glass soil jar/Teflon lined cap TH23-08A E440 09-Jun-2023 17-Jun-2023 18-Jun-2023 9 days 1 180 days Metals : Metals in Soil/Solid by CRC ICPMS Glass soil jar/Teflon lined cap 09-Jun-2023 E440 17-Jun-2023 ✓ TH23-09A 18-Jun-2023 180 9 days days Metals: Metals in Soil/Solid by CRC ICPMS Glass soil jar/Teflon lined cap TH23-10A E440 09-Jun-2023 17-Jun-2023 18-Jun-2023 9 days ✓ 180 days **Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap E144 09-Jun-2023 TH23-07A 16-Jun-2023 ------------**Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap TH23-08A E144 09-Jun-2023 16-Jun-2023 **Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap TH23-09A E144 09-Jun-2023 16-Jun-2023 **Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap E144 09-Jun-2023 16-Jun-2023 TH23-10A

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Work Order : VA23B3174 Amendment 1

Client : McElhanney Ltd.
Project : 2241-20128-00



Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Sampling Date Analysis Analyte Group Method Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date **Holding Times** Eval Actual Rec Rec Actual Date Physical Tests: pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap E108 09-Jun-2023 17-Jun-2023 17-Jun-2023 30 days 8 days 1 TH23-07A Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap 30 days TH23-08A E108 09-Jun-2023 17-Jun-2023 17-Jun-2023 8 days 1 Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap TH23-09A E108 09-Jun-2023 17-Jun-2023 17-Jun-2023 30 days 8 days 1 Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap 09-Jun-2023 E108 ✓ TH23-10A 17-Jun-2023 17-Jun-2023 30 days 8 days **Physical Tests: Saturation Percentage** Glass soil jar/Teflon lined cap TH23-07A E141 09-Jun-2023 16-Jun-2023 16-Jun-2023 0 days Physical Tests : Saturation Percentage Glass soil jar/Teflon lined cap E141 09-Jun-2023 TH23-08A 16-Jun-2023 16-Jun-2023 ----0 days ----**Physical Tests: Saturation Percentage** Glass soil jar/Teflon lined cap TH23-09A E141 09-Jun-2023 16-Jun-2023 16-Jun-2023 0 days **Physical Tests: Saturation Percentage** Glass soil jar/Teflon lined cap TH23-09B E141 0 days 09-Jun-2023 22-Jun-2023 22-Jun-2023 **Physical Tests: Saturation Percentage** Glass soil jar/Teflon lined cap E141 09-Jun-2023 16-Jun-2023 16-Jun-2023 0 days TH23-10A

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Work Order : VA23B3174 Amendment 1

Client : McElhanney Ltd.
Project : 2241-20128-00



Matrix: Soil/Solid Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date Polycyclic Aromatic Hydrocarbons: PAHs by Hex:Ace GC-MS (Low Level CCME) Glass soil jar/Teflon lined cap 16-Jun-2023 E641A-L 09-Jun-2023 40 days ✓ TH23-07A 8 days 17-Jun-2023 1 days 14 days Polycyclic Aromatic Hydrocarbons: PAHs by Hex:Ace GC-MS (Low Level CCME) Glass soil jar/Teflon lined cap TH23-08A E641A-L 09-Jun-2023 16-Jun-2023 14 8 days ✓ 17-Jun-2023 40 days 1 days ✓ days Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME) Glass soil jar/Teflon lined cap TH23-09A E641A-L 09-Jun-2023 16-Jun-2023 ✓ 17-Jun-2023 40 days 1 14 8 days 1 days davs Polycyclic Aromatic Hydrocarbons: PAHs by Hex:Ace GC-MS (Low Level CCME) Glass soil jar/Teflon lined cap 09-Jun-2023 E641A-L 1 ✓ TH23-10A 16-Jun-2023 14 8 days 17-Jun-2023 40 days 1 days days Saturated Paste Extractables: Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) Glass soil jar/Teflon lined cap TH23-09B E442 09-Jun-2023 22-Jun-2023 ✓ 22-Jun-2023 ✓ 0 days 365 13 180 days days days Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) Glass soil jar/Teflon lined cap E442 09-Jun-2023 1 ✓ TH23-07A 16-Jun-2023 365 8 days 17-Jun-2023 180 1 days days days Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) Glass soil jar/Teflon lined cap TH23-08A E442 09-Jun-2023 16-Jun-2023 8 days ✓ 17-Jun-2023 ✓ 1 days 365 180 days days Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) Glass soil jar/Teflon lined cap E442 ✓ ✓ TH23-09A 09-Jun-2023 16-Jun-2023 365 8 days 17-Jun-2023 180 1 days days days Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) Glass soil jar/Teflon lined cap E442 1 TH23-10A 09-Jun-2023 16-Jun-2023 17-Jun-2023 1 days ✓ 8 days 365 180 days days

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Work Order : VA23B3174 Amendment 1

McElhanney Ltd. 2241-20128-00 Client Project



Matrix: Soil/Solid					E	/aluation: × =	Holding time exce	edance ; •	✓ = Within	Holding Time
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	g Times Actual	Eval
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap TH23-09B	E239.CI	09-Jun-2023	22-Jun-2023	365 days	13 days	*	22-Jun-2023	28 days	0 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap TH23-07A	E239.Cl	09-Jun-2023	16-Jun-2023	365 days	8 days	✓	16-Jun-2023	28 days	0 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap TH23-08A	E239.Cl	09-Jun-2023	16-Jun-2023	365 days	8 days	✓	16-Jun-2023	28 days	0 days	4
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap TH23-09A	E239.CI	09-Jun-2023	16-Jun-2023	365 days	8 days	✓	16-Jun-2023	28 days	0 days	✓
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap TH23-10A	E239.Cl	09-Jun-2023	16-Jun-2023	365 days	8 days	✓	16-Jun-2023	28 days	0 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

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Work Order : VA23B3174 Amendment 1

Client : McElhanney Ltd.
Project : 2241-20128-00



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Soil/Solid	Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specif								
Quality Control Sample Type				Count		Frequency (%)			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation		
Laboratory Duplicates (DUP)									
BC PHCs - EPH by GC-FID	E601A	992976	1	16	6.2	5.0	✓		
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442	1001666	2	16	12.5	5.0	✓		
Chloride by IC (Saturated Paste)	E239.CI	1001664	2	25	8.0	5.0	✓		
Mercury in Soil/Solid by CVAAS	E510	992978	1	13	7.6	5.0	✓		
Metals in Soil/Solid by CRC ICPMS	E440	992979	2	15	13.3	5.0	✓		
Moisture Content by Gravimetry	E144	992984	1	16	6.2	5.0	✓		
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	992975	1	16	6.2	5.0	✓		
pH by Meter (1:2 Soil:Water Extraction)	E108	992980	1	13	7.6	5.0	✓		
Saturation Percentage	E141	1001665	1	24	4.1	5.0)£		
Laboratory Control Samples (LCS)									
BC PHCs - EPH by GC-FID	E601A	992976	1	16	6.2	5.0	✓		
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442	1001666	4	16	25.0	10.0	✓		
Chloride by IC (Saturated Paste)	E239.CI	1001664	4	25	16.0	10.0	✓		
Mercury in Soil/Solid by CVAAS	E510	992978	2	13	15.3	10.0	✓		
Metals in Soil/Solid by CRC ICPMS	E440	992979	2	15	13.3	10.0	✓		
Moisture Content by Gravimetry	E144	992984	1	16	6.2	5.0	✓		
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	992975	1	16	6.2	5.0	✓		
pH by Meter (1:2 Soil:Water Extraction)	E108	992980	1	13	7.6	5.0	✓		
Saturation Percentage	E141	1001665	4	24	16.6	10.0	✓		
Method Blanks (MB)									
BC PHCs - EPH by GC-FID	E601A	992976	1	16	6.2	5.0	✓		
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442	1001666	2	16	12.5	5.0	✓		
Chloride by IC (Saturated Paste)	E239.CI	1001664	2	25	8.0	5.0	✓		
Mercury in Soil/Solid by CVAAS	E510	992978	1	13	7.6	5.0	✓		
Metals in Soil/Solid by CRC ICPMS	E440	992979	1	15	6.6	5.0	✓		
Moisture Content by Gravimetry	E144	992984	1	16	6.2	5.0	✓		
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	992975	1	16	6.2	5.0	✓		
Saturation Percentage	E141	1001665	2	24	8.3	5.0	✓		
Matrix Spikes (MS)									
BC PHCs - EPH by GC-FID	E601A	992976	1	16	6.2	5.0	✓		
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	992975	1	16	6.2	5.0	✓		

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Client : McElhanney Ltd.
Project : 2241-20128-00



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 Vancouver - Environmental	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally $20\pm5^{\circ}\text{C}$), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 °C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Saturation Percentage	E141 Vancouver - Environmental	Soil/Solid	CSSS Ch. 15 (mod)/AER D50	Saturation Percentage (SP) is determined as the total volume of water present in a saturated paste (in mL) divided by the dry weight of the sample (in grams), expressed as a percentage.
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Chloride by IC (Saturated Paste)	E239.Cl Vancouver - Environmental	Soil/Solid	CSSS Ch. 15 (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining a soil extract produced by the saturated paste extraction procedure which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Metals in Soil/Solid by CRC ICPMS	E440 Vancouver - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCI. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Ti, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442 Vancouver - Environmental	Soil/Solid	CSSS CH15/EPA 6020B (mod)	A soil extract produced by the saturated paste extraction procedure is analyzed for Calcium, Magnesium, Potassium and Sodium by Collision/Reaction Cell ICPMS as per "Soil Sampling Methods of Analysis" By M Carter.
Mercury in Soil/Solid by CVAAS	E510 Vancouver - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl, followed by CVAAS analysis.
BC PHCs - EPH by GC-FID	E601A Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual (EPH in Solids by GC/FID) (mod)	Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions.

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Client McElhanney Ltd. 2241-20128-00 Project



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L Vancouver - Environmental	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are extracted with hexane/acetone and analyzed by GC-MS. If reported, IACR (index of additive cancer risk, unitless) and B(a)P toxic potency equivalent (in soil concentration units) are calculated as per CCME PAH Soil Quality Guidelines fact sheet (2010) or ABT1.
Chloride by IC (Saturated Paste) (mg/kg)	EC239A.CI Vancouver - Environmental	Soil/Solid	CSSS Ch. 15 (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining a soil extract produced by the saturated paste extraction procedure which is then analyzed by lon Chromatography with conductivity and/or UV detection.
Ca, K, Mg, Na by ICPMS (Saturated Paste, mg/kg)	EC442 Vancouver - Environmental	Soil/Solid	CSSS CH15/EPA 6020B (mod)	A soil extract produced by the saturated paste extraction procedure is analyzed for Calcium, Magnesium, Potassium, Sodium by ICPMS.
LEPH and HEPH: EPH-PAH	EC600A Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual (LEPH and HEPH)	Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH) are calculated as follows: LEPH = Extractable Petroleum Hydrocarbons (EPH10-19) minus Naphthalene and Phenanthrene; HEPH = Extractable Petroleum Hydrocarbons (EPH19-32) minus Benz(a)anthracene, Benzo(b+j+k)fluoranthene, Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, and Pyrene.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 Vancouver - Environmental	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Digestion for Metals and Mercury	EP440 Vancouver - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCI. This method is intended to liberate metals that may be environmentally available.
PHCs and PAHs Hexane-Acetone Tumbler Extraction	EP601 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.

ALS Canada Ltd.



QUALITY CONTROL REPORT

Work Order :VA23B3174

Amendment : 1

Client : McElhanney Ltd.

Contact : Victoria Amson

Address :# 500 - 3960 Quadra Street

Victoria BC Canada V8X 4A3

Telephone

Project : 2241-20128-00

PO :---C-O-C number :---

Sampler : LD, MM 250 370 9221

Site : ---

Quote number : BC/Yukon Standing Offer - 2022 update

No. of samples received : 8
No. of samples analysed : 5

Page : 1 of 14

Laboratory : Vancouver - Environmental

Account Manager : Dean Watt

Address : 8081 Lougheed Highway

Burnaby, British Columbia Canada V5A 1W9

Telephone :+1 604 253 4188

Date Samples Received :12-Jun-2023 11:50

Date Analysis Commenced : 16-Jun-2023

Issue Date : 22-Jun-2023 16:52

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department				
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia				
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia				
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia				
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia				
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia				
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia				

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Client : McElhanney Ltd.
Project : 2241-20128-00



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Work Order: VA23B3174 Amendment 1

Client : McElhanney Ltd.
Project : 2241-20128-00



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Soil/Solid		Laboratory Duplicate (DUP) Report									
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC											
VA23B3174-001	TH23-07A	pH (1:2 soil:water)		E108	0.10	pH units	5.55	5.42	2.4%	5%	
Physical Tests (QC	Lot: 992984)										
VA23B3174-001	TH23-07A	Moisture		E144	0.25	%	32.8	33.1	0.816%	20%	
Saturated Paste Ext	tractables (QC Lot: 1001	664)									
VA23B3105-008	Anonymous	Chloride, soluble ion content	16887-00-6	E239.CI	20	mg/L	295000 μg/L	257	13.7%	30%	
Saturated Paste Ex	tractables (QC Lot: 1001	666)									
VA23B3105-008	Anonymous	Sodium, soluble ion content	17341-25-2	E442	20.0	mg/L	165000 μg/L	143	14.3%	30%	
Saturated Paste Ext	tractables (QC Lot: 9929	81)									
VA23B1990-005	Anonymous	% Saturation		E141	1.0	%	197	220	10.7%	20%	
Saturated Paste Ex	tractables (QC Lot: 9929	82)									
VA23B1990-005	Anonymous	Chloride, soluble ion content	16887-00-6	E239.CI	20	mg/L	190	161	16.7%	30%	
Saturated Paste Ex	tractables (QC Lot: 9929	83)									
VA23B3174-001	TH23-07A	Sodium, soluble ion content	17341-25-2	E442	20.0	mg/L	23400 μg/L	25.7	2.4	Diff <2x LOR	
Metals (QC Lot: 99	2978)		1/ 1								
VA23B3174-001	TH23-07A	Mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500 µg/g	<0.0500	0	Diff <2x LOR	
Metals (QC Lot: 99)	2979)										
VA23B3174-001	TH23-07A	Arsenic	7440-38-2	E440	0.10	mg/kg	2.06 μg/g	1.99	3.79%	30%	
VA23B3174-001	TH23-07A	Aluminum	7429-90-5	E440	50	mg/kg	30400 μg/g	28500	6.40%	40%	
		Antimony	7440-36-0	E440	0.10	mg/kg	<0.10 µg/g	<0.10	0	Diff <2x LOR	
		Barium	7440-39-3	E440	0.50	mg/kg	133 µg/g	130	2.35%	40%	
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.55 μg/g	0.53	0.02	Diff <2x LOR	
		Bismuth	7440-69-9	E440	0.20	mg/kg	0.38 µg/g	0.28	0.10	Diff <2x LOR	
		Boron	7440-42-8	E440	5.0	mg/kg	<5.0 µg/g	<5.0	0	Diff <2x LOR	
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.104 μg/g	0.090	0.014	Diff <2x LOR	
		Calcium	7440-70-2	E440	50	mg/kg	5410 μg/g	4970	8.56%	30%	
		Chromium	7440-47-3	E440	0.50	mg/kg	46.2 μg/g	42.4	8.80%	30%	
l		Cobalt	7440-48-4	E440	0.10	mg/kg	9.75 μg/g	9.13	6.58%	30%	
		Copper	7440-50-8	E440	0.50	mg/kg	24.7 μg/g	22.2	10.7%	30%	
		Iron	7439-89-6	E440	50	mg/kg	27000 μg/g	26200	3.29%	30%	
l		Lead	7439-92-1	E440	0.50	mg/kg	8.86 µg/g	7.62	15.1%	40%	

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Client : McElhanney Ltd.
Project : 2241-20128-00



ub-Matrix: Soil/Solid						Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie	
Metals (QC Lot: 99	2979) - continued											
VA23B3174-001	TH23-07A	Lithium	7439-93-2	E440	2.0	mg/kg	17.3 µg/g	16.9	2.19%	30%		
		Magnesium	7439-95-4	E440	20	mg/kg	5350 μg/g	4920	8.46%	30%		
		Manganese	7439-96-5	E440	1.0	mg/kg	267 μg/g	243	9.60%	30%		
		Molybdenum	7439-98-7	E440	0.10	mg/kg	0.41 µg/g	0.36	0.05	Diff <2x LOR		
		Nickel	7440-02-0	E440	0.50	mg/kg	31.9 μg/g	30.0	6.10%	30%		
		Phosphorus	7723-14-0	E440	50	mg/kg	272 μg/g	221	52	Diff <2x LOR		
		Potassium	7440-09-7	E440	100	mg/kg	530 μg/g	500	6.13%	40%		
		Selenium	7782-49-2	E440	0.20	mg/kg	<0.20 µg/g	<0.20	0	Diff <2x LOR		
		Silver	7440-22-4	E440	0.10	mg/kg	0.20 μg/g	0.18	0.03	Diff <2x LOR		
		Sodium	7440-23-5	E440	50	mg/kg	280 μg/g	266	5.11%	40%		
		Strontium	7440-24-6	E440	0.50	mg/kg	35.6 µg/g	33.7	5.54%	40%		
		Sulfur	7704-34-9	E440	1000	mg/kg	<1000 µg/g	<1000	0	Diff <2x LOR		
		Thallium	7440-28-0	E440	0.050	mg/kg	0.074 µg/g	0.069	0.005	Diff <2x LOR		
		Tin	7440-31-5	E440	2.0	mg/kg	<2.0 μg/g	<2.0	0	Diff <2x LOR		
		Titanium	7440-32-6	E440	1.0	mg/kg	1030 μg/g	777	27.8%	40%		
		Tungsten	7440-33-7	E440	0.50	mg/kg	<0.50 µg/g	<0.50	0	Diff <2x LOR		
		Uranium	7440-61-1	E440	0.050	mg/kg	0.536 µg/g	0.493	8.34%	30%		
		Vanadium	7440-62-2	E440	0.20	mg/kg	82.4 μg/g	74.9	9.47%	30%		
		Zinc	7440-66-6	E440	2.0	mg/kg	33.9 μg/g	30.8	9.60%	30%		
		Zirconium	7440-67-7	E440	1.0	mg/kg	<1.0 µg/g	<1.0	0	Diff <2x LOR		
lydrocarbons (QC	Lot: 992976)											
VA23B3174-001	TH23-07A	EPH (C10-C19)		E601A	200	mg/kg	<200 μg/g	<200	0	Diff <2x LOR		
		EPH (C19-C32)		E601A	200	mg/kg	<200 μg/g	<200	0	Diff <2x LOR		
Polycyclic Aromatic	Hydrocarbons (QC	Lot: 992975)										
VA23B3174-001	TH23-07A	Acenaphthene	83-32-9	E641A-L	0.0050	mg/kg	<0.0050 µg/g	<0.0050	0	Diff <2x LOR		
		Acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg	<0.0050 µg/g	<0.0050	0	Diff <2x LOR		
		Acridine	260-94-6	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR		
		Anthracene	120-12-7	E641A-L	0.0041	mg/kg	<0.0048 µg/g	<0.0041	0.0007	Diff <2x LOR		
		Benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR		
		Benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR		
		Benzo(b+j)fluoranthene	n/a	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR		
		Benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR		
		Benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR		
		Chrysene	218-01-9	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR		

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Client McElhanney Ltd. Project 2241-20128-00



Sub-Matrix: Soil/Solid	ub-Matrix: Soil/Solid						Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier			
Polycyclic Aromatic	Hydrocarbons (QC L	ot: 992975) - continued												
VA23B3174-001	TH23-07A	Dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg	<0.0050 µg/g	<0.0050	0	Diff <2x LOR				
		Fluoranthene	206-44-0	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR				
		Fluorene	86-73-7	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR				
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR				
		Methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR				
		Methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR				
		Naphthalene	91-20-3	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR				
		Phenanthrene	85-01-8	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR				
		Pyrene	129-00-0	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR				
		Quinoline	91-22-5	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR				
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Client : McElhanney Ltd.
Project : 2241-20128-00



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 992984)					
Moisture	E144	0.25	%	<0.25	
Saturated Paste Extractables (QCLot: 10	01664)				
Chloride, soluble ion content	16887-00-6 E239.CI	20	mg/L	<20	
Saturated Paste Extractables (QCLot: 10	01665)				
% Saturation	E141	1	%	50.0	
Saturated Paste Extractables (QCLot: 10					
Sodium, soluble ion content	17341-25-2 E442	2	mg/L	<2.0	
Saturated Paste Extractables (QCLot: 99	2981)				
% Saturation	E141	1	%	50.0	
Saturated Paste Extractables (QCLot: 99	2982)				
Chloride, soluble ion content	16887-00-6 E239.CI	20	mg/L	<20	
Saturated Paste Extractables (QCLot: 99	2983)				
Sodium, soluble ion content	17341-25-2 E442	2	mg/L	<2.0	
Metals (QCLot: 992978)					
Mercury	7439-97-6 E510	0.005	mg/kg	<0.0050	
Metals (QCLot: 992979)					
Aluminum	7429-90-5 E440	50	mg/kg	<50	
Antimony	7440-36-0 E440	0.1	mg/kg	<0.10	
Arsenic	7440-38-2 E440	0.1	mg/kg	<0.10	
Barium	7440-39-3 E440	0.5	mg/kg	<0.50	
Beryllium	7440-41-7 E440	0.1	mg/kg	<0.10	
Bismuth	7440-69-9 E440	0.2	mg/kg	<0.20	
Boron	7440-42-8 E440	5	mg/kg	<5.0	
Cadmium	7440-43-9 E440	0.02	mg/kg	<0.020	
Calcium	7440-70-2 E440	50	mg/kg	<50	
Chromium	7440-47-3 E440	0.5	mg/kg	<0.50	
Cobalt	7440-48-4 E440	0.1	mg/kg	<0.10	
Copper	7440-50-8 E440	0.5	mg/kg	<0.50	
Iron	7439-89-6 E440	50	mg/kg	<50	
Lead	7439-92-1 E440	0.5	mg/kg	<0.50	
Lithium	7439-93-2 E440	2	mg/kg	<2.0	
Magnesium	7439-95-4 E440	20	mg/kg	<20	

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Client McElhanney Ltd. Project 2241-20128-00



nalyte	CAS Number Method	LOR	Unit	Result	Qualifier
etals (QCLot: 992979) - continue	d d				
Manganese	7439-96-5 E440	1	mg/kg	<1.0	
Molybdenum	7439-98-7 E440	0.1	mg/kg	<0.10	
Nickel	7440-02-0 E440	0.5	mg/kg	<0.50	
Phosphorus	7723-14-0 E440	50	mg/kg	<50	
Potassium	7440-09-7 E440	100	mg/kg	<100	
Selenium	7782-49-2 E440	0.2	mg/kg	<0.20	
Silver	7440-22-4 E440	0.1	mg/kg	<0.10	
Sodium	7440-23-5 E440	50	mg/kg	<50	
Strontium	7440-24-6 E440	0.5	mg/kg	<0.50	
Sulfur	7704-34-9 E440	1000	mg/kg	<1000	
Thallium	7440-28-0 E440	0.05	mg/kg	<0.050	
Tin	7440-31-5 E440	2	mg/kg	<2.0	
Titanium	7440-32-6 E440	1	mg/kg	<1.0	
Tungsten	7440-33-7 E440	0.5	mg/kg	<0.50	
Uranium	7440-61-1 E440	0.05	mg/kg	<0.050	
Vanadium	7440-62-2 E440	0.2	mg/kg	<0.20	
Zinc	7440-66-6 E440	2	mg/kg	<2.0	
Zirconium	7440-67-7 E440	1	mg/kg	<1.0	
ydrocarbons (QCLot: 992976)					
EPH (C10-C19)	E601A	200	mg/kg	<200	
EPH (C19-C32)	E601A	200	mg/kg	<200	
olycyclic Aromatic Hydrocarbons	(QCLot: 992975)				
Acenaphthene	83-32-9 E641A-L	0.005	mg/kg	<0.0050	
Acenaphthylene	208-96-8 E641A-L	0.005	mg/kg	<0.0050	
Acridine	260-94-6 E641A-L	0.01	mg/kg	<0.010	
Anthracene	120-12-7 E641A-L	0.004	mg/kg	<0.0040	
Benz(a)anthracene	56-55-3 E641A-L	0.01	mg/kg	<0.010	
Benzo(a)pyrene	50-32-8 E641A-L	0.01	mg/kg	<0.010	
Benzo(b+j)fluoranthene	n/a E641A-L	0.01	mg/kg	<0.010	
Benzo(g,h,i)perylene	191-24-2 E641A-L	0.01	mg/kg	<0.010	
Benzo(k)fluoranthene	207-08-9 E641A-L	0.01	mg/kg	<0.010	
Chrysene	218-01-9 E641A-L	0.01	mg/kg	<0.010	
Dibenz(a,h)anthracene	53-70-3 E641A-L	0.005	mg/kg	<0.0050	
Fluoranthene	206-44-0 E641A-L	0.01	mg/kg	<0.010	
Fluorene	86-73-7 E641A-L	0.01	mg/kg	<0.010	

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Client : McElhanney Ltd.
Project : 2241-20128-00



Sub-Matrix: Soil/Solid

CAS Number	Method	LOR	Unit	Result	Qualifier
CLot: 992975) - contini	ued				
193-39-5	E641A-L	0.01	mg/kg	<0.010	
90-12-0	E641A-L	0.01	mg/kg	<0.010	
91-57-6	E641A-L	0.01	mg/kg	<0.010	
91-20-3	E641A-L	0.01	mg/kg	<0.010	
85-01-8	E641A-L	0.01	mg/kg	<0.010	
129-00-0	E641A-L	0.01	mg/kg	<0.010	
91-22-5	E641A-L	0.01	mg/kg	<0.010	
	CLot: 992975) - contini 193-39-5 90-12-0 91-57-6 91-20-3 85-01-8 129-00-0	193-39-5 E641A-L 90-12-0 E641A-L 91-57-6 E641A-L 91-20-3 E641A-L 85-01-8 E641A-L 129-00-0 E641A-L 91-22-5 E641A-L	CLot: 992975) - continued 193-39-5 E641A-L 0.01 90-12-0 E641A-L 0.01 91-57-6 E641A-L 0.01 91-20-3 E641A-L 0.01 85-01-8 E641A-L 0.01 129-00-0 E641A-L 0.01	CLot: 992975) - continued 193-39-5	CLot: 992975) - continued 193-39-5 E641A-L 0.01 mg/kg <0.010 90-12-0 E641A-L 0.01 mg/kg <0.010 91-57-6 E641A-L 0.01 mg/kg <0.010 91-20-3 E641A-L 0.01 mg/kg <0.010 85-01-8 E641A-L 0.01 mg/kg <0.010 129-00-0 E641A-L 0.01 mg/kg <0.010



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Client : McElhanney Ltd.
Project : 2241-20128-00



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Soil/Solid	Laboratory Control Sample (LCS) Report							
				Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 992980)								
pH (1:2 soil:water)	E108		pH units	6 pH units	99.8	95.0	105	
Physical Tests (QCLot: 992984)								
Moisture	E144	0.25	%	50 %	99.7	90.0	110	
Saturated Paste Extractables (QCLot: 1001664)								
Chloride, soluble ion content	16887-00-6 E239.CI	20	mg/L	100 mg/L	103	80.0	120	
Saturated Paste Extractables (QCLot: 1001665)								
% Saturation	E141	1	%	100 %	100	80.0	120	
Saturated Paste Extractables (QCLot: 1001666)								
Sodium, soluble ion content	17341-25-2 E442	2	mg/L	50 mg/L	108	80.0	120	
Saturated Paste Extractables (QCLot: 992981)								
% Saturation	E141	1	%	100 %	92.5	80.0	120	
Saturated Paste Extractables (QCLot: 992982)								
Chloride, soluble ion content	16887-00-6 E239.Cl	20	mg/L	100 mg/L	101	80.0	120	
Saturated Paste Extractables (QCLot: 992983)								
Sodium, soluble ion content	17341-25-2 E442	2	mg/L	50 mg/L	105	80.0	120	
Metals (QCLot: 992978)	7400 07 0 5740	0.005					100	
Mercury	7439-97-6 E510	0.005	mg/kg	0.1 mg/kg	99.2	80.0	120	
Metals (QCLot: 992979)	7400 00 5 5440	50				00.0	100	
Aluminum	7429-90-5 E440	50	mg/kg	200 mg/kg	101	80.0	120	
Antimony	7440-36-0 E440 7440-38-2 E440	0.1 0.1	mg/kg	100 mg/kg	100.0	80.0 80.0	120 120	
Arsenic Barium	7440-39-3 E440	0.1	mg/kg mg/kg	100 mg/kg	105	80.0	120	
Beryllium	7440-41-7 E440	0.5	mg/kg	25 mg/kg	104 103	80.0	120	
Bismuth	7440-69-9 E440	0.1	mg/kg	10 mg/kg 100 mg/kg	95.6	80.0	120	
Boron	7440-42-8 E440	5	mg/kg	100 mg/kg	94.6	80.0	120	
Cadmium	7440-43-9 E440	0.02	mg/kg	100 mg/kg	104	80.0	120	
Calcium	7440-70-2 E440	50	mg/kg	5000 mg/kg	102	80.0	120	
Chromium	7440-47-3 E440	0.5	mg/kg	25 mg/kg	100	80.0	120	
	7440-48-4 E440	0.1	mg/kg	25 mg/kg	103	80.0	120	
Cobalt								

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Client : McElhanney Ltd.
Project : 2241-20128-00



Sub-Matrix: Soil/Solid	Laboratory Control Sample (LCS) Report								
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 992979) - continued									
Iron	7439-89-6 I	E440	50	mg/kg	100 mg/kg	107	80.0	120	
Lead	7439-92-1 I	E440	0.5	mg/kg	50 mg/kg	97.4	80.0	120	
Lithium	7439-93-2 I	E440	2	mg/kg	25 mg/kg	100	80.0	120	
Magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	102	80.0	120	
Manganese	7439-96-5 I	E440	1	mg/kg	25 mg/kg	102	80.0	120	
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	95.8	80.0	120	
Nickel	7440-02-0 I	E440	0.5	mg/kg	50 mg/kg	100	80.0	120	
Phosphorus	7723-14-0 I	E440	50	mg/kg	1000 mg/kg	96.6	80.0	120	
Potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	102	80.0	120	
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	99.8	80.0	120	
Silver	7440-22-4 I	E440	0.1	mg/kg	10 mg/kg	94.6	80.0	120	
Sodium	7440-23-5 I	E440	50	mg/kg	5000 mg/kg	101	80.0	120	
Strontium	7440-24-6 I	E440	0.5	mg/kg	25 mg/kg	98.2	80.0	120	
Sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	89.9	80.0	120	
Thallium	7440-28-0 I	E440	0.05	mg/kg	100 mg/kg	97.2	80.0	120	
Tin	7440-31-5 I	E440	2	mg/kg	50 mg/kg	98.8	80.0	120	
Titanium	7440-32-6 I	E440	1	mg/kg	25 mg/kg	88.9	80.0	120	
Tungsten	7440-33-7 I	E440	0.5	mg/kg	10 mg/kg	98.1	80.0	120	
Uranium	7440-61-1 I	E440	0.05	mg/kg	0.5 mg/kg	104	80.0	120	
Vanadium	7440-62-2 I	E440	0.2	mg/kg	50 mg/kg	103	80.0	120	
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	104	80.0	120	
Zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	94.5	80.0	120	
Hydrocarbons (QCLot: 992976)									
EPH (C10-C19)		E601A	200	mg/kg	1134.37 mg/kg	101	70.0	130	
EPH (C19-C32)		E601A	200	mg/kg	575.98 mg/kg	95.0	70.0	130	
Polycyclic Aromatic Hydrocarbons (C	QCLot: 992975)								
Acenaphthene	83-32-9	E641A-L	0.005	mg/kg	0.5 mg/kg	108	60.0	130	
Acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	0.5 mg/kg	108	60.0	130	
Acridine	260-94-6 I	E641A-L	0.01	mg/kg	0.5 mg/kg	111	60.0	130	
Anthracene	120-12-7 I	E641A-L	0.004	mg/kg	0.5 mg/kg	110	60.0	130	
Benz(a)anthracene	56-55-3 I	E641A-L	0.01	mg/kg	0.5 mg/kg	98.5	60.0	130	
Benzo(a)pyrene	50-32-8 I	E641A-L	0.01	mg/kg	0.5 mg/kg	105	60.0	130	
Benzo(b+j)fluoranthene	n/a I	E641A-L	0.01	mg/kg	0.5 mg/kg	102	60.0	130	
Benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	0.5 mg/kg	115	60.0	130	
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Client McElhanney Ltd. Project 2241-20128-00



ub-Matrix: Soil/Solid					Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery (%) Recovery Limits (%)			
Analyte	CAS Number I	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier	
Polycyclic Aromatic Hydrocarbons (QCLot: 992975) - continued									
Benzo(k)fluoranthene	207-08-9 E	E641A-L	0.01	mg/kg	0.5 mg/kg	105	60.0	130		
Chrysene	218-01-9 E	E641A-L	0.01	mg/kg	0.5 mg/kg	106	60.0	130		
Dibenz(a,h)anthracene	53-70-3 E	E641A-L	0.005	mg/kg	0.5 mg/kg	111	60.0	130		
Fluoranthene	206-44-0 E	E641A-L	0.01	mg/kg	0.5 mg/kg	109	60.0	130		
Fluorene	86-73-7 E	E641A-L	0.01	mg/kg	0.5 mg/kg	110	60.0	130		
Indeno(1,2,3-c,d)pyrene	193-39-5 E	E641A-L	0.01	mg/kg	0.5 mg/kg	108	60.0	130		
Methylnaphthalene, 1-	90-12-0 E	E641A-L	0.01	mg/kg	0.5 mg/kg	113	60.0	130		
Methylnaphthalene, 2-	91-57-6 E	E641A-L	0.01	mg/kg	0.5 mg/kg	109	60.0	130		
Naphthalene	91-20-3 E	E641A-L	0.01	mg/kg	0.5 mg/kg	111	50.0	130		
Phenanthrene	85-01-8 E	E641A-L	0.01	mg/kg	0.5 mg/kg	112	60.0	130		
Pyrene	129-00-0 E	E641A-L	0.01	mg/kg	0.5 mg/kg	109	60.0	130		
Quinoline	91-22-5 E	E641A-L	0.01	mg/kg	0.5 mg/kg	106	60.0	130		



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Work Order: VA23B3174 Amendment 1

Client : McElhanney Ltd.
Project : 2241-20128-00



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Soil/So	lid				Matrix Spike (MS) Report							
					Spi	ike	Recovery (%)	Recovery	Limits (%)			
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier		
Hydrocarbons (QCLot: 992976)											
VA23B3174-003	TH23-08A	EPH (C10-C19)		E601A	980 mg/kg	1134.37 mg/kg	99.1	60.0	140			
		EPH (C19-C32)		E601A	470 mg/kg	575.98 mg/kg	93.3	60.0	140			
Polycyclic Arom	atic Hydrocarbons(QCLot: 992975)										
VA23B3174-003	TH23-08A	Acenaphthene	83-32-9	E641A-L	0.448 mg/kg	0.5 mg/kg	103	50.0	140			
		Acenaphthylene	208-96-8	E641A-L	0.444 mg/kg	0.5 mg/kg	102	50.0	140			
		Acridine	260-94-6	E641A-L	0.457 mg/kg	0.5 mg/kg	105	50.0	140			
		Anthracene	120-12-7	E641A-L	0.454 mg/kg	0.5 mg/kg	105	50.0	140			
		Benz(a)anthracene	56-55-3	E641A-L	0.404 mg/kg	0.5 mg/kg	93.1	50.0	140			
		Benzo(a)pyrene	50-32-8	E641A-L	0.426 mg/kg	0.5 mg/kg	98.3	50.0	140			
		Benzo(b+j)fluoranthene	n/a	E641A-L	0.413 mg/kg	0.5 mg/kg	95.4	50.0	140			
		Benzo(g,h,i)perylene	191-24-2	E641A-L	0.459 mg/kg	0.5 mg/kg	106	50.0	140			
		Benzo(k)fluoranthene	207-08-9	E641A-L	0.433 mg/kg	0.5 mg/kg	100.0	50.0	140			
		Chrysene	218-01-9	E641A-L	0.439 mg/kg	0.5 mg/kg	101	50.0	140			
		Dibenz(a,h)anthracene	53-70-3	E641A-L	0.442 mg/kg	0.5 mg/kg	102	50.0	140			
		Fluoranthene	206-44-0	E641A-L	0.447 mg/kg	0.5 mg/kg	103	50.0	140			
		Fluorene	86-73-7	E641A-L	0.451 mg/kg	0.5 mg/kg	104	50.0	140			
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.434 mg/kg	0.5 mg/kg	100	50.0	140			
		Methylnaphthalene, 1-	90-12-0	E641A-L	0.461 mg/kg	0.5 mg/kg	106	50.0	140			
		Methylnaphthalene, 2-	91-57-6	E641A-L	0.448 mg/kg	0.5 mg/kg	103	50.0	140			
		Naphthalene	91-20-3	E641A-L	0.457 mg/kg	0.5 mg/kg	105	50.0	140			
		Phenanthrene	85-01-8	E641A-L	0.458 mg/kg	0.5 mg/kg	106	50.0	140			
		Pyrene	129-00-0	E641A-L	0.444 mg/kg	0.5 mg/kg	102	50.0	140			
		Quinoline	91-22-5	E641A-L	0.436 mg/kg	0.5 mg/kg	100	50.0	140			

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Work Order: VA23B3174 Amendment 1

Client : McElhanney Ltd.
Project : 2241-20128-00



Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:	p-Matrix:				Reference Material (RM) Report					
					RM Target	Recovery (%)	Recovery I	Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier	
Saturated Paste	Extractables (QCLot: 1	001664)								
	RM	Chloride, soluble ion content	16887-00-6	E239.Cl	1237 mg/L	90.4	70.0	130		
Saturated Paste	Extractables (QCLot: 1	001665)								
	RM	% Saturation		E141	48.3 %	97.6	70.0	130		
Saturated Paste	Extractables (QCLot: 1	001666)								
	RM	Sodium, soluble ion content	17341-25-2	E442	330 mg/L	97.9	70.0	130		
Saturated Paste	Extractables (QCLot: 9	992981)								
	RM	% Saturation		E141	48.3 %	101	70.0	130		
Saturated Paste	Extractables (QCLot: 9	992982)								
	RM	Chloride, soluble ion content	16887-00-6	E239.CI	1237 mg/L	90.2	70.0	130		
Saturated Paste	Extractables (QCLot: 9	992983)								
	RM	Sodium, soluble ion content	17341-25-2	E442	330 mg/L	88.0	70.0	130		
Metals (QCLot:	992978)									
	SCP SS-2	Mercury	7439-97-6	E510	0.059 mg/kg	99.0	70.0	130		
Metals (QCLot:	992979)									
	SCP SS-2	Aluminum	7429-90-5	E440	9817 mg/kg	105	70.0	130		
	SCP SS-2	Antimony	7440-36-0	E440	3.99 mg/kg	96.3	70.0	130		
	SCP SS-2	Arsenic	7440-38-2	E440	3.73 mg/kg	99.3	70.0	130		
	SCP SS-2	Barium	7440-39-3	E440	105 mg/kg	100.0	70.0	130		
	SCP SS-2	Beryllium	7440-41-7	E440	0.349 mg/kg	107	70.0	130		
	SCP SS-2	Boron	7440-42-8	E440	8.5 mg/kg	124	40.0	160		
	SCP SS-2	Cadmium	7440-43-9	E440	0.91 mg/kg	108	70.0	130		
	SCP SS-2	Calcium	7440-70-2	E440	31082 mg/kg	103	70.0	130		
	SCP SS-2	Chromium	7440-47-3	E440	101 mg/kg	113	70.0	130		
	SCP SS-2	Cobalt	7440-48-4	E440	6.9 mg/kg	103	70.0	130		
	SCP SS-2	Copper	7440-50-8	E440	123 mg/kg	94.2	70.0	130		
	SCP SS-2	Iron	7439-89-6	E440	23558 mg/kg	104	70.0	130		
	SCP SS-2	Lead	7439-92-1	E440	267 mg/kg	94.8	70.0	130		
	SCP SS-2	Lithium	7439-93-2	E440	9.5 mg/kg	99.7	70.0	130		
	1				1 1 J J		70.0	100		

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Client : McElhanney Ltd.
Project : 2241-20128-00



Sub-Matrix:	ub-Matrix:						Reference Material (RM) Report						
					RM Target	Recovery (%)	Recovery	Limits (%)					
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier				
Metals (QCLot:	992979) - continued												
	SCP SS-2	Magnesium	7439-95-4	E440	5509 mg/kg	102	70.0	130					
	SCP SS-2	Manganese	7439-96-5	E440	269 mg/kg	108	70.0	130					
	SCP SS-2	Molybdenum	7439-98-7	E440	1.03 mg/kg	89.0	70.0	130					
	SCP SS-2	Nickel	7440-02-0	E440	26.7 mg/kg	99.1	70.0	130					
	SCP SS-2	Phosphorus	7723-14-0	E440	752 mg/kg	84.1	70.0	130					
	SCP SS-2	Potassium	7440-09-7	E440	1587 mg/kg	114	70.0	130					
	SCP SS-2	Sodium	7440-23-5	E440	797 mg/kg	98.5	70.0	130					
	SCP SS-2	Strontium	7440-24-6	E440	86.1 mg/kg	96.7	70.0	130					
	SCP SS-2	Thallium	7440-28-0	E440	0.0786 mg/kg	93.4	40.0	160					
	SCP SS-2	Tin	7440-31-5	E440	10.6 mg/kg	89.1	70.0	130					
	SCP SS-2	Titanium	7440-32-6	E440	839 mg/kg	105	70.0	130					
	SCP SS-2	Uranium	7440-61-1	E440	0.52 mg/kg	102	70.0	130					
	SCP SS-2	Vanadium	7440-62-2	E440	32.7 mg/kg	105	70.0	130					
	SCP SS-2	Zinc	7440-66-6	E440	297 mg/kg	99.7	70.0	130					
	SCP SS-2	Zirconium	7440-67-7	E440	5.73 mg/kg	90.2	70.0	130					

Chain of Custody (COC) / Analytical Request Form

COC Number: 21 -

Canada Toll Free: 1 800 668 9878

Report To	Contact and com	pany name below will appe	ear on the final report		Renorts /	Recipients		1		Tu	rnaro	und Ti	me (T	AT) Re	auesta	ed .					- 0			
Company:	McElhanney			Select Report F						Routine [R] if received by 3pm M-F - no surcharges apply														
Contact:	Victoria Amson							4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum						AFFIX ALS BARCODE LABEL HERE				CDE						
Phone:	7785841382			-4	Merge QC/QCI Reports with COA. ✓ YES NO NA Compare Results to Criteria on Report - provide details below if box checked							3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum										EKC		
	Company address belo	w will appear on the fin	al report		Select Distribution:									50% rus					(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				-	
Street:	Suite 500 - 3960 Qua	adra St		Email 1 or Fax	vamson@mcelha	nney.com								00% rus 1-5 - 20) 					-	
City/Province:	Victoria, BC			Email 2	bwhite@mcelhan					Additio	nal fee	s may a	pply to	rush req	uests o	n week	kends, s	tatutory	/ holidays	s and for	r non-rou	line test	s.	
Postal Code:	V8X 4A3			Email 3	mmanzi@mcelha	nney.com		,	Date an	Additional fees may apply to rush requests on weekends, statutory holidays and for non-routine tests. ate and Time Required for all E&P TATs:														
Invoice To	Same as Report To	✓ YES [NO	<u> </u>	Invoice R	ecipients					For	all tests	with rus	sh TATs	equeste	d, plea	se conta	ct your	AM to cor	nfirm av	ailability.			
	Copy of Invoice with	Report 🗹 YES	NO	Select Invoice	Analysis Request																			
Company:				Email 1 or Fax	Email 1 or Fax vamson@mcelhanney.com					Indicate Filtered (F), Preserved (P) or Filtered and Preserved							reserve	ed (F/P) k	pelow		Ť	Ιe	T 🐷	
Contact:				Email 2	bwhite@mcelhan	ney.com		ш]	2	l ë
	Projec	t Information		Oi	l and Gas Require	d Fields (clien	t use)	CONTAIN				ļ .			Ī							٦_	REQUIRED	E
ALS Account #				AFE/Cost Center:		PO#		Ę				1			- 1			- 1				НОГР	2	<u>®</u>
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ALS Lab Worl	k Order# (ALS use o	only): 631	14	ALS Contact:	Dean Watt	Sampler:	M. Manzi / L. Dykeman	NUMBER	stals	Salinity (Sat Paste)	EPH/HEPH/PAHs	BTEX+VPH+MTBE										SAMPLES	EXTENDED	SUSPECTED HAZARD (see notes)
ALS Sample #		ample identification	and/or Coordinates		Date	Time	Sample Type	1≅	CSR Metals	nity	Ĭ	X.	ا ا		ı	1	J	ı	ı	ı	1	≥	IΨ	S
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	TH23-08B				9-Jun-23	РМ	Soil	5				-							_				1	<u> </u>
	TH23-09A				9-Jun-23	PM	Soil	5	R	R			\vdash					η,	MA.		_	1	1	T
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Drinking	Water (DW) Samples	¹ (client use)	Notes / Specify I		evaluation by select xcel COC only)	ng from drop-de	own below	Coolii	ng Me	thod	1	NONE			10		_	FRO			COOLIN	IC TAIT	14.700	
Are samples tak	en from a Regulated D	W System?							<u> </u>		_=			on San						 ☐ YES		NO	IATED	<u>-</u>
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Released by: M	Nichael Manzi	Date: June 9 2023	Time:	Received by:		Date:		Time:		Rece	eived	by:	0	111		Date:			ne	17		Time	57	$\overline{\mathbf{C}}$
REFER TO BACK	PAGE FOR ALS LOCA	TIONS AND SAMPLIN	G INFORMATION	<u></u>	WH	ITE - LABORATO	DRY COPY YEL	LOW -	CLIEN	IT CO	PY	-		/Y-				<u> </u>	<u> </u>	<u></u>		44	AUG 2L	U20 FRONT

ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order : VA23B3448 Page 1 of 11

Amendment : 1

Address

Client Laboratory : McElhanney Ltd. Vancouver - Environmental

: Victoria Amson Account Manager Dean Watt Contact

> Address : # 500 - 3960 Quadra Street : 8081 Lougheed Highway

Victoria BC Canada V8X 4A3 Burnaby BC Canada V5A 1W9

: 17-Jun-2023

Telephone : 250 370 9221 Telephone : +1 604 253 4188

Date Samples Received **Project** : 2241-20128-00 T2017 : 14-Jun-2023 11:10 PO **Date Analysis Commenced**

C-O-C number Issue Date : 22-Jun-2023 16:54 ----

Sampler : MM / LD Site ----

Quote number : BC/Yukon Standing Offer - 2022 update

No. of samples received : 15 No. of samples analysed : 14

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kate Dimitrova	Analsyt	Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Parnian Sane	Analyst	Metals, Burnaby, British Columbia
Sam Silveira	Lab Assistant	Metals, Burnaby, British Columbia

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General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances LOR: Limit of Reporting (detection limit).

Unit	Description	
-	no units	
%	percent	
μg/g	micrograms per gram	
μg/g μg/L	micrograms per litre	
mg/kg	milligrams per kilogram	
pH units	pH units	

<: less than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

Additional data has been added.

Qualifiers

Qualifier	Description
ADLI	Acridine Detection Limit was increased due to sample matrix issues which caused
	low d9-Acridine surrogate or internal std. recoveries (confirmed by re-analysis).
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.
DLHM	Detection Limit Adjusted: Sample has high moisture content.
DLQ	Detection Limit raised due to co-eluting interference. Mass Spectrometry qualifier ion ratio did not meet acceptance criteria.

>: greater than.

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 Client
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Analytical Results

Sub-Matrix: Soil/Solid			CI	ient sample ID	TH23-11A	TH23-11B	TH23-12B	TH23-13A	TH23-13B
(Matrix: Soil/Solid)									
			Client samp	ling date / time	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3448-001	VA23B3448-002	VA23B3448-004	VA23B3448-005	VA23B3448-006
. 3					Result	Result	Result	Result	Result
Physical Tests									
% Saturation		E141/VA	1.0	%	67.4	66.8	23.2	69.2	51.2
Moisture		E144/VA	0.25	%	25.8		12.0	32.7	
pH (1:2 soil:water)		E108/VA	0.10	pH units	5.87		6.31	5.56	
Saturated Paste Extractables									
Chloride, soluble ion content	16887-00-6	EC239A.CI/V	1.0	μg/g	144	56.1	32.9	112	56.3
Chloride, soluble ion content	16887-00-6	E239.CI/VA	20000	μg/L	213000	84000	142000	162000	110000
Sodium, soluble ion content	17341-25-2		1.00	μg/g	102	31.5	14.1	39.5	24.7
Sodium, soluble ion content	17341-25-2		20000	μg/L	151000	47200	60900	57100	48300
Metals									
Aluminum	7429-90-5	E440/VA	50	μg/g	34200		22600	34000	
Antimony	7440-36-0	E440/VA	0.10	μg/g	0.17		0.16	0.13	
Arsenic	7440-38-2	E440/VA	0.10	μg/g	6.83		4.37	3.43	
Barium	7440-39-3	E440/VA	0.50	μg/g	89.6		43.0	80.6	
Beryllium	7440-41-7	E440/VA	0.10	μg/g	0.44		0.25	0.66	
Bismuth	7440-69-9	E440/VA	0.20	μg/g	<0.20		<0.20	<0.20	
Boron	7440-42-8	E440/VA	5.0	μg/g	<5.0		<5.0	<5.0	
Cadmium	7440-43-9	E440/VA	0.020	μg/g	0.034		0.080	0.123	
Calcium	7440-70-2	E440/VA	50	μg/g	4960		6910	5110	
Chromium	7440-47-3	E440/VA	0.50	μg/g	57.3		47.7	54.1	
Cobalt	7440-48-4	E440/VA	0.10	μg/g	15.0		13.5	10.4	
Copper	7440-50-8	E440/VA	0.50	μg/g	27.1		44.2	38.1	
Iron	7439-89-6	E440/VA	50	μg/g	34500		31000	28900	
Lead	7439-92-1	E440/VA	0.50	μg/g	4.71		3.53	4.40	
Lithium	7439-93-2	E440/VA	2.0	μg/g	17.9		13.5	14.0	
Magnesium	7439-95-4	E440/VA	20	μg/g	9220		11000	7520	
Manganese	7439-96-5	E440/VA	1.0	μg/g	547		754	704	
Mercury	7439-97-6	E510/VA	0.0500	μg/g	<0.0500		<0.0500	0.0604	
Molybdenum	7439-98-7	E440/VA	0.10	μg/g	0.55		0.40	0.53	
Nickel	7440-02-0	E440/VA	0.50	μg/g	37.5		33.0	31.0	

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McElhanney Ltd. 2241-20128-00 T2017 Client Project



Analytical Results

Analytical Results								
Sub-Matrix: Soil/Solid		C	lient sample ID	TH23-11A	TH23-11B	TH23-12B	TH23-13A	TH23-13B
(Matrix: Soil/Solid)								
		Client samp	oling date / time	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Analyte	CAS Number Method/Lab	LOR	Unit	VA23B3448-001	VA23B3448-002	VA23B3448-004	VA23B3448-005	VA23B3448-006
				Result	Result	Result	Result	Result
Metals								
Phosphorus	7723-14-0 E440/VA	50	μg/g	588		564	575	
Potassium	7440-09-7 E440/VA	100	μg/g	610		580	690	
Selenium	7782-49-2 E440/VA	0.20	μg/g	0.42		<0.20	0.80	
Silver	7440-22-4 E440/VA	0.10	μg/g	0.13		<0.10	0.14	
Sodium	7440-23-5 E440/VA	50	μg/g	474		196	279	
Strontium	7440-24-6 E440/VA	0.50	μg/g	31.4		27.0	32.6	
Sulfur	7704-34-9 E440/VA	1000	μg/g	<1000		<1000	<1000	
Thallium	7440-28-0 E440/VA	0.050	μg/g	0.086		<0.050	0.080	
Tin	7440-31-5 E440/VA	2.0	μg/g	<2.0		<2.0	<2.0	
Titanium	7440-32-6 E440/VA	1.0	μg/g	1460		1360	1410	
Tungsten	7440-33-7 E440/VA	0.50	μg/g	<0.50		<0.50	<0.50	
Uranium	7440-61-1 E440/VA	0.050	μg/g	0.425		0.266	0.678	
Vanadium	7440-62-2 E440/VA	0.20	μg/g	104		74.1	81.7	
Zinc	7440-66-6 E440/VA	2.0	μg/g	56.6		53.4	49.8	
Zirconium	7440-67-7 E440/VA	1.0	μg/g	1.4		1.6	1.8	
Hydrocarbons								
EPH (C10-C19)	E601A/VA	200	μg/g	<200		<200	<200	
EPH (C19-C32)	E601A/VA	200	μg/g	<200		<200	<200	
HEPHs	EC600A/VA	200	μg/g	<200		<200	<200	
LEPHs	EC600A/VA	200	μg/g	<200		<200	<200	
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (EPH surrogate)	392-83-6 E601A/VA	1.0	%	100		100	109	
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9 E641A-L/VA	0.0050	μg/g	<0.0050		<0.0050	<0.0050	
Acenaphthylene	208-96-8 E641A-L/VA	0.0050	μg/g	<0.0050		<0.0050	<0.0050	
Acridine	260-94-6 E641A-L/VA	0.010	μg/g	<0.010		<0.010	<0.010	
Anthracene	120-12-7 E641A-L/VA	0.0040	μg/g	<0.0041 DLHM		<0.0040	<0.0044 DLHM	
Benz(a)anthracene	56-55-3 E641A-L/VA	0.010	μg/g	<0.010		<0.010	<0.010	
Benzo(a)pyrene	50-32-8 E641A-L/VA	0.010	μg/g	<0.010		<0.010	<0.010	
Benzo(b+j)fluoranthene	n/a <mark>E641A-L/VA</mark>	0.010	μg/g	<0.010		<0.010	<0.010	
Benzo(b+j+k)fluoranthene	n/a E641A-L/VA	0.015	μg/g	<0.015		<0.015	<0.015	
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 Client
 :
 McElhanney Ltd.

 Project
 :
 2241-20128-00 T2017



Analytical Results

Sub-Matrix: Soil/Solid			Cli	ient sample ID	TH23-11A	TH23-11B	TH23-12B	TH23-13A	TH23-13B
(Matrix: Soil/Solid)									
			Client samp	ling date / time	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3448-001	VA23B3448-002	VA23B3448-004	VA23B3448-005	VA23B3448-006
					Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons									
Benzo(g,h,i)perylene	191-24-2	E641A-L/VA	0.010	μg/g	<0.010		<0.010	<0.010	
Benzo(k)fluoranthene	207-08-9	E641A-L/VA	0.010	μg/g	<0.010		<0.010	<0.010	
Chrysene	218-01-9	E641A-L/VA	0.010	μg/g	<0.010		<0.010	<0.010	
Dibenz(a,h)anthracene	53-70-3	E641A-L/VA	0.0050	μg/g	<0.0050		<0.0050	<0.0050	
Fluoranthene	206-44-0	E641A-L/VA	0.010	μg/g	<0.010		<0.010	<0.010	
Fluorene	86-73-7	E641A-L/VA	0.010	μg/g	<0.010		<0.010	<0.010	
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L/VA	0.010	μg/g	<0.010		<0.010	<0.010	
Methylnaphthalene, 1-	90-12-0	E641A-L/VA	0.010	μg/g	<0.010		<0.010	<0.010	
Methylnaphthalene, 2-	91-57-6	E641A-L/VA	0.010	μg/g	<0.010		<0.010	<0.010	
Naphthalene	91-20-3	E641A-L/VA	0.010	μg/g	<0.010		<0.010	<0.010	
Phenanthrene	85-01-8	E641A-L/VA	0.010	μg/g	<0.010		<0.010	<0.010	
Pyrene	129-00-0	E641A-L/VA	0.010	μg/g	<0.010		<0.010	<0.010	
Quinoline	91-22-5	E641A-L/VA	0.010	μg/g	<0.010		<0.010	<0.010	
B(a)P total potency equivalents [B(a)P TPE]		E641A-L/VA	0.020	μg/g	<0.020		<0.020	<0.020	
IACR (CCME)		E641A-L/VA	0.150	-	<0.150		<0.150	<0.150	
Polycyclic Aromatic Hydrocarbons Surrogates									
Acridine-d9	34749-75-2	E641A-L/VA	0.1	%	96.8		107	80.5	
Chrysene-d12	1719-03-5	E641A-L/VA	0.1	%	111		109	109	
Naphthalene-d8	1146-65-2	E641A-L/VA	0.1	%	108		108	109	
Phenanthrene-d10	1517-22-2	E641A-L/VA	0.1	%	116		114	114	

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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Analytical Results

Sub-Matrix: Soil/Solid			CI	ient sample ID	TH23-14A	TH23-14B	TH23-15A	TH23-15B	HA23-02
(Matrix: Soil/Solid)									
			Client samp	ling date / time	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3448-007	VA23B3448-008	VA23B3448-009	VA23B3448-010	VA23B3448-011
Timelyte	Onto Ivalilison				Result	Result	Result	Result	Result
Physical Tests									
% Saturation		E141/VA	1.0	%	91.1	54.2	64.3	107	55.3
Moisture		E144/VA	0.25	%	36.5		25.7		24.5
pH (1:2 soil:water)		E108/VA	0.10	pH units	4.70		5.37		6.91
Saturated Paste Extractables									
Chloride, soluble ion content	16887-00-6	EC239A.CI/V	1.0	μg/g	230	147	502	503	<11.1
		A							
Chloride, soluble ion content	16887-00-6		20000	μg/L	252000	272000	781000	470000	<20000
Sodium, soluble ion content	17341-25-2		1.00	µg/g	81.1	49.9	248	287	<11.1
Sodium, soluble ion content	17341-25-2	E442/VA	20000	μg/L	89000	92100	385000	268000	<20000
Metals									
Aluminum	7429-90-5		50	µg/g	39200		37200		29100
Antimony	7440-36-0		0.10	µg/g	0.14		0.16		0.37
Arsenic	7440-38-2		0.10	µg/g	5.34		4.41		7.11
Barium	7440-39-3		0.50	μg/g	112		138		94.8
Beryllium	7440-41-7		0.10	µg/g	0.54		0.44		0.41
Bismuth	7440-69-9		0.20	µg/g	<0.20		<0.20		<0.20
Boron	7440-42-8		5.0	µg/g	<5.0		<5.0		<5.0
Cadmium	7440-43-9		0.020	μg/g	0.097		0.068		0.101
Calcium	7440-70-2		50	µg/g	5230		5990		7760
Chromium	7440-47-3		0.50	μg/g	53.3		55.9		51.5
Cobalt	7440-48-4		0.10	μg/g	14.6		14.6		21.6
Copper	7440-50-8		0.50	µg/g	32.7		24.7		39.5
Iron	7439-89-6		50	μg/g	34300		37000		39700
Lead	7439-92-1		0.50	µg/g	5.53		5.04		5.35
Lithium	7439-93-2		2.0	µg/g	17.2		17.8		15.4
Magnesium	7439-95-4		20	μg/g	9240		10300		11000
Manganese	7439-96-5		1.0	µg/g	741		818		1040
Mercury	7439-97-6		0.0500	µg/g	0.0815		0.0541		<0.0500
Molybdenum	7439-98-7		0.10	μg/g	0.80		0.41		0.46
Nickel	7440-02-0		0.50	μg/g	37.5		45.6		39.2
Phosphorus	7723-14-0	E440/VA	50	μg/g	482		440		558

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Analytical Results

Sub-Matrix: Soil/Solid		Ci	lient sample ID	TH23-14A	TH23-14B	TH23-15A	TH23-15B	HA23-02
(Matrix: Soil/Solid)								
		Client samp	oling date / time	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Analyte	CAS Number Method/Lab	LOR	Unit	VA23B3448-007	VA23B3448-008	VA23B3448-009	VA23B3448-010	VA23B3448-011
				Result	Result	Result	Result	Result
Metals								
Potassium	7440-09-7 E440/VA	100	μg/g	820		790		730
Selenium	7782-49-2 E440/VA	0.20	μg/g	0.70		0.32		0.27
Silver	7440-22-4 E440/VA	0.10	μg/g	0.12		<0.10		<0.10
Sodium	7440-23-5 E440/VA	50	μg/g	280		569		224
Strontium	7440-24-6 E440/VA	0.50	μg/g	35.7		42.3		36.4
Sulfur	7704-34-9 E440/VA	1000	μg/g	<1000		<1000		<1000
Thallium	7440-28-0 E440/VA	0.050	μg/g	0.097		0.081		0.053
Tin	7440-31-5 E440/VA	2.0	μg/g	<2.0		<2.0		<2.0
Titanium	7440-32-6 E440/VA	1.0	μg/g	1580		1800		1650
Tungsten	7440-33-7 E440/VA	0.50	μg/g	<0.50		<0.50		<0.50
Uranium	7440-61-1 E440/VA	0.050	μg/g	0.618		0.405		0.350
Vanadium	7440-62-2 E440/VA	0.20	μg/g	86.8		95.1		97.7
Zinc	7440-66-6 E440/VA	2.0	μg/g	69.5		65.4		145
Zirconium	7440-67-7 E440/VA	1.0	μg/g	1.7		2.0		2.7
Hydrocarbons								
EPH (C10-C19)	E601A/VA	200	μg/g	<200		<200		<200
EPH (C19-C32)	E601A/VA	200	μg/g	<200		<200		<200
HEPHs	EC600A/VA	200	μg/g	<200		<200		<200
LEPHs	EC600A/VA	200	µg/g	<200		<200		<200
Hydrocarbons Surrogates		THE RES						
Bromobenzotrifluoride, 2- (EPH surrogate)	392-83-6 E601A/VA	1.0	%	101		90.8		106
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9 E641A-L/VA	0.0050	μg/g	<0.0050		<0.0050		<0.0050
Acenaphthylene	208-96-8 E641A-L/VA	0.0050	μg/g	<0.0050		<0.0050		<0.0050
Acridine	260-94-6 E641A-L/VA	0.010	μg/g	<0.010		<0.010		<0.010
Anthracene	120-12-7 E641A-L/VA	0.0040	μg/g	<0.0048 DLHM		<0.0042 DLHM		<0.0040
Benz(a)anthracene	56-55-3 E641A-L/VA	0.010	μg/g	<0.010		<0.010		<0.010
Benzo(a)pyrene	50-32-8 E641A-L/VA	0.010	μg/g	<0.010		<0.010		<0.010
Benzo(b+j)fluoranthene	n/a E641A-L/VA	0.010	μg/g	<0.010		<0.010		0.013
Benzo(b+j+k)fluoranthene	n/a E641A-L/VA	0.015	μg/g	<0.015		<0.015		<0.015
Benzo(g,h,i)perylene	191-24-2 E641A-L/VA	0.010	μg/g	<0.010		<0.010		<0.010
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Sub-Matrix: Soil/Solid			Ci	lient sample ID	TH23-14A	TH23-14B	TH23-15A	TH23-15B	HA23-02
(Matrix: Soil/Solid)									
			Client samp	oling date / time	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3448-007	VA23B3448-008	VA23B3448-009	VA23B3448-010	VA23B3448-011
					Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons									
Benzo(k)fluoranthene		E641A-L/VA	0.010	μg/g	<0.010		<0.010		<0.010
Chrysene	218-01-9	E641A-L/VA	0.010	μg/g	<0.010		<0.010		<0.014 DLCI
Dibenz(a,h)anthracene	53-70-3	E641A-L/VA	0.0050	μg/g	<0.0050		<0.0050		<0.0050
Fluoranthene	206-44-0	E641A-L/VA	0.010	μg/g	<0.010		<0.010		0.021
Fluorene	86-73-7	E641A-L/VA	0.010	μg/g	<0.010		<0.010		<0.010
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L/VA	0.010	μg/g	<0.010		<0.010		<0.010
Methylnaphthalene, 1-	90-12-0	E641A-L/VA	0.010	μg/g	<0.010		<0.010		<0.010
Methylnaphthalene, 2-	91-57-6	E641A-L/VA	0.010	μg/g	<0.010		<0.010		<0.010
Naphthalene	91-20-3	E641A-L/VA	0.010	μg/g	<0.010		<0.010		<0.010
Phenanthrene	85-01-8	E641A-L/VA	0.010	μg/g	<0.010		<0.010		0.017
Pyrene	129-00-0	E641A-L/VA	0.010	μg/g	<0.010		<0.010		0.026
Quinoline	91-22-5	E641A-L/VA	0.010	μg/g	<0.010		<0.010		<0.010
B(a)P total potency equivalents [B(a)P TPE]		E641A-L/VA	0.020	μg/g	<0.020		<0.020		<0.020
IACR (CCME)		E641A-L/VA	0.150	-	<0.150		<0.150		0.158
Polycyclic Aromatic Hydrocarbons Surrogates									
Acridine-d9	34749-75-2	E641A-L/VA	0.1	%	94.5		87.0		103
Chrysene-d12	1719-03-5	E641A-L/VA	0.1	%	113		100		105
Naphthalene-d8	1146-65-2	E641A-L/VA	0.1	%	113		99.4		106
Phenanthrene-d10	1517-22-2	E641A-L/VA	0.1	%	117		104		110

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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Analytical Results

Sub-Matrix: Soil/Solid			CI	ient sample ID	HA23-03	HA23-06	HA23-07	DUP B	
(Matrix: Soil/Solid)									
			Oliant assum	lina data (tima	40 1 2022	40 1 2022	40 1 2002	40 him 2002	
				ling date / time	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3448-012	VA23B3448-013	VA23B3448-014	VA23B3448-015	
					Result	Result	Result	Result	
Physical Tests % Saturation		E141/VA	1.0	%	36.7	58.1	31.3	71.7	
Moisture		E144/VA	0.25	% %	15.5	3.90	2.84	30.2	
pH (1:2 soil:water)		E108/VA	0.23	pH units	5.18	5.15	5.75	5.47	
		L100/VA	0.10	pri units	0.10	5.15	3.73	5.47	
Saturated Paste Extractables Chloride, soluble ion content	16997.00.6	EC239A.CI/V	1.0	ua/a	7.7	<11.6	<6.3	119	
omoriac, soluble for content	10007-00-0	A	1.0	μg/g	7.7	411.0	-0.0	110	
Chloride, soluble ion content	16887-00-6	E239.CI/VA	20000	μg/L	21000	<20000	<20000	166000	
Sodium, soluble ion content	17341-25-2	EC442/VA	1.00	μg/g	<7.35	<11.6	<6.27	42.2	
Sodium, soluble ion content	17341-25-2		20000	μg/L	<20000	<20000	<20000	58800	
Metals									
Aluminum	7429-90-5	E440/VA	50	μg/g	23200	20800	25500	32300	
Antimony	7440-36-0	E440/VA	0.10	µg/g	0.16	0.39	0.60	0.11	
Arsenic	7440-38-2	E440/VA	0.10	μg/g	3.94	3.88	8.01	3.14	
Barium	7440-39-3	E440/VA	0.50	μg/g	49.0	48.5	70.4	78.7	
Beryllium	7440-41-7	E440/VA	0.10	µg/g	0.27	0.25	0.28	0.70	
Bismuth	7440-69-9	E440/VA	0.20	μg/g	<0.20	<0.20	<0.20	<0.20	
Boron	7440-42-8	E440/VA	5.0	μg/g	<5.0	<5.0	<5.0	<5.0	
Cadmium	7440-43-9	E440/VA	0.020	μg/g	0.074	0.117	0.152	0.109	
Calcium	7440-70-2	E440/VA	50	μg/g	5840	7250	8210	5680	
Chromium	7440-47-3	E440/VA	0.50	μg/g	49.0	34.4	41.7	47.7	
Cobalt	7440-48-4		0.10	μg/g	12.7	12.9	12.3	10.1	
Copper	7440-50-8	E440/VA	0.50	μg/g	37.6	45.8	57.2	35.0	
Iron	7439-89-6	E440/VA	50	μg/g	29500	31700	29800	27400	
Lead	7439-92-1		0.50	μg/g	6.87	38.5	40.8	4.26	
Lithium	7439-93-2		2.0	μg/g	13.8	12.2	11.6	13.2	
Magnesium	7439-95-4	E440/VA	20	µg/g	10000	11100	9500	7340	
Manganese	7439-96-5		1.0	μg/g	614	574	634	665	
Mercury	7439-97-6	E510/VA	0.0500	μg/g	<0.0500	<0.0500	<0.0500	0.0520	
Molybdenum	7439-98-7		0.10	μg/g	0.53	0.76	0.42	0.64	
Nickel	7440-02-0		0.50	μg/g	31.7	25.5	29.2	29.9	
Phosphorus	7723-14-0	E440/VA	50	μg/g	598	678	1390	519	
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Analytical Results

Analytical Results								
Sub-Matrix: Soil/Solid		C	lient sample ID	HA23-03	HA23-06	HA23-07	DUP B	
(Matrix: Soil/Solid)								
		Client samp	oling date / time	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	
Analyte	CAS Number Method/Lab	LOR	Unit	VA23B3448-012	VA23B3448-013	VA23B3448-014	VA23B3448-015	
				Result	Result	Result	Result	
Metals								
Potassium	7440-09-7 E440/VA	100	μg/g	670	590	660	590	
Selenium	7782-49-2 E440/VA	0.20	μg/g	<0.20	<0.20	0.25	0.68	
Silver	7440-22-4 E440/VA	0.10	μg/g	<0.10	<0.10	<0.10	0.13	
Sodium	7440-23-5 E440/VA	50	μg/g	143	403	203	256	
Strontium	7440-24-6 E440/VA	0.50	μg/g	24.8	30.1	39.3	34.8	
Sulfur	7704-34-9 E440/VA	1000	μg/g	<1000	<1000	<1000	<1000	
Thallium	7440-28-0 E440/VA	0.050	μg/g	<0.050	<0.050	<0.050	0.076	
Tin	7440-31-5 E440/VA	2.0	μg/g	<2.0	<2.0	<2.0	<2.0	
Titanium	7440-32-6 E440/VA	1.0	μg/g	1260	1590	1480	1310	
Tungsten	7440-33-7 E440/VA	0.50	μg/g	<0.50	<0.50	<0.50	<0.50	
Uranium	7440-61-1 E440/VA	0.050	μg/g	0.260	0.265	0.300	0.678	
Vanadium	7440-62-2 E440/VA	0.20	μg/g	75.4	89.7	82.6	75.8	
Zinc	7440-66-6 E440/VA	2.0	μg/g	124	77.2	88.0	47.7	
Zirconium	7440-67-7 E440/VA	1.0	μg/g	1.2	2.3	1.7	1.9	
Hydrocarbons			7					
EPH (C10-C19)	E601A/VA	200	μg/g	<200	<200	<200	<200	
EPH (C19-C32)	E601A/VA	200	μg/g	<200	<200	<200	<200	
HEPHs	EC600A/VA	200	μg/g	<200	<200	<200	<200	
LEPHs	EC600A/VA	200	μg/g	<200	<200	<200	<200	
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (EPH surrogate)	392-83-6 E601A/VA	1.0	%	102	103	99.0	103	
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9 E641A-L/VA	0.0050	μg/g	<0.0050	<0.0050	<0.0050	<0.0050	
Acenaphthylene	208-96-8 E641A-L/VA	0.0050	μg/g	<0.0050	<0.0050	<0.0050	<0.0050	
Acridine	260-94-6 E641A-L/VA	0.010	μg/g	<0.010	<0.026 ADLI	<0.010	<0.010	
Anthracene	120-12-7 E641A-L/VA	0.0040	μg/g	<0.0040	<0.0040	<0.0040	<0.0046 DLHM	
Benz(a)anthracene	56-55-3 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	
Benzo(a)pyrene	50-32-8 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.013 DLQ	<0.010	
Benzo(b+j)fluoranthene	n/a E641A-L/VA	0.010	μg/g	<0.010	0.018	0.015	<0.010	
Benzo(b+j+k)fluoranthene	n/a E641A-L/VA	0.015	μg/g	<0.015	0.018	0.015	<0.015	
Benzo(g,h,i)perylene	191-24-2 E641A-L/VA	0.010	μg/g	<0.010	0.019	0.010	<0.010	
(0) / M: 3 : :		1	r:3'3					

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Analytical Results

Sub-Matrix: Soil/Solid			Cl	ient sample ID	HA23-03	HA23-06	HA23-07	DUP B	
(Matrix: Soil/Solid)									l .
			Client samp	ling date / time	12-Jun-2023	12-Jun-2023	12-Jun-2023	12-Jun-2023	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3448-012	VA23B3448-013	VA23B3448-014	VA23B3448-015	
					Result	Result	Result	Result	
Polycyclic Aromatic Hydrocarbons									
Benzo(k)fluoranthene		E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	
Chrysene	218-01-9	E641A-L/VA	0.010	μg/g	<0.010	<0.015 DLCI	<0.010	<0.010	
Dibenz(a,h)anthracene	53-70-3	E641A-L/VA	0.0050	μg/g	<0.0050	<0.0050	<0.0050	<0.0050	
Fluoranthene	206-44-0	E641A-L/VA	0.010	μg/g	<0.010	0.022	0.014	<0.010	
Fluorene	86-73-7	E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L/VA	0.010	μg/g	<0.010	0.012	<0.010	<0.010	
Methylnaphthalene, 1-	90-12-0	E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	
Methylnaphthalene, 2-	91-57-6	E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	
Naphthalene	91-20-3	E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	
Phenanthrene	85-01-8	E641A-L/VA	0.010	μg/g	<0.010	0.012	<0.010	<0.010	
Pyrene	129-00-0	E641A-L/VA	0.010	μg/g	<0.010	0.019	0.014	<0.010	
Quinoline	91-22-5	E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	
B(a)P total potency equivalents [B(a)P TPE]		E641A-L/VA	0.020	μg/g	<0.020	<0.020	<0.020	<0.020	
IACR (CCME)		E641A-L/VA	0.150	-	<0.150	0.194	0.174	<0.150	
Polycyclic Aromatic Hydrocarbons Surrogates									
Acridine-d9	34749-75-2	E641A-L/VA	0.1	%	87.8	38.4 ADLI	76.0	80.5	
Chrysene-d12	1719-03-5	E641A-L/VA	0.1	%	103	104	97.0	110	
Naphthalene-d8	1146-65-2	E641A-L/VA	0.1	%	103	109	96.6	109	
Phenanthrene-d10	1517-22-2	E641A-L/VA	0.1	%	107	110	102	114	

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **VA23B3448** Page : 1 of 18

Amendment :1

Client : McElhanney Ltd. Laboratory : Vancouver - Environmental

Contact : Victoria Amson : Dean Watt

:# 500 - 3960 Quadra Street Address : 8081 Lougheed Highway

Victoria BC Canada V8X 4A3

Burnaby, British Columbia Canada V5A 1W9

 Telephone
 : 250 370 9221
 Telephone
 : +1 604 253 4188

 Project
 : 2241-20128-00 T2017
 Date Samples Received
 : 14-Jun-2023 11:10

PO : ---- Issue Date : 22-Jun-2023 16:55
C-O-C number : ---Sampler : MM / LD

Site :---Quote number : BC/Yukon Standing Offer - 2022 update

No. of samples received :15
No. of samples analysed :14

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Address

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers Outliers : Quality Control Samples

No Method Blank value outliers occur.

- No Matrix Spike outliers occur.
- Duplicate outliers occur please see following pages for full details.
- Laboratory Control Sample (LCS) outliers occur please see following pages for full details.
- Test sample Surrogate recovery outliers exist for all regular sample matrices please see following pages for full details.

Outliers: Reference Material (RM) Samples

• Reference Material (RM) Sample outliers occur - please see the following pages for full details.

Outliers : Analysis Holding Time Compliance (Breaches) ■ No Analysis Holding Time Outliers exist.

Outliers: Frequency of Quality Control Samples • No Quality Control Sample Frequency Outliers occur.



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Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: Soil/Solid

J

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Metals	Anonymous	Anonymous	Cadmium	7440-43-9	E440	0.065 % DUP-H,	Diff <2x LOR	Low Level DUP DQO
						J		exceeded (difference > 2
								LOR).

Result Qualifiers

Qualifier Description

DUP-H Duplicate results outside ALS DQO, due to sample heterogeneity.

Duplicate results and limits are expressed in terms of absolute difference.

Laboratory Control Sample (LCS) Recover	ies						
Metals	QC-MRG2-9947470	 Aluminum	7429-90-5	E440	124 % MES	80.0-120%	Recovery greater than
	02						upper control limit

Result Qualifiers

 Qualifier
 Description

 MES
 Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a</td>

Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).

Reference Material (RM) Sample							
Metals	QC-MRG2-9947470	 Cadmium	7440-43-9	E440	134 % MES	70.0-130%	Recovery greater than
	03						upper control limit

Result Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a
	Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).

Regular Sample Surrogates

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Result	Limits	Comment
Samples Submitted							
Polycyclic Aromatic Hydrocarbons Surrogates	VA23B3448-013	HA23-06	Acridine-d9	34749-75-2	38.4 %	60.0-130	Recovery less than lower
						%	data quality objective

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Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and/or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Preparation Preparation Preparation Preparation Preparation Preparation Rec Actual Rec Actu	Matrix: Soil/Solid					Evaluation: × =	Holding time excee	edance ; 🔻	= Within	Holding Time
Collass soil jar/Teffon lined cap E601A 12-Jun-2023 18-Jun-2023 14 6 days 20-Jun-2023 40 days 2 days	Analyte Group	Method	Sampling Date	Ext	traction / Preparati	on		Analys	is	
Date Rec Actual Rec Actual Rec Actual	Container / Client Sample ID(s)			Preparation	Holding Time	es Eval	Analysis Date	Holding	Times	Eval
Class soil arTeflon lined cap E601A 12-Jun-2023 18-Jun-2023 14 6 days ✓ 20-Jun-2023 40 days 2 days				Date	Rec Actu	ıal		Rec	Actual	
DUP B E601A 12-Jun-2023 18-Jun-2023 14 days	Hydrocarbons : BC PHCs - EPH by GC-FID									
days	Glass soil jar/Teflon lined cap									
	DUP B	E601A	12-Jun-2023	18-Jun-2023	14 6 da	ys ✓	20-Jun-2023	40 days	2 days	✓
E601A 12-Jun-2023 18-Jun-2023 14 days 20-Jun-2023 40 days 2 days 40 days 2 days 40 days 40 days 2 days 40 days 40 days 2 days 40 days					days					
HA23-02 E601A 12-Jun-2023 18-Jun-2023 14 days 40 days 2 days 40 days 2 days 40 days 40 days 2 days 40 days	Hydrocarbons : BC PHCs - EPH by GC-FID									
days	Glass soil jar/Teflon lined cap									
State Stat	HA23-02	E601A	12-Jun-2023	18-Jun-2023	14 6 da	ys ✓	20-Jun-2023	40 days	2 days	✓
E601A 12-Jun-2023 18-Jun-2023 14 6 days ✓ 20-Jun-2023 40 days 2 days ✓ 20-Jun-2023 40 days ✓ 20-Jun-2023 40 days ✓ 20-Jun-2023 40 days ✓ 20-Jun-2023 ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓					days					
HA23-03	Hydrocarbons : BC PHCs - EPH by GC-FID									
Aydrocarbons : BC PHCs - EPH by GC-FID	Glass soil jar/Teflon lined cap									
Addrocarbons : BC PHCs - EPH by GC-FID Glass soil jar/Teflon lined cap HA23-06 E601A 12-Jun-2023 18-Jun-2023 14 6 days 40 days 20-Jun-2023 40 days 2 days Addrocarbons : BC PHCs - EPH by GC-FID Glass soil jar/Teflon lined cap HA23-07 E601A 12-Jun-2023 18-Jun-2023 18-Jun-2023 14 6 days 40 days 2 days 40 days 2 days 40 days 2 days 40 days 4	HA23-03	E601A	12-Jun-2023	18-Jun-2023	14 6 da	ys √	20-Jun-2023	40 days	2 days	✓
E601A 12-Jun-2023 18-Jun-2023 14 6 days ✓ 20-Jun-2023 40 days 2 days ✓ 20-Jun-2023 2 days ✓ 2 days					days					
HA23-06 E601A 12-Jun-2023 18-Jun-2023 14 days 6 days ✓ 20-Jun-2023 40 days 2 days ✓ 14 days 19 drydrocarbons: BC PHCs - EPH by GC-FID Glass soil jar/Teflon lined cap HA23-07 E601A 12-Jun-2023 18-Jun-2023 14 days 6 days ✓ 20-Jun-2023 40 days 2 days ✓ 40 days 2 days ✓ 40 days 2 days ✓ 40 days 40 days 2 days ✓ 40 days 40	Hydrocarbons : BC PHCs - EPH by GC-FID									
days	Glass soil jar/Teflon lined cap									
Section Sect	HA23-06	E601A	12-Jun-2023	18-Jun-2023	14 6 da	ys ✓	20-Jun-2023	40 days	2 days	✓
Glass soil jar/Teflon lined cap HA23-07 E601A 12-Jun-2023 18-Jun-2023 14 6 days ✓ 20-Jun-2023 40 days ✓ 2 days ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓					days					
HA23-07 E601A 12-Jun-2023 18-Jun-2023 14 days 6 days ✓ 20-Jun-2023 40 days 2 days ✓ Wydrocarbons: BC PHCs - EPH by GC-FID Glass soil jar/Teflon lined cap TH23-13A E601A 12-Jun-2023 18-Jun-2023 14 days 6 days ✓ 20-Jun-2023 40 days 2 days ✓ Wydrocarbons: BC PHCs - EPH by GC-FID Glass soil jar/Teflon lined cap TH23-14A E601A 12-Jun-2023 18-Jun-2023 14 days 40 days 2 days ✓ 20-Jun-2023 40 days 2 days ✓	Hydrocarbons : BC PHCs - EPH by GC-FID									
days	Glass soil jar/Teflon lined cap									
Section Sec	HA23-07	E601A	12-Jun-2023	18-Jun-2023	14 6 da	ys ✓	20-Jun-2023	40 days	2 days	✓
Glass soil jar/Teflon lined cap TH23-13A E601A 12-Jun-2023 18-Jun-2023 14 6 days ✓ 20-Jun-2023 40 days ✓ 2 days ✓					days					
TH23-13A	Hydrocarbons : BC PHCs - EPH by GC-FID									
Hydrocarbons : BC PHCs - EPH by GC-FID Glass soil jar/Teflon lined cap TH23-14A E601A 12-Jun-2023 18-Jun-2023 14 6 days ✓ 20-Jun-2023 40 days 2 days ✓	Glass soil jar/Teflon lined cap									
lydrocarbons : BC PHCs - EPH by GC-FID Glass soil jar/Teflon lined cap TH23-14A E601A 12-Jun-2023 18-Jun-2023 14 6 days ✓ 20-Jun-2023 40 days 2 days ✓	TH23-13A	E601A	12-Jun-2023	18-Jun-2023	14 6 da	ys √	20-Jun-2023	40 days	2 days	✓
Glass soil jar/Teflon lined cap E601A 12-Jun-2023 18-Jun-2023 14 6 days ✓ 20-Jun-2023 40 days 2 days ✓					days					
TH23-14A	Hydrocarbons : BC PHCs - EPH by GC-FID									
	Glass soil jar/Teflon lined cap									
days	TH23-14A	E601A	12-Jun-2023	18-Jun-2023	14 6 da	ys ✓	20-Jun-2023	40 days	2 days	✓
					days					

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Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Sampling Date Analysis Analyte Group Method Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date Hydrocarbons: BC PHCs - EPH by GC-FID Glass soil jar/Teflon lined cap E601A 12-Jun-2023 18-Jun-2023 6 days 20-Jun-2023 40 days 1 TH23-15A 2 days 14 days Hydrocarbons: BC PHCs - EPH by GC-FID Glass soil jar/Teflon lined cap ✓ TH23-11A E601A 12-Jun-2023 19-Jun-2023 14 8 days 20-Jun-2023 40 days 1 days ✓ days Hydrocarbons : BC PHCs - EPH by GC-FID Glass soil jar/Teflon lined cap TH23-12B E601A 12-Jun-2023 19-Jun-2023 8 days ✓ 20-Jun-2023 40 days 1 days ✓ 14 davs Metals : Mercury in Soil/Solid by CVAAS Glass soil jar/Teflon lined cap 12-Jun-2023 E510 19-Jun-2023 ✓ DUP B 20-Jun-2023 28 days 9 days Metals: Mercury in Soil/Solid by CVAAS Glass soil jar/Teflon lined cap HA23-02 E510 12-Jun-2023 19-Jun-2023 20-Jun-2023 28 days 9 days ✓ Metals : Mercury in Soil/Solid by CVAAS Glass soil jar/Teflon lined cap E510 12-Jun-2023 HA23-03 19-Jun-2023 20-Jun-2023 28 days 9 days ----Metals : Mercury in Soil/Solid by CVAAS Glass soil jar/Teflon lined cap HA23-06 E510 12-Jun-2023 19-Jun-2023 20-Jun-2023 28 days 9 days ✓ Metals : Mercury in Soil/Solid by CVAAS Glass soil jar/Teflon lined cap HA23-07 9 days ✓ E510 12-Jun-2023 19-Jun-2023 20-Jun-2023 28 days Metals : Mercury in Soil/Solid by CVAAS Glass soil jar/Teflon lined cap 1 E510 12-Jun-2023 19-Jun-2023 20-Jun-2023 28 days 9 days TH23-11A

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Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Sampling Date Analysis Analyte Group Method Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date **Holding Times** Eval Rec Actual Rec Actual Date Metals: Metals in Soil/Solid by CRC ICPMS Glass soil jar/Teflon lined cap E440 12-Jun-2023 19-Jun-2023 20-Jun-2023 1 TH23-11A 9 days 180 days Metals: Metals in Soil/Solid by CRC ICPMS Glass soil jar/Teflon lined cap TH23-12B E440 12-Jun-2023 19-Jun-2023 20-Jun-2023 180 9 days 1 days Metals : Metals in Soil/Solid by CRC ICPMS Glass soil jar/Teflon lined cap TH23-13A E440 12-Jun-2023 19-Jun-2023 20-Jun-2023 9 days 1 180 days Metals : Metals in Soil/Solid by CRC ICPMS Glass soil jar/Teflon lined cap 12-Jun-2023 E440 19-Jun-2023 ✓ TH23-14A 20-Jun-2023 180 9 days days Metals: Metals in Soil/Solid by CRC ICPMS Glass soil jar/Teflon lined cap TH23-15A E440 12-Jun-2023 19-Jun-2023 20-Jun-2023 9 days ✓ 180 days **Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap DUP B E144 12-Jun-2023 17-Jun-2023 ------------**Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap HA23-02 E144 12-Jun-2023 17-Jun-2023 **Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap HA23-03 E144 17-Jun-2023 12-Jun-2023 **Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap E144 12-Jun-2023 17-Jun-2023 HA23-06

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Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Sampling Date Analysis Analyte Group Method Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date **Holding Times** Eval Rec Actual Rec Actual Date **Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap HA23-07 E144 12-Jun-2023 17-Jun-2023 **Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap TH23-11A E144 12-Jun-2023 17-Jun-2023 **Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap TH23-12B E144 12-Jun-2023 17-Jun-2023 ----**Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap 12-Jun-2023 E144 TH23-13A 17-Jun-2023 **Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap TH23-14A E144 12-Jun-2023 17-Jun-2023 **Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap E144 12-Jun-2023 TH23-15A 17-Jun-2023 --------Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap DUP B E108 12-Jun-2023 19-Jun-2023 19-Jun-2023 30 days 8 days ✓ Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap HA23-02 30 days 8 days ✓ E108 12-Jun-2023 19-Jun-2023 19-Jun-2023 Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap E108 1 HA23-03 12-Jun-2023 19-Jun-2023 19-Jun-2023 30 days 8 days

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Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Sampling Date Analysis Analyte Group Method Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date Physical Tests: pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap HA23-06 E108 12-Jun-2023 19-Jun-2023 19-Jun-2023 30 days 8 days 1 Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap 30 days HA23-07 E108 12-Jun-2023 19-Jun-2023 19-Jun-2023 8 days ✓ Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap TH23-11A E108 12-Jun-2023 19-Jun-2023 20-Jun-2023 30 days 8 days ✓ Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap 12-Jun-2023 E108 19-Jun-2023 TH23-12B 20-Jun-2023 30 days 8 days Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap TH23-13A E108 12-Jun-2023 19-Jun-2023 19-Jun-2023 30 days 8 days ✓ Physical Tests: pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap E108 12-Jun-2023 TH23-14A 19-Jun-2023 19-Jun-2023 30 days 8 days ----Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap TH23-15A E108 12-Jun-2023 19-Jun-2023 19-Jun-2023 30 days 8 days ✓ **Physical Tests: Saturation Percentage** LDPE bag DUP B E141 0 days 12-Jun-2023 20-Jun-2023 20-Jun-2023 **Physical Tests: Saturation Percentage** LDPE bag E141 20-Jun-2023 12-Jun-2023 20-Jun-2023 0 days HA23-02

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Matrix: Soil/Solid Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time Extraction / Preparation Sampling Date Analysis Analyte Group Method Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date **Holding Times** Eval Rec Actual Rec Actual Date **Physical Tests: Saturation Percentage** LDPE bag E141 HA23-03 12-Jun-2023 20-Jun-2023 20-Jun-2023 0 days **Physical Tests: Saturation Percentage** LDPE bag HA23-06 E141 12-Jun-2023 20-Jun-2023 20-Jun-2023 0 days **Physical Tests: Saturation Percentage** LDPE bag HA23-07 E141 12-Jun-2023 20-Jun-2023 20-Jun-2023 0 days ----**Physical Tests: Saturation Percentage** LDPE bag 12-Jun-2023 E141 20-Jun-2023 TH23-11A 20-Jun-2023 0 days **Physical Tests: Saturation Percentage** LDPE bag TH23-11B E141 12-Jun-2023 22-Jun-2023 22-Jun-2023 0 days Physical Tests : Saturation Percentage LDPE bag E141 12-Jun-2023 TH23-12B 20-Jun-2023 20-Jun-2023 ----0 days ----**Physical Tests: Saturation Percentage** LDPE bag TH23-13A E141 12-Jun-2023 20-Jun-2023 20-Jun-2023 0 days Physical Tests : Saturation Percentage LDPE bag E141 22-Jun-2023 0 days TH23-13B 12-Jun-2023 22-Jun-2023 **Physical Tests: Saturation Percentage** LDPE bag E141 12-Jun-2023 20-Jun-2023 20-Jun-2023 0 days TH23-14A

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Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date **Physical Tests: Saturation Percentage** LDPE bag E141 12-Jun-2023 22-Jun-2023 22-Jun-2023 TH23-14B 0 days **Physical Tests: Saturation Percentage** LDPE bag TH23-15A E141 12-Jun-2023 20-Jun-2023 20-Jun-2023 0 days **Physical Tests: Saturation Percentage** LDPE bag E141 12-Jun-2023 22-Jun-2023 22-Jun-2023 0 days TH23-15B Polycyclic Aromatic Hydrocarbons: PAHs by Hex:Ace GC-MS (Low Level CCME) Glass soil jar/Teflon lined cap 12-Jun-2023 E641A-L 1 DUP B 18-Jun-2023 14 6 days 19-Jun-2023 40 days 1 days days Polycyclic Aromatic Hydrocarbons: PAHs by Hex:Ace GC-MS (Low Level CCME) Glass soil jar/Teflon lined cap HA23-02 E641A-L 12-Jun-2023 18-Jun-2023 ✓ 19-Jun-2023 40 days ✓ 6 days 1 days 14 days Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME) Glass soil jar/Teflon lined cap E641A-L 12-Jun-2023 1 HA23-03 18-Jun-2023 14 6 days 19-Jun-2023 40 days 1 days days Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME) Glass soil jar/Teflon lined cap HA23-06 E641A-L 12-Jun-2023 18-Jun-2023 6 days ✓ 19-Jun-2023 40 days ✓ 1 days 14 days Polycyclic Aromatic Hydrocarbons: PAHs by Hex:Ace GC-MS (Low Level CCME) Glass soil jar/Teflon lined cap E641A-L ✓ ✓ HA23-07 12-Jun-2023 18-Jun-2023 14 6 days 19-Jun-2023 40 days 1 days days Polycyclic Aromatic Hydrocarbons: PAHs by Hex:Ace GC-MS (Low Level CCME) Glass soil jar/Teflon lined cap E641A-L ✓ 12-Jun-2023 18-Jun-2023 19-Jun-2023 40 days 1 days ✓ TH23-13A 6 days 14 days

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Matrix: Soil/Solid Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date **Holding Times** Eval Rec Actual Rec Actual Date Polycyclic Aromatic Hydrocarbons: PAHs by Hex:Ace GC-MS (Low Level CCME) Glass soil jar/Teflon lined cap E641A-L 12-Jun-2023 18-Jun-2023 40 days ✓ TH23-14A 6 days 19-Jun-2023 1 days 14 days Polycyclic Aromatic Hydrocarbons: PAHs by Hex:Ace GC-MS (Low Level CCME) Glass soil jar/Teflon lined cap TH23-15A E641A-L 12-Jun-2023 18-Jun-2023 14 6 days ✓ 19-Jun-2023 40 days 1 days ✓ days Polycyclic Aromatic Hydrocarbons: PAHs by Hex:Ace GC-MS (Low Level CCME) Glass soil jar/Teflon lined cap TH23-11A E641A-L 12-Jun-2023 19-Jun-2023 ✓ 20-Jun-2023 40 days 0 days ✓ 14 8 days davs Polycyclic Aromatic Hydrocarbons: PAHs by Hex:Ace GC-MS (Low Level CCME) Glass soil jar/Teflon lined cap 12-Jun-2023 E641A-L 1 ✓ TH23-12B 19-Jun-2023 14 8 days 20-Jun-2023 40 days 0 days days Saturated Paste Extractables: Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) LDPE bag TH23-11B E442 12-Jun-2023 22-Jun-2023 ✓ 22-Jun-2023 ✓ 0 days 365 10 180 days days days Saturated Paste Extractables: Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) LDPE bag E442 12-Jun-2023 1 ✓ TH23-13B 22-Jun-2023 365 10 22-Jun-2023 180 0 days days days days Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) LDPE bag TH23-14B E442 12-Jun-2023 22-Jun-2023 ✓ 22-Jun-2023 ✓ 0 days 365 10 180 days davs days Saturated Paste Extractables: Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) LDPE bag E442 ✓ ✓ TH23-15B 12-Jun-2023 22-Jun-2023 365 10 22-Jun-2023 180 0 days days days days Saturated Paste Extractables: Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) LDPE bag E442 1 DUP B 12-Jun-2023 20-Jun-2023 20-Jun-2023 ✓ 8 days 0 days 365 180 days days

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Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Sampling Date Extraction / Preparation Analyte Group Method Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date Saturated Paste Extractables: Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) LDPE bag E442 12-Jun-2023 20-Jun-2023 ✓ HA23-02 8 days 20-Jun-2023 0 days 365 180 days days Saturated Paste Extractables: Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) LDPE bag HA23-03 E442 12-Jun-2023 20-Jun-2023 365 8 days ✓ 20-Jun-2023 0 days ✓ 180 days days Saturated Paste Extractables: Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) LDPE bag HA23-06 E442 12-Jun-2023 20-Jun-2023 ✓ 20-Jun-2023 ✓ 8 days 0 days 365 180 davs days Saturated Paste Extractables: Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) LDPE bag 12-Jun-2023 E442 1 HA23-07 20-Jun-2023 365 8 days 20-Jun-2023 180 0 days ✓ days days Saturated Paste Extractables: Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) LDPE bag E442 12-Jun-2023 20-Jun-2023 ✓ 20-Jun-2023 0 days ✓ TH23-11A 8 days 365 180 days days Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) LDPE bag E442 12-Jun-2023 8 days ✓ TH23-12B 20-Jun-2023 365 ✓ 20-Jun-2023 180 0 days days days Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) LDPE bag TH23-13A E442 12-Jun-2023 20-Jun-2023 ✓ 20-Jun-2023 ✓ 8 days 0 days 365 180 days days Saturated Paste Extractables: Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) LDPE bag E442 ✓ TH23-14A 12-Jun-2023 20-Jun-2023 365 8 days ✓ 20-Jun-2023 180 0 days days days Saturated Paste Extractables: Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L) LDPE bag E442 12-Jun-2023 20-Jun-2023 ✓ ✓ TH23-15A 8 days 20-Jun-2023 0 days 365 180 days days

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Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date Saturated Paste Extractables : Chloride by IC (Saturated Paste) LDPE bag E239.CI 12-Jun-2023 22-Jun-2023 22-Jun-2023 28 days 0 days ✓ TH23-11B 10 365 days days Saturated Paste Extractables: Chloride by IC (Saturated Paste) LDPE bag TH23-13B E239.CI 12-Jun-2023 22-Jun-2023 365 10 ✓ 22-Jun-2023 28 days 0 days ✓ days days Saturated Paste Extractables : Chloride by IC (Saturated Paste) LDPE bag E239.CI 12-Jun-2023 22-Jun-2023 ✓ 22-Jun-2023 28 days 0 days ✓ TH23-14B 365 10 davs davs Saturated Paste Extractables: Chloride by IC (Saturated Paste) LDPE bag 12-Jun-2023 E239.CI 1 TH23-15B 22-Jun-2023 365 22-Jun-2023 28 days 0 days ✓ 10 days days Saturated Paste Extractables : Chloride by IC (Saturated Paste) LDPE bag DUP B E239.CI 12-Jun-2023 20-Jun-2023 ✓ 20-Jun-2023 28 days ✓ 8 days 0 days 365 days Saturated Paste Extractables: Chloride by IC (Saturated Paste) LDPE bag E239.CI 12-Jun-2023 1 ✓ HA23-02 20-Jun-2023 365 8 days 20-Jun-2023 28 days 0 days days Saturated Paste Extractables : Chloride by IC (Saturated Paste) LDPE bag HA23-03 E239.CI 12-Jun-2023 20-Jun-2023 8 days ✓ 20-Jun-2023 28 days ✓ 0 days 365 days Saturated Paste Extractables: Chloride by IC (Saturated Paste) LDPE bag ✓ ✓ HA23-06 E239.CI 12-Jun-2023 20-Jun-2023 365 8 days 20-Jun-2023 28 days 0 days days Saturated Paste Extractables : Chloride by IC (Saturated Paste) LDPE bag ✓ E239.CI 12-Jun-2023 20-Jun-2023 20-Jun-2023 28 days 0 days ✓ HA23-07 8 days 365 days

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Matrix: Soil/Solid					E	/aluation: ≭ =	Holding time exce	edance ; 🔻	= Within	Holding Tir
Analyte Group	Method	Sampling Date	Ext	raction / Pr	reparation		Analysis			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
LDPE bag										
TH23-11A	E239.CI	12-Jun-2023	20-Jun-2023	365	8 days	✓	20-Jun-2023	28 days	0 days	✓
				days						
Saturated Paste Extractables : Chloride by IC (Saturated Paste)				THE REAL PROPERTY.						
LDPE bag										
TH23-12B	E239.CI	12-Jun-2023	20-Jun-2023	365	8 days	✓	20-Jun-2023	28 days	0 days	✓
				days						
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
LDPE bag										
TH23-13A	E239.Cl	12-Jun-2023	20-Jun-2023	365	8 days	✓	20-Jun-2023	28 days	0 days	✓
				days						
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
LDPE bag										
TH23-14A	E239.CI	12-Jun-2023	20-Jun-2023	365	8 days	✓	20-Jun-2023	28 days	0 days	✓
				days						
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
LDPE bag										
TH23-15A	E239.CI	12-Jun-2023	20-Jun-2023	365	8 days	✓	20-Jun-2023	28 days	0 days	✓
		V		days						

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

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Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Soil/Solid		Evaluation	: × = QC freque	ency outside spe	ecification; ✓ = 0	QC frequency wit	thin specification
Quality Control Sample Type			Co	unt		Frequency (%))
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
BC PHCs - EPH by GC-FID	E601A	994754	2	20	10.0	5.0	✓
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442	994746	3	26	11.5	5.0	✓
Chloride by IC (Saturated Paste)	E239.CI	994744	3	32	9.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	994747	2	28	7.1	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	994748	2	28	7.1	5.0	✓
Moisture Content by Gravimetry	E144	994755	2	20	10.0	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	994753	2	20	10.0	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	994751	2	28	7.1	5.0	✓
Saturation Percentage	E141	994745	2	31	6.4	5.0	✓
Laboratory Control Samples (LCS)							
BC PHCs - EPH by GC-FID	E601A	994754	2	20	10.0	5.0	✓
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442	994746	5	26	19.2	10.0	✓
Chloride by IC (Saturated Paste)	E239.CI	994744	5	32	15.6	10.0	✓
Mercury in Soil/Solid by CVAAS	E510	994747	4	28	14.2	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	994748	4	28	14.2	10.0	✓
Moisture Content by Gravimetry	E144	994755	2	20	10.0	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	994753	2	20	10.0	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	994751	2	28	7.1	5.0	✓
Saturation Percentage	E141	994745	6	31	19.3	10.0	✓
Method Blanks (MB)							
BC PHCs - EPH by GC-FID	E601A	994754	2	20	10.0	5.0	✓
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442	994746	3	26	11.5	5.0	✓
Chloride by IC (Saturated Paste)	E239.CI	994744	3	32	9.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	994747	2	28	7.1	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	994748	2	28	7.1	5.0	✓
Moisture Content by Gravimetry	E144	994755	2	20	10.0	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	994753	2	20	10.0	5.0	✓
Saturation Percentage	E141	994745	3	31	9.6	5.0	✓
Matrix Spikes (MS)							
BC PHCs - EPH by GC-FID	E601A	994754	2	20	10.0	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	994753	2	20	10.0	5.0	✓

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Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 Vancouver - Environmental	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally $20\pm5^{\circ}\text{C}$), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 °C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Saturation Percentage	E141 Vancouver - Environmental	Soil/Solid	CSSS Ch. 15 (mod)/AER D50	Saturation Percentage (SP) is determined as the total volume of water present in a saturated paste (in mL) divided by the dry weight of the sample (in grams), expressed as a percentage.
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Chloride by IC (Saturated Paste)	E239.Cl Vancouver - Environmental	Soil/Solid	CSSS Ch. 15 (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining a soil extract produced by the saturated paste extraction procedure which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Metals in Soil/Solid by CRC ICPMS	E440 Vancouver - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCI. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Ti, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442 Vancouver - Environmental	Soil/Solid	CSSS CH15/EPA 6020B (mod)	A soil extract produced by the saturated paste extraction procedure is analyzed for Calcium, Magnesium, Potassium and Sodium by Collision/Reaction Cell ICPMS as per "Soil Sampling Methods of Analysis" By M Carter.
Mercury in Soil/Solid by CVAAS	E510 Vancouver - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl, followed by CVAAS analysis.
BC PHCs - EPH by GC-FID	E601A Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual (EPH in Solids by GC/FID) (mod)	Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L Vancouver - Environmental	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are extracted with hexane/acetone and analyzed by GC-MS. If reported, IACR (index of additive cancer risk, unitless) and B(a)P toxic potency equivalent (in soil concentration units) are calculated as per CCME PAH Soil Quality Guidelines fact sheet (2010) or ABT1.
Chloride by IC (Saturated Paste) (mg/kg)	EC239A.Cl Vancouver -	Soil/Solid	CSSS Ch. 15 (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining a soil extract produced by the saturated paste extraction procedure which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
	Environmental			
Ca, K, Mg, Na by ICPMS (Saturated Paste, mg/kg)	EC442 Vancouver - Environmental	Soil/Solid	CSSS CH15/EPA 6020B (mod)	A soil extract produced by the saturated paste extraction procedure is analyzed for Calcium, Magnesium, Potassium, Sodium by ICPMS.
LEPH and HEPH: EPH-PAH	EC600A Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual (LEPH and HEPH)	Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH) are calculated as follows: LEPH = Extractable Petroleum Hydrocarbons (EPH10-19) minus Naphthalene and Phenanthrene; HEPH = Extractable Petroleum Hydrocarbons (EPH19-32) minus Benz(a)anthracene, Benzo(b+j+k)fluoranthene, Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-cd)pyrene, and Pyrene.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 Vancouver - Environmental	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Digestion for Metals and Mercury	EP440 Vancouver - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCI. This method is intended to liberate metals that may be environmentally available.
PHCs and PAHs Hexane-Acetone Tumbler Extraction	EP601 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.

ALS Canada Ltd.



QUALITY CONTROL REPORT

Work Order :VA23B3448

Amendment : 1

Client : McElhanney Ltd.

Contact : Victoria Amson

Address :# 500 - 3960 Quadra Street

Victoria BC Canada V8X 4A3

Telephone

Project : 2241-20128-00 T2017

PO :---C-O-C number :---

Sampler : MM / LD 250 370 9221

Site : ---

Quote number : BC/Yukon Standing Offer - 2022 update

No. of samples received : 15
No. of samples analysed : 14

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Laboratory : Vancouver - Environmental

Account Manager : Dean Watt

Address : 8081 Lougheed Highway

Burnaby, British Columbia Canada V5A 1W9

Telephone :+1 604 253 4188

Date Samples Received :14-Jun-2023 11:10

Date Analysis Commenced : 17-Jun-2023

Issue Date : 22-Jun-2023 16:55

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department	
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia	
Kate Dimitrova	Analsyt	Vancouver Inorganics, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia	
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia	
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia	
Parnian Sane	Analyst	Vancouver Metals, Burnaby, British Columbia	
Sam Silveira	Lab Assistant	Vancouver Metals, Burnaby, British Columbia	

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General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Soil/Solid						Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier		
Physical Tests (QC	Lot: 994751)												
VA23B3347-021	Anonymous	pH (1:2 soil:water)		E108	0.10	pH units	6.43	6.43	0.0%	5%			
Physical Tests (QC	Lot: 994755)												
VA23B3347-021	Anonymous	Moisture		E144	0.25	%	20.9	20.9	0.161%	20%			
Physical Tests (QC	Lot: 994844)												
VA23B3448-005	TH23-13A	pH (1:2 soil:water)		E108	0.10	pH units	5.56	5.54	0.4%	5%			
Physical Tests (QC	Lot: 994848)				411								
VA23B3448-005	TH23-13A	Moisture		E144	0.25	%	32.7	30.9	5.66%	20%			
Saturated Paste Ex	tractables (QC Lot: 1	001664)											
VA23B3105-008	Anonymous	Chloride, soluble ion content	16887-00-6	E239.CI	20	mg/L	295000 μg/L	257	13.7%	30%			
Saturated Paste Ex	tractables (QC Lot: 1	001666)											
VA23B3105-008	Anonymous	Sodium, soluble ion content	17341-25-2	E442	20.0	mg/L	165000 μg/L	143	14.3%	30%			
Saturated Paste Ex	tractables (QC Lot: 9	94744)			44.7								
VA23B3347-021	Anonymous	Chloride, soluble ion content	16887-00-6	E239.CI	20	mg/L	47	44	4	Diff <2x LOR			
Saturated Paste Ex	tractables (QC Lot: 9	94745)	7										
VA23B3347-021	Anonymous	% Saturation		E141	1.0	%	187	205	9.40%	20%			
Saturated Paste Ex	tractables (QC Lot: 9	94746)			44.7								
VA23B3347-021	Anonymous	Sodium, soluble ion content	17341-25-2	E442	2.0	mg/L	24.1	25.5	5.66%	30%			
Saturated Paste Ex	tractables (QC Lot: 9	94845)											
VA23B3448-009	TH23-15A	Chloride, soluble ion content	16887-00-6	E239.CI	20	mg/L	781000 μg/L	716	8.56%	30%			
Saturated Paste Ex	tractables (QC Lot: 9	94846)			44.7								
VA23B3448-009	TH23-15A	% Saturation		E141	1.0	%	64.3	61.1	5.20%	20%			
Saturated Paste Ex	tractables (QC Lot: 9	94847)											
VA23B3448-009	TH23-15A	Sodium, soluble ion content	17341-25-2	E442	20.0	mg/L	385000 μg/L	364	5.69%	30%			
Metals (QC Lot: 99	4747)				44.7								
VA23B3347-021	Anonymous	Mercury	7439-97-6	E510	0.0500	mg/kg	0.0723	0.0789	0.0066	Diff <2x LOR			
Metals (QC Lot: 99	4748)												
VA23B3347-021	Anonymous	Aluminum	7429-90-5	E440	50	mg/kg	37700	40200	6.42%	40%			
		Antimony	7440-36-0	E440	0.10	mg/kg	0.50	0.34	0.16	Diff <2x LOR			
		Arsenic	7440-38-2	E440	0.10	mg/kg	8.43	8.66	2.67%	30%			
		Barium	7440-39-3	E440	0.50	mg/kg	142	153	7.82%	40%			

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Sub-Matrix: Soil/Solid						Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie	
Metals (QC Lot: 994	4748) - continued											
VA23B3347-021	Anonymous	Beryllium	7440-41-7	E440	0.10	mg/kg	0.65	0.69	6.26%	30%		
		Bismuth	7440-69-9	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR		
		Boron	7440-42-8	E440	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR		
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.120	# 0.054	0.065	Diff <2x LOR	DUP-H,	
		Calcium	7440-70-2	E440	50	mg/kg	6550	6720	2.61%	30%		
		Chromium	7440-47-3	E440	0.50	mg/kg	65.3	69.2	5.88%	30%		
		Cobalt	7440-48-4	E440	0.10	mg/kg	19.5	23.9	20.2%	30%		
		Copper	7440-50-8	E440	0.50	mg/kg	44.5	47.1	5.59%	30%		
		Iron	7439-89-6	E440	50	mg/kg	45500	49100	7.53%	30%		
		Lead	7439-92-1	E440	0.50	mg/kg	7.27	6.68	8.46%	40%		
		Lithium	7439-93-2	E440	2.0	mg/kg	22.7	24.2	6.42%	30%		
		Magnesium	7439-95-4	E440	20	mg/kg	10400	11300	8.28%	30%		
		Manganese	7439-96-5	E440	1.0	mg/kg	900	1130	22.4%	30%		
		Molybdenum	7439-98-7	E440	0.10	mg/kg	0.40	0.40	0.007	Diff <2x LOR		
		Nickel	7440-02-0	E440	0.50	mg/kg	46.5	51.2	9.54%	30%		
		Phosphorus	7723-14-0	E440	50	mg/kg	138	124	14	Diff <2x LOR		
		Potassium	7440-09-7	E440	100	mg/kg	1270	1360	7.01%	40%		
		Selenium	7782-49-2	E440	0.20	mg/kg	0.26	0.22	0.04	Diff <2x LOR		
		Silver	7440-22-4	E440	0.10	mg/kg	0.10	<0.10	0.004	Diff <2x LOR		
		Sodium	7440-23-5	E440	50	mg/kg	374	391	4.41%	40%		
		Strontium	7440-24-6	E440	0.50	mg/kg	57.3	59.3	3.53%	40%		
		Sulfur	7704-34-9	E440	1000	mg/kg	<1000	<1000	0	Diff <2x LOR		
		Thallium	7440-28-0	E440	0.050	mg/kg	0.087	0.092	0.004	Diff <2x LOR		
		Tin	7440-31-5	E440	2.0	mg/kg	<2.0	<2.0	0	Diff <2x LOR		
		Titanium	7440-32-6	E440	1.0	mg/kg	1520	1570	3.18%	40%		
		Tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR		
		Uranium	7440-61-1	E440	0.050	mg/kg	0.787	0.818	3.76%	30%		
		Vanadium	7440-62-2	E440	0.20	mg/kg	128	135	5.51%	30%		
		Zinc	7440-66-6	E440	2.0	mg/kg	66.9	66.3	0.916%	30%		
		Zirconium	7440-67-7	E440	1.0	mg/kg	5.2	5.1	0.1	Diff <2x LOR		
letals (QC Lot: 994	1842)			- 15011								
/A23B3448-005	TH23-13A	Mercury	7439-97-6	E510	0.0500	mg/kg	0.0604 μg/g	0.0560	0.0044	Diff <2x LOR		
Metals (QC Lot: 994												
/A23B3448-005	TH23-13A	Aluminum	7429-90-5	E440	50	mg/kg	34000 µg/g	32700	3.88%	40%		

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ıb-Matrix: Soil/Solid				I		-	Labora	LOR Unit Original Duplicate PRD/9/1 or Duplicate						
aboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie			
etals (QC Lot: 994	4843) - continued													
A23B3448-005	TH23-13A	Antimony	7440-36-0	E440	0.10	mg/kg	0.13 µg/g	0.11	0.02	Diff <2x LOR				
		Arsenic	7440-38-2	E440	0.10	mg/kg	3.43 µg/g	3.31	3.62%	30%				
		Barium	7440-39-3	E440	0.50	mg/kg	80.6 µg/g	77.7	3.58%	40%				
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.66 µg/g	0.66	0.008	Diff <2x LOR				
		Bismuth	7440-69-9	E440	0.20	mg/kg	<0.20 µg/g	<0.20	0	Diff <2x LOR				
		Boron	7440-42-8	E440	5.0	mg/kg	<5.0 µg/g	<5.0	0	Diff <2x LOR				
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.123 μg/g	0.118	0.004	Diff <2x LOR				
		Calcium	7440-70-2	E440	50	mg/kg	5110 μg/g	4770	6.94%	30%				
		Chromium	7440-47-3	E440	0.50	mg/kg	54.1 μg/g	44.9	18.7%	30%				
		Cobalt	7440-48-4	E440	0.10	mg/kg	10.4 μg/g	10.2	1.64%	30%				
		Copper	7440-50-8	E440	0.50	mg/kg	38.1 µg/g	35.2	7.91%	30%				
		Iron	7439-89-6	E440	50	mg/kg	28900 μg/g	28000	3.33%	30%				
		Lead	7439-92-1	E440	0.50	mg/kg	4.40 µg/g	4.04	8.48%	40%				
		Lithium	7439-93-2	E440	2.0	mg/kg	14.0 µg/g	13.4	5.04%	30%				
		Magnesium	7439-95-4	E440	20	mg/kg	7520 μg/g	6940	8.16%	30%				
		Manganese	7439-96-5	E440	1.0	mg/kg	704 μg/g	714	1.41%	30%				
		Molybdenum	7439-98-7	E440	0.10	mg/kg	0.53 µg/g	0.51	3.97%	40%				
		Nickel	7440-02-0	E440	0.50	mg/kg	31.0 µg/g	28.9	6.95%	30%				
		Phosphorus	7723-14-0	E440	50	mg/kg	575 μg/g	552	4.09%	30%				
		Potassium	7440-09-7	E440	100	mg/kg	690 µg/g	640	7.81%	40%				
		Selenium	7782-49-2	E440	0.20	mg/kg	0.80 µg/g	0.78	0.03	Diff <2x LOR				
		Silver	7440-22-4	E440	0.10	mg/kg	0.14 µg/g	0.13	0.009	Diff <2x LOR				
		Sodium	7440-23-5	E440	50	mg/kg	279 μg/g	255	8.82%	40%				
		Strontium	7440-24-6	E440	0.50	mg/kg	32.6 µg/g	34.0	4.32%	40%				
		Sulfur	7704-34-9	E440	1000	mg/kg	<1000 µg/g	<1000	0	Diff <2x LOR				
		Thallium	7440-28-0	E440	0.050	mg/kg	0.080 µg/g	0.079	0.001	Diff <2x LOR				
		Tin	7440-31-5	E440	2.0	mg/kg	<2.0 μg/g	<2.0	0	Diff <2x LOR				
		Titanium	7440-32-6	E440	1.0	mg/kg	1410 µg/g	1220	14.3%	40%				
		Tungsten	7440-33-7	E440	0.50	mg/kg	<0.50 μg/g	<0.50	0	Diff <2x LOR				
		Uranium	7440-61-1	E440	0.050	mg/kg	0.678 μg/g	0.689	1.56%	30%				
		Vanadium	7440-62-2	E440	0.20	mg/kg	81.7 μg/g	75.1	8.44%	30%				
		Zinc	7440-66-6	E440	2.0	mg/kg	49.8 μg/g	48.3	3.06%	30%				
		Zirconium	7440-67-7	E440	1.0	mg/kg	1.8 µg/g	1.6	0.1	Diff <2x LOR				
Hydrocarbons (QC		Zirodilidili	7440 07 7	L++0	1.0	mg/ng	1.0 ру/у	1.0	0.1	Dill -2X EOIX				

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Work Order: VA23B3448 Amendment 1

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Sub-Matrix: Soil/Solid							Labora	tory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Hydrocarbons (QC	Lot: 994754) - conti	nued									
VA23B3347-021	Anonymous	EPH (C10-C19)		E601A	200	mg/kg	<200	<200	0	Diff <2x LOR	
		EPH (C19-C32)		E601A	200	mg/kg	<200	<200	0	Diff <2x LOR	
Hydrocarbons (QC	Lot: 994841)				1917						
VA23B3448-005	TH23-13A	EPH (C10-C19)		E601A	200	mg/kg	<200 µg/g	<200	0	Diff <2x LOR	
		EPH (C19-C32)		E601A	200	mg/kg	<200 μg/g	<200	0	Diff <2x LOR	
Polycyclic Aromatic	Hydrocarbons (QC	Lot: 994753)						Y			
VA23B3347-021	Anonymous	Acenaphthene	83-32-9	E641A-L	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	
		Acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	
		Acridine	260-94-6	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Anthracene	120-12-7	E641A-L	0.0040	mg/kg	<0.0040	<0.0040	0	Diff <2x LOR	
		Benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Benzo(b+j)fluoranthene	n/a	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Chrysene	218-01-9	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	
		Fluoranthene	206-44-0	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Fluorene	86-73-7	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Naphthalene	91-20-3	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Phenanthrene	85-01-8	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Pyrene	129-00-0	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
		Quinoline	91-22-5	E641A-L	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	
			31-22-3	EOT IA-E	0.010	mg/kg	40.010	40.010		DIII 12X LOIX	
Polycyclic Aromatic VA23B3448-005	Hydrocarbons (QC	Acenaphthene	83-32-9	E641A-L	0.0050	mg/kg	<0.0050 μg/g	<0.0050	0	Diff <2x LOR	
V MEDIO990-000	11120-100		208-96-8	E641A-L	0.0050		<0.0050 μg/g <0.0050 μg/g	<0.0050	0	Diff <2x LOR	
		Acenaphthylene				mg/kg					
		Acridine	260-94-6	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Anthracene	120-12-7	E641A-L	0.0045	mg/kg	<0.0044 µg/g	<0.0045	0.00005	Diff <2x LOR	
		Benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Benzo(b+j)fluoranthene	n/a	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	

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Sub-Matrix: Soil/Solid							Labora	tory Duplicate (DU	JP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Polycyclic Aromatic	Hydrocarbons (QC Lot:	994840) - continued									
VA23B3448-005	TH23-13A	Benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Chrysene	218-01-9	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg	<0.0050 µg/g	<0.0050	0	Diff <2x LOR	
		Fluoranthene	206-44-0	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Fluorene	86-73-7	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Naphthalene	91-20-3	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Phenanthrene	85-01-8	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Pyrene	129-00-0	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Quinoline	91-22-5	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	

Qualifiers

Qualifier	Description
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
J	Duplicate results and limits are expressed in terms of absolute difference.

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Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 994755)					
Moisture	E144	0.25	%	<0.25	
Physical Tests (QCLot: 994848)					
Moisture	E144	0.25	%	<0.25	
Saturated Paste Extractables (QCLot:	1001664)				
Chloride, soluble ion content	16887-00-6 E239.CI	20	mg/L	<20	
Saturated Paste Extractables (QCLot:	1001665)				
% Saturation	E141	1	%	50.0	
aturated Paste Extractables (QCLot:	1001666)				
Sodium, soluble ion content	17341-25-2 E442	2	mg/L	<2.0	
Saturated Paste Extractables (QCLot:	994744)				
Chloride, soluble ion content	16887-00-6 E239.CI	20	mg/L	<20	
aturated Paste Extractables (QCLot:	994745)				
% Saturation	E141	1	%	50.0	
aturated Paste Extractables (QCLot:	994746)				
Sodium, soluble ion content	17341-25-2 E442	2	mg/L	<2.0	
aturated Paste Extractables (QCLot:	994846)				
% Saturation	E141	1	%	50.0	
letals (QCLot: 994747)					
Mercury	7439-97-6 E510	0.005	mg/kg	<0.0050	
letals (QCLot: 994748)					
Aluminum	7429-90-5 E440	50	mg/kg	<50	
Antimony	7440-36-0 E440	0.1	mg/kg	<0.10	
Arsenic	7440-38-2 E440	0.1	mg/kg	<0.10	
Barium	7440-39-3 E440	0.5	mg/kg	<0.50	
Beryllium	7440-41-7 E440	0.1	mg/kg	<0.10	
Bismuth	7440-69-9 E440	0.2	mg/kg	<0.20	
Boron	7440-42-8 E440	5	mg/kg	<5.0	
Cadmium	7440-43-9 E440	0.02	mg/kg	<0.020	
Calcium	7440-70-2 E440	50	mg/kg	<50	
Chromium	7440-47-3 E440	0.5	mg/kg	<0.50	
Cobalt	7440-48-4 E440	0.1	mg/kg	<0.10	
Copper	7440-50-8 E440	0.5	mg/kg	<0.50	

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nalyte	CAS Number Me	ethod	LOR	Unit	Result	Qualifier
etals (QCLot: 994748) - con	tinued					
Iron	7439-89-6 E4-	140	50	mg/kg	<50	
Lead	7439-92-1 E4	140	0.5	mg/kg	<0.50	
Lithium	7439-93-2 E4	140	2	mg/kg	<2.0	
Magnesium	7439-95-4 E4	140	20	mg/kg	<20	
Manganese	7439-96-5 E4	140	1	mg/kg	<1.0	
Molybdenum	7439-98-7 E44	140	0.1	mg/kg	<0.10	
Nickel	7440-02-0 E44	140	0.5	mg/kg	<0.50	
Phosphorus	7723-14-0 E4-	140	50	mg/kg	<50	
Potassium	7440-09-7 E4-	140	100	mg/kg	<100	
Selenium	7782-49-2 E4	140	0.2	mg/kg	<0.20	
Silver	7440-22-4 E44	140	0.1	mg/kg	<0.10	
Sodium	7440-23-5 E44	140	50	mg/kg	<50	
Strontium	7440-24-6 E44	140	0.5	mg/kg	<0.50	
Sulfur	7704-34-9 E44	140	1000	mg/kg	<1000	
Thallium	7440-28-0 E4-	140	0.05	mg/kg	<0.050	
Tin	7440-31-5 E44	140	2	mg/kg	<2.0	
Titanium	7440-32-6 E4	140	1	mg/kg	<1.0	
Tungsten	7440-33-7 E44	140	0.5	mg/kg	<0.50	
Uranium	7440-61-1 E44	140	0.05	mg/kg	<0.050	
Vanadium	7440-62-2 E4	140	0.2	mg/kg	<0.20	
Zinc	7440-66-6 E4-	140	2	mg/kg	<2.0	
Zirconium	7440-67-7 E4	140	1	mg/kg	<1.0	
etals (QCLot: 994842)						
Mercury	7439-97-6 E5	510	0.005	mg/kg	<0.0050	
etals (QCLot: 994843)						
Aluminum	7429-90-5 E44	140	50	mg/kg	<50	
Antimony	7440-36-0 E44	140	0.1	mg/kg	<0.10	
Arsenic	7440-38-2 E4	140	0.1	mg/kg	<0.10	
Barium	7440-39-3 E4	440	0.5	mg/kg	<0.50	
Beryllium	7440-41-7	140	0.1	mg/kg	<0.10	
Bismuth	7440-69-9 E44	440	0.2	mg/kg	<0.20	
Boron	7440-42-8 E44	440	5	mg/kg	<5.0	
Cadmium	7440-43-9 E44	440	0.02	mg/kg	<0.020	
Calcium	7440-70-2 E4-	440	50	mg/kg	<50	
Chromium	7440-47-3 E4	140	0.5	mg/kg	<0.50	

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alyte	CAS Number	Method	LOR	Unit	Result	Qualifier
etals (QCLot: 994843) - cor	ntinued					
Cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	
Iron	7439-89-6	E440	50	mg/kg	<50	
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	
Lithium	7439-93-2	E440	2	mg/kg	<2.0	
Magnesium	7439-95-4	E440	20	mg/kg	<20	
Manganese	7439-96-5	E440	1	mg/kg	<1.0	
Molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	
Phosphorus	7723-14-0	E440	50	mg/kg	<50	
Potassium	7440-09-7	E440	100	mg/kg	<100	
Selenium	7782-49-2	E440	0.2	mg/kg	<0.20	
Silver	7440-22-4	E440	0.1	mg/kg	<0.10	
Sodium	7440-23-5	E440	50	mg/kg	<50	
Strontium	7440-24-6	E440	0.5	mg/kg	<0.50	
Sulfur	7704-34-9	E440	1000	mg/kg	<1000	
Thallium	7440-28-0	E440	0.05	mg/kg	<0.050	
Tin	7440-31-5	E440	2	mg/kg	<2.0	
Titanium	7440-32-6	E440	1	mg/kg	<1.0	
Tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	
Uranium	7440-61-1	E440	0.05	mg/kg	<0.050	
Vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	
Zinc	7440-66-6	E440	2	mg/kg	<2.0	
Zirconium	7440-67-7	E440	1	mg/kg	<1.0	
ydrocarbons (QCLot: 99475	54)					
EPH (C10-C19)	-	E601A	200	mg/kg	<200	
EPH (C19-C32)		E601A	200	mg/kg	<200	
ydrocarbons (QCLot: 99484	1)					
EPH (C10-C19)		E601A	200	mg/kg	<200	
EPH (C19-C32)		E601A	200	mg/kg	<200	
olycyclic Aromatic Hydrocar	rbons (QCLot: 994753)					
Acenaphthene	83-32-9	E641A-L	0.005	mg/kg	<0.0050	
Acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	<0.0050	
Acridine	260-94-6	E641A-L	0.01	mg/kg	<0.010	
Anthracene	120-12-7	E641A-L	0.004	mg/kg	<0.0040	

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nalyte	CAS Number Method	LOR	Unit	Result	Qualifier
olycyclic Aromatic Hydrocarbons	(QCLot: 994753) - continued				
Benz(a)anthracene	56-55-3 E641A-L	0.01	mg/kg	<0.010	
Benzo(a)pyrene	50-32-8 E641A-L	0.01	mg/kg	<0.010	
Benzo(b+j)fluoranthene	n/a E641A-L	0.01	mg/kg	<0.010	
Benzo(g,h,i)perylene	191-24-2 E641A-L	0.01	mg/kg	<0.010	
Benzo(k)fluoranthene	207-08-9 E641A-L	0.01	mg/kg	<0.010	
Chrysene	218-01-9 E641A-L	0.01	mg/kg	<0.010	
Dibenz(a,h)anthracene	53-70-3 E641A-L	0.005	mg/kg	<0.0050	
Fluoranthene	206-44-0 E641A-L	0.01	mg/kg	<0.010	
Fluorene	86-73-7 E641A-L	0.01	mg/kg	<0.010	
Indeno(1,2,3-c,d)pyrene	193-39-5 E641A-L	0.01	mg/kg	<0.010	
Methylnaphthalene, 1-	90-12-0 E641A-L	0.01	mg/kg	<0.010	
Methylnaphthalene, 2-	91-57-6 E641A-L	0.01	mg/kg	<0.010	
Naphthalene	91-20-3 E641A-L	0.01	mg/kg	<0.010	
Phenanthrene	85-01-8 E641A-L	0.01	mg/kg	<0.010	
Pyrene	129-00-0 E641A-L	0.01	mg/kg	<0.010	
Quinoline	91-22-5 E641A-L	0.01	mg/kg	<0.010	
lycyclic Aromatic Hydrocarbons	(QCLot: 994840)				
Acenaphthene	83-32-9 E641A-L	0.005	mg/kg	<0.0050	
Acenaphthylene	208-96-8 E641A-L	0.005	mg/kg	<0.0050	
Acridine	260-94-6 E641A-L	0.01	mg/kg	<0.010	
Anthracene	120-12-7 E641A-L	0.004	mg/kg	<0.0040	
Benz(a)anthracene	56-55-3 E641A-L	0.01	mg/kg	<0.010	
Benzo(a)pyrene	50-32-8 E641A-L	0.01	mg/kg	<0.010	
Benzo(b+j)fluoranthene	n/a E641A-L	0.01	mg/kg	<0.010	
Benzo(g,h,i)perylene	191-24-2 E641A-L	0.01	mg/kg	<0.010	
Benzo(k)fluoranthene	207-08-9 E641A-L	0.01	mg/kg	<0.010	
Chrysene	218-01-9 E641A-L	0.01	mg/kg	<0.010	
Dibenz(a,h)anthracene	53-70-3 E641A-L	0.005	mg/kg	<0.0050	
Fluoranthene	206-44-0 E641A-L	0.01	mg/kg	<0.010	
Fluorene	86-73-7 E641A-L	0.01	mg/kg	<0.010	
Indeno(1,2,3-c,d)pyrene	193-39-5 E641A-L	0.01	mg/kg	<0.010	
Methylnaphthalene, 1-	90-12-0 E641A-L	0.01	mg/kg	<0.010	
Methylnaphthalene, 2-	91-57-6 E641A-L	0.01	mg/kg	<0.010	
Naphthalene	91-20-3 E641A-L	0.01	mg/kg	<0.010	
Phenanthrene	85-01-8 E641A-L	0.01	mg/kg	<0.010	

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Ana	alyte CAS Numbe	r Method	LOR	Unit	Result	Qualifier			
Polycyclic Aromatic Hydrocarbons (QCLot: 994840) - continued									
F	Pyrene 129-00-0	E641A-L	0.01	mg/kg	<0.010				
C	Quinoline 91-22-5	E641A-L	0.01	mg/kg	<0.010				



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Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Soil/Solid				Laboratory Control Sample (LCS) Report					
					Spike Recovery (%)		Recovery Limits (%)		
Analyte	CAS Number Me	ethod	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 994751)									
pH (1:2 soil:water)	E1	108		pH units	6 pH units	100	95.0	105	
Physical Tests (QCLot: 994755)									
Moisture	E1	144	0.25	%	50 %	99.8	90.0	110	
Physical Tests (QCLot: 994844)					Y A				
pH (1:2 soil:water)	E1	108		pH units	6 pH units	100	95.0	105	
Physical Tests (QCLot: 994848)									
Moisture	E1	144	0.25	%	50 %	99.1	90.0	110	
Saturated Paste Extractables (QCLot: 1001664)									
Chloride, soluble ion content	16887-00-6 E2	239.CI	20	mg/L	100 mg/L	103	80.0	120	
Saturated Paste Extractables (QCLot: 1001665)									
% Saturation	E1	141	1	%	100 %	100	80.0	120	
Saturated Paste Extractables (QCLot: 1001666)									
Sodium, soluble ion content	17341-25-2 E4	142	2	mg/L	50 mg/L	108	80.0	120	
Saturated Paste Extractables (QCLot: 994744)									
Chloride, soluble ion content	16887-00-6 E2	239.Cl	20	mg/L	100 mg/L	101	80.0	120	
Saturated Paste Extractables (QCLot: 994745)									
% Saturation	E1	141	1	%	100 %	101	80.0	120	
Saturated Paste Extractables (QCLot: 994746)									
Sodium, soluble ion content	17341-25-2 E4	142	2	mg/L	50 mg/L	110	80.0	120	
Saturated Paste Extractables (QCLot: 994846)									
% Saturation	E1	141	1	%	100 %	101	80.0	120	
Metals (QCLot: 994747)									
Mercury	7439-97-6 E5	510	0.005	mg/kg	0.1 mg/kg	106	80.0	120	
Metals (QCLot: 994748)									
Aluminum	7429-90-5 E4	140	50	mg/kg	200 mg/kg	# 124	80.0	120	MES
Antimony	7440-36-0 E4	140	0.1	mg/kg	100 mg/kg	98.6	80.0	120	
Arsenic	7440-38-2 E4	140	0.1	mg/kg	100 mg/kg	103	80.0	120	
Barium	7440-39-3 E4	140	0.5	mg/kg	25 mg/kg	106	80.0	120	
Beryllium	7440-41-7 E4	140	0.1	mg/kg	10 mg/kg	95.0	80.0	120	
Bismuth	7440-69-9 E4	140	0.2	mg/kg	100 mg/kg	98.7	80.0	120	

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Sub-Matrix: Soil/Solid			Laboratory Control Sample (LCS) Report							
					Spike	Recovery (%)	Recovery	Limits (%)		
Analyte	CAS Number Meti	hod	LOR	Unit	Concentration	LCS	Low	High	Qualifier	
Metals (QCLot: 994748) - continued										
Boron	7440-42-8 E440			mg/kg	100 mg/kg	87.7	80.0	120		
Cadmium	7440-43-9 E440	0	0.02	mg/kg	10 mg/kg	101	80.0	120		
Calcium	7440-70-2 E440	0	50	mg/kg	5000 mg/kg	97.0	80.0	120		
Chromium	7440-47-3 E440	0	3 3		25 mg/kg	103	80.0	120		
Cobalt	7440-48-4 E440	0	0.1	mg/kg	25 mg/kg	98.0	80.0	120		
Copper	7440-50-8 E440	0	0.5	mg/kg	25 mg/kg	96.2	80.0	120		
Iron	7439-89-6 E440	0	50	mg/kg	100 mg/kg	114	80.0	120	MES	
Lead	7439-92-1 E44	.0	0.5	mg/kg	50 mg/kg	102	80.0	120		
Lithium	7439-93-2 E44	0	2	mg/kg	25 mg/kg	94.3	80.0	120		
Magnesium	7439-95-4 E44	0	20	mg/kg	5000 mg/kg	102	80.0	120		
Manganese	7439-96-5 E44	0	1	mg/kg	25 mg/kg	104	80.0	120		
Molybdenum	7439-98-7 E44	0	0.1	mg/kg	25 mg/kg	96.5	80.0	120		
Nickel	7440-02-0 E440	0	0.5	mg/kg	50 mg/kg	98.2	80.0	120		
Phosphorus	7723-14-0 E440	0	50	mg/kg	1000 mg/kg	104	80.0	120		
Potassium	7440-09-7 E440	0	100	mg/kg	5000 mg/kg	102	80.0	120		
Selenium	7782-49-2 E440	0	0.2	mg/kg	100 mg/kg	102	80.0	120		
Silver	7440-22-4 E440	0	0.1	mg/kg	10 mg/kg	90.9	80.0	120		
Sodium	7440-23-5 E44	0	50	mg/kg	5000 mg/kg	g/kg 101 80.0	80.0	120		
Strontium	7440-24-6 E44	0	0.5	mg/kg	25 mg/kg		80.0	120		
Sulfur	7704-34-9 E44	0	1000	mg/kg	5000 mg/kg	101	80.0	120		
Thallium	7440-28-0 E44	0	0.05	mg/kg	100 mg/kg	101	80.0	120		
Tin	7440-31-5 E440	0	2	mg/kg	50 mg/kg	95.2	80.0	120		
Titanium	7440-32-6 E44	0	1	mg/kg	25 mg/kg	103	80.0	120		
Tungsten	7440-33-7 E440	0	0.5	mg/kg	10 mg/kg	95.7	80.0	120		
Uranium	7440-61-1 E440	0	0.05	mg/kg	0.5 mg/kg	99.0	80.0	120		
Vanadium	7440-62-2 E44	0	0.2	mg/kg	50 mg/kg	101	80.0	120		
Zinc	7440-66-6 E44	0	2	mg/kg	50 mg/kg	99.2	80.0	120		
Zirconium	7440-67-7 E440	0	1	mg/kg	10 mg/kg	95.4	80.0	120		
Metals (QCLot: 994842)										
Mercury	7439-97-6 E51	0	0.005	mg/kg	0.1 mg/kg	107	80.0	120		
Metals (QCLot: 994843)									1	
Aluminum	7429-90-5 E44	0	50	mg/kg	200 mg/kg	99.8	80.0	120		
Antimony	7440-36-0 E440	0	0.1	mg/kg	100 mg/kg	102	80.0	120		
Arsenic	7440-38-2 E44	0	0.1	mg/kg	100 mg/kg	104	80.0	120		
Barium	7440-39-3 E440	.0	0.5	mg/kg	25 mg/kg	103	80.0	120		
Beryllium	7440-41-7 E440	0	0.1	mg/kg	10 mg/kg	94.8	80.0	120		

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Sub-Matrix: Soil/Solid		Laboratory Control Sample (LCS) Report Spike Recovery (%) Recovery Limits (%)							
	nalyte CAS Number Method LOR Unit					Recovery (%)	Recovery	Limits (%)	
Analyte			Unit	Concentration	LCS	Low	High	Qualifier	
Metals (QCLot: 994843) - continued									
Bismuth	7440-69-9 E440			mg/kg	100 mg/kg	94.5	80.0	120	
Boron	7440-42-8 E440)	5 mg/kg		100 mg/kg	92.5	80.0	120	
Cadmium	7440-43-9 E440			10 mg/kg	98.1	80.0	120		
Calcium	7440-70-2 E440)	50	mg/kg	5000 mg/kg	97.4	80.0	120	
Chromium	7440-47-3 E440)	0.5	mg/kg	25 mg/kg	95.8	80.0	120	
Cobalt	7440-48-4 E440)	0.1	mg/kg	25 mg/kg	94.2	80.0	120	
Copper	7440-50-8 E440)	0.5	mg/kg	25 mg/kg	94.7	80.0	120	
Iron	7439-89-6 E440)	50	mg/kg	100 mg/kg	101	80.0	120	
Lead	7439-92-1 E440)	0.5	mg/kg	50 mg/kg	96.3	80.0	120	
Lithium	7439-93-2 E440)	2	mg/kg	25 mg/kg	94.0	80.0	120	
Magnesium	7439-95-4 E440)	20	mg/kg	5000 mg/kg	103	80.0	120	
Manganese	7439-96-5 E440)	1	mg/kg	25 mg/kg	98.2	80.0	120	
Molybdenum	7439-98-7 E440)	0.1	mg/kg	25 mg/kg	98.5	80.0	120	
Nickel	7440-02-0 E440)	0.5	mg/kg	50 mg/kg	95.5	80.0	120	
Phosphorus	7723-14-0 E440		50	mg/kg	1000 mg/kg	97.6	80.0	120	
Potassium	7440-09-7 E440		100	mg/kg	5000 mg/kg	101	80.0	120	
Selenium	7782-49-2 E440		0.2	mg/kg	100 mg/kg	102	80.0	120	
Silver	7440-22-4 E440		0.1	mg/kg	10 mg/kg	91.6	80.0	120	
Sodium	7440-23-5 E440		50	mg/kg	5000 mg/kg	99.5	80.0	120	
Strontium	7440-24-6 E440		0.5	mg/kg	25 mg/kg	102	80.0	120	
Sulfur	7704-34-9 E440		1000	mg/kg	5000 mg/kg	98.2	80.0	120	
Thallium	7440-28-0 E440		0.05	mg/kg	100 mg/kg	98.1	80.0	120	
Tin	7440-31-5 E440		2	mg/kg	50 mg/kg	95.7	80.0	120	
Titanium	7440-32-6 E440		1	mg/kg	25 mg/kg	99.4	80.0	120	
Tungsten	7440-33-7 E440		0.5	mg/kg	10 mg/kg	97.1	80.0	120	
Uranium	7440-61-1 E440		0.05	mg/kg	0.5 mg/kg	96.2	80.0	120	
Vanadium	7440-62-2 E440		0.2	mg/kg	50 mg/kg	100	80.0	120	
Zinc	7440-66-6 E440		2	mg/kg	50 mg/kg	97.2	80.0	120	
Zirconium	7440-67-7 E440)	1	mg/kg	10 mg/kg	96.9	80.0	120	
Hydrocarbons (QCLot: 994754)									1
EPH (C10-C19)	E601	A	200	mg/kg	1134.37 mg/kg	110	70.0	130	
EPH (C19-C32)	E601	A	200	mg/kg	575.98 mg/kg	106	70.0	130	
Hydrocarbons (QCLot: 994841)									
EPH (C10-C19)	E601	A	200	mg/kg	1134.37 mg/kg	99.2	70.0	130	
EPH (C19-C32)	E601	A	200	mg/kg	575.98 mg/kg	94.5	70.0	130	

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Sub-Matrix: Soil/Solid		Laboratory Control Sample (LCS) Report Spike Recovery (%) Recovery Limits (%)							
	CAS Number Method LOR					Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifie
Polycyclic Aromatic Hydrocarbons (QCL	_ot: 994753)								
Acenaphthene	83-32-9 E	E641A-L	0.005	mg/kg	0.5 mg/kg	102	60.0	130	
Acenaphthylene	208-96-8 E	E641A-L	0.005	mg/kg	0.5 mg/kg	102	60.0	130	
Acridine	260-94-6 E	E641A-L	0.01	mg/kg	0.5 mg/kg	102	60.0	130	
Anthracene	120-12-7 E	E641A-L	0.004	mg/kg	0.5 mg/kg	104	60.0	130	
Benz(a)anthracene	56-55-3 E	E641A-L	0.01	mg/kg	0.5 mg/kg	96.5	60.0	130	
Benzo(a)pyrene	50-32-8 E	E641A-L	0.01	mg/kg	0.5 mg/kg	101	60.0	130	
Benzo(b+j)fluoranthene	n/a E	E641A-L	0.01	mg/kg	0.5 mg/kg	103	60.0	130	
Benzo(g,h,i)perylene	191-24-2 E	E641A-L	0.01	mg/kg	0.5 mg/kg	108	60.0	130	
Benzo(k)fluoranthene	207-08-9 E	E641A-L	0.01	mg/kg	0.5 mg/kg	111	60.0	130	
Chrysene	218-01-9 E	E641A-L	0.01	mg/kg	0.5 mg/kg	103	60.0	130	
Dibenz(a,h)anthracene	53-70-3 E	E641A-L	0.005	mg/kg	0.5 mg/kg	103	60.0	130	
Fluoranthene	206-44-0 E	E641A-L	0.01	mg/kg	0.5 mg/kg	105	60.0	130	
Fluorene	86-73-7 E	E641A-L	0.01	mg/kg	0.5 mg/kg	105	60.0	130	
Indeno(1,2,3-c,d)pyrene	193-39-5 E	E641A-L	0.01	mg/kg	0.5 mg/kg	102	60.0	130	
Methylnaphthalene, 1-	90-12-0 E	E641A-L	0.01	mg/kg	0.5 mg/kg	99.5	60.0	130	
Methylnaphthalene, 2-	91-57-6 E	E641A-L	0.01	mg/kg	0.5 mg/kg	107	60.0	130	
Naphthalene	91-20-3 E	E641A-L	0.01	mg/kg	0.5 mg/kg	101	50.0	130	
Phenanthrene	85-01-8 E	E641A-L	0.01	mg/kg	0.5 mg/kg	107	60.0	130	
Pyrene	129-00-0 E	E641A-L	0.01	mg/kg	0.5 mg/kg	105	60.0	130	
Quinoline	91-22-5 E	E641A-L	0.01	mg/kg	0.5 mg/kg	105	60.0	130	
Polycyclic Aromatic Hydrocarbons (QCL	ot: 994840)								
Acenaphthene	83-32-9 E	E641A-L	0.005	mg/kg	0.5 mg/kg	100	60.0	130	
Acenaphthylene	208-96-8 E	E641A-L	0.005	mg/kg	0.5 mg/kg	101	60.0	130	
Acridine	260-94-6 E	E641A-L	0.01	mg/kg	0.5 mg/kg	100	60.0	130	
Anthracene	120-12-7 E	E641A-L	0.004	mg/kg	0.5 mg/kg	101	60.0	130	
Benz(a)anthracene	56-55-3 E	E641A-L	0.01	mg/kg	0.5 mg/kg	97.3	60.0	130	
Benzo(a)pyrene	50-32-8 E	E641A-L	0.01	mg/kg	0.5 mg/kg	102	60.0	130	
Benzo(b+j)fluoranthene	n/a E	E641A-L	0.01	mg/kg	0.5 mg/kg	104	60.0	130	
Benzo(g,h,i)perylene	191-24-2 E	E641A-L	0.01	mg/kg	0.5 mg/kg	106	60.0	130	
Benzo(k)fluoranthene	207-08-9 E	E641A-L	0.01	mg/kg	0.5 mg/kg	106	60.0	130	
Chrysene	218-01-9 E	E641A-L	0.01	mg/kg	0.5 mg/kg	100	60.0	130	
Dibenz(a,h)anthracene	53-70-3 E	E641A-L	0.005	mg/kg	0.5 mg/kg	102	60.0	130	
Fluoranthene	206-44-0 E		0.01	mg/kg	0.5 mg/kg	102	60.0	130	
Fluorene	86-73-7 E		0.01	mg/kg	0.5 mg/kg	104	60.0	130	
Indeno(1,2,3-c,d)pyrene	193-39-5 E		0.01	mg/kg	0.5 mg/kg	103	60.0	130	
	.00 00 0	· · · · -	""		0.5 mg/ng	100	00.0		

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Sub-Matrix: Soil/Solid		Laboratory Co	ntrol Sample (LCS)	Report					
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 994840) - continued									
Methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	0.5 mg/kg	102	60.0	130	
Methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	0.5 mg/kg	110	60.0	130	
Naphthalene	91-20-3	E641A-L	0.01	mg/kg	0.5 mg/kg	108	50.0	130	
Phenanthrene	85-01-8	E641A-L	0.01	mg/kg	0.5 mg/kg	104	60.0	130	
Pyrene	129-00-0	E641A-L	0.01	mg/kg	0.5 mg/kg	103	60.0	130	
Quinoline	91-22-5	E641A-L	0.01	mg/kg	0.5 mg/kg	104	60.0	130	

Qualifiers

Qualifier Description

MES Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Sca

Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



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Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Soil/Sol	id						Matrix Spik	e (MS) Report		
					Sp	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Hydrocarbons (C	QCLot: 994754)									
VA23B3347-022	Anonymous	EPH (C10-C19)		E601A	960 mg/kg	1134.37 mg/kg	104	60.0	140	
		EPH (C19-C32)		E601A	470 mg/kg	575.98 mg/kg	101	60.0	140	
lydrocarbons (C	QCLot: 994841)									
VA23B3448-007	TH23-14A	EPH (C10-C19)		E601A	890 mg/kg	1134.37 mg/kg	96.7	60.0	140	
		EPH (C19-C32)		E601A	430 mg/kg	575.98 mg/kg	91.8	60.0	140	
olycyclic Aroma	atic Hydrocarbons(QCLot: 994753)								
VA23B3347-022	Anonymous	Acenaphthene	83-32-9	E641A-L	0.429 mg/kg	0.5 mg/kg	109	50.0	140	
		Acenaphthylene	208-96-8	E641A-L	0.428 mg/kg	0.5 mg/kg	109	50.0	140	
		Acridine	260-94-6	E641A-L	0.422 mg/kg	0.5 mg/kg	107	50.0	140	
		Anthracene	120-12-7	E641A-L	0.432 mg/kg	0.5 mg/kg	110	50.0	140	
		Benz(a)anthracene	56-55-3	E641A-L	0.400 mg/kg	0.5 mg/kg	102	50.0	140	
		Benzo(a)pyrene	50-32-8	E641A-L	0.413 mg/kg	0.5 mg/kg	105	50.0	140	
		Benzo(b+j)fluoranthene	n/a	E641A-L	0.430 mg/kg	0.5 mg/kg	109	50.0	140	
		Benzo(g,h,i)perylene	191-24-2	E641A-L	0.455 mg/kg	0.5 mg/kg	116	50.0	140	
		Benzo(k)fluoranthene	207-08-9	E641A-L	0.459 mg/kg	0.5 mg/kg	117	50.0	140	
		Chrysene	218-01-9	E641A-L	0.410 mg/kg	0.5 mg/kg	104	50.0	140	
		Dibenz(a,h)anthracene	53-70-3	E641A-L	0.437 mg/kg	0.5 mg/kg	111	50.0	140	
		Fluoranthene	206-44-0	E641A-L	0.438 mg/kg	0.5 mg/kg	112	50.0	140	
		Fluorene	86-73-7	E641A-L	0.442 mg/kg	0.5 mg/kg	113	50.0	140	
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.423 mg/kg	0.5 mg/kg	108	50.0	140	
		Methylnaphthalene, 1-	90-12-0	E641A-L	0.425 mg/kg	0.5 mg/kg	108	50.0	140	
		Methylnaphthalene, 2-	91-57-6	E641A-L	0.456 mg/kg	0.5 mg/kg	116	50.0	140	
		Naphthalene	91-20-3	E641A-L	0.435 mg/kg	0.5 mg/kg	111	50.0	140	
		Phenanthrene	85-01-8	E641A-L	0.447 mg/kg	0.5 mg/kg	114	50.0	140	
		Pyrene	129-00-0	E641A-L	0.438 mg/kg	0.5 mg/kg	111	50.0	140	
		Quinoline	91-22-5	E641A-L	0.431 mg/kg	0.5 mg/kg	110	50.0	140	
olycyclic Aroma	atic Hydrocarbons(QCLot: 994840)								
VA23B3448-007	TH23-14A	Acenaphthene	83-32-9	E641A-L	0.420 mg/kg	0.5 mg/kg	103	50.0	140	
		Acenaphthylene	208-96-8	E641A-L	0.422 mg/kg	0.5 mg/kg	104	50.0	140	
	T .	Acridine	260-94-6	E641A-L	0.358 mg/kg	0.5 mg/kg	88.1	50.0	140	

19 of 22 VA23B3448 Amendment 1 Work Order:



Sub-Matrix: Soil/Sol	id						Matrix Spil	ke (MS) Report		
					Spi	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Polycyclic Aroma	atic Hydrocarbons(Q	CLot: 994840) - continued		- 15-11						
VA23B3448-007	TH23-14A	Anthracene	120-12-7	E641A-L	0.425 mg/kg	0.5 mg/kg	104	50.0	140	
		Benz(a)anthracene	56-55-3	E641A-L	0.400 mg/kg	0.5 mg/kg	98.5	50.0	140	
		Benzo(a)pyrene	50-32-8	E641A-L	0.419 mg/kg	0.5 mg/kg	103	50.0	140	
		Benzo(b+j)fluoranthene	n/a	E641A-L	0.426 mg/kg	0.5 mg/kg	105	50.0	140	
		Benzo(g,h,i)perylene	191-24-2	E641A-L	0.433 mg/kg	0.5 mg/kg	106	50.0	140	
		Benzo(k)fluoranthene	207-08-9	E641A-L	0.434 mg/kg	0.5 mg/kg	107	50.0	140	
		Chrysene	218-01-9	E641A-L	0.418 mg/kg	0.5 mg/kg	103	50.0	140	
		Dibenz(a,h)anthracene	53-70-3	E641A-L	0.416 mg/kg	0.5 mg/kg	102	50.0	140	
		Fluoranthene	206-44-0	E641A-L	0.426 mg/kg	0.5 mg/kg	105	50.0	140	
		Fluorene	86-73-7	E641A-L	0.436 mg/kg	0.5 mg/kg	107	50.0	140	
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.416 mg/kg	0.5 mg/kg	102	50.0	140	
		Methylnaphthalene, 1-	90-12-0	E641A-L	0.428 mg/kg	0.5 mg/kg	105	50.0	140	
		Methylnaphthalene, 2-	91-57-6	E641A-L	0.458 mg/kg	0.5 mg/kg	112	50.0	140	
		Naphthalene	91-20-3	E641A-L	0.456 mg/kg	0.5 mg/kg	112	50.0	140	
		Phenanthrene	85-01-8	E641A-L	0.437 mg/kg	0.5 mg/kg	108	50.0	140	
		Pyrene	129-00-0	E641A-L	0.426 mg/kg	0.5 mg/kg	105	50.0	140	
		Quinoline	91-22-5	E641A-L	0.404 mg/kg	0.5 mg/kg	99.3	50.0	140	

Page : 20 of 22

Work Order: VA23B3448 Amendment 1

 Client
 :
 McElhanney Ltd.

 Project
 :
 2241-20128-00 T2017



Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:					Refere	Reference Material (RM) Report					
					RM Target	Recovery (%)	Recovery I	Limits (%)			
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier		
Saturated Past	te Extractables (QCLot:	1001664)									
	RM	Chloride, soluble ion content	16887-00-6	E239.CI	1237 mg/L	90.4	70.0	130			
Saturated Past	te Extractables (QCLot:	1001665)									
	RM	% Saturation		E141	48.3 %	97.6	70.0	130			
Saturated Past	te Extractables (QCLot:	1001666)									
	RM	Sodium, soluble ion content	17341-25-2	E442	330 mg/L	97.9	70.0	130			
Saturated Past	te Extractables (QCLot:	994744)									
	RM	Chloride, soluble ion content	16887-00-6	E239.CI	1237 mg/L	80.6	70.0	130			
Saturated Past	te Extractables (QCLot:	994745)									
	RM	% Saturation		E141	48.3 %	117	70.0	130			
Saturated Past	te Extractables (QCLot:	994746)									
	RM	Sodium, soluble ion content	17341-25-2	E442	330 mg/L	90.3	70.0	130			
Saturated Past	te Extractables (QCLot:	994845)									
	RM	Chloride, soluble ion content	16887-00-6	E239.CI	1237 mg/L	88.6	70.0	130			
Saturated Past	te Extractables (QCLot:	994846)									
	RM	% Saturation		E141	48.3 %	99.9	70.0	130			
Saturated Past	te Extractables (QCLot:	994847)									
	RM	Sodium, soluble ion content	17341-25-2	E442	330 mg/L	94.5	70.0	130			
Metals (QCLot	: 994747)										
(43_5)	SCP SS-2	Mercury	7439-97-6	E510	0.059 mg/kg	106	70.0	130			
Metals (QCLot	: 994748)										
(43_5)	SCP SS-2	Aluminum	7429-90-5	E440	9817 mg/kg	110	70.0	130			
	SCP SS-2	Antimony	7440-36-0	E440	3.99 mg/kg	92.8	70.0	130			
	SCP SS-2	Arsenic	7440-38-2	E440	3.73 mg/kg	102	70.0	130			
	SCP SS-2	Barium	7440-39-3	E440	105 mg/kg	104	70.0	130			
	SCP SS-2	Beryllium	7440-41-7	E440	0.349 mg/kg	106	70.0	130			
	SCP SS-2	Boron	7440-42-8	E440	8.5 mg/kg	117	40.0	160			
	SCP SS-2	Cadmium	7440-43-9	E440	0.91 mg/kg	# 134	70.0	130	MES		
	SCP SS-2	Calcium	7440-70-2	E440	31082 mg/kg	105	70.0	130			
	30F 33-2	GaloiuIII	1-1-0-10-2	L++U	0 1002 Hig/Ng	100	10.0	130			

21 of 22 VA23B3448 Amendment 1 Work Order:



Sub-Matrix:						Refere	nce Material (RM) Re	eport	
					RM Target	Recovery (%)	Recovery L	Limits (%)	
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot:	994748) - continued								
•	SCP SS-2	Chromium	7440-47-3	E440	101 mg/kg	118	70.0	130	
	SCP SS-2	Cobalt	7440-48-4	E440	6.9 mg/kg	102	70.0	130	
	SCP SS-2	Copper	7440-50-8	E440	123 mg/kg	100	70.0	130	
	SCP SS-2	Iron	7439-89-6	E440	23558 mg/kg	106	70.0	130	
	SCP SS-2	Lead	7439-92-1	E440	267 mg/kg	115	70.0	130	
	SCP SS-2	Lithium	7439-93-2	E440	9.5 mg/kg	102	70.0	130	
	SCP SS-2	Magnesium	7439-95-4	E440	5509 mg/kg	108	70.0	130	
	SCP SS-2	Manganese	7439-96-5	E440	269 mg/kg	110	70.0	130	
	SCP SS-2	Molybdenum	7439-98-7	E440	1.03 mg/kg	95.6	70.0	130	
	SCP SS-2	Nickel	7440-02-0	E440	26.7 mg/kg	104	70.0	130	
	SCP SS-2	Phosphorus	7723-14-0	E440	752 mg/kg	102	70.0	130	
	SCP SS-2	Potassium	7440-09-7	E440	1587 mg/kg	115	70.0	130	
	SCP SS-2	Sodium	7440-23-5	E440	797 mg/kg	103	70.0	130	
	SCP SS-2	Strontium	7440-24-6	E440	86.1 mg/kg	105	70.0	130	
	SCP SS-2	Thallium	7440-28-0	E440	0.0786 mg/kg	97.6	40.0	160	
	SCP SS-2	Tin	7440-31-5	E440	10.6 mg/kg	91.0	70.0	130	
	SCP SS-2	Titanium	7440-32-6	E440	839 mg/kg	112	70.0	130	
	SCP SS-2	Uranium	7440-61-1	E440	0.52 mg/kg	105	70.0	130	
	SCP SS-2	Vanadium	7440-62-2	E440	32.7 mg/kg	107	70.0	130	
	SCP SS-2	Zinc	7440-66-6	E440	297 mg/kg	101	70.0	130	
	SCP SS-2	Zirconium	7440-67-7	E440	5.73 mg/kg	90.4	70.0	130	
Metals (QCLot:	994842)								
·	SCP SS-2	Mercury	7439-97-6	E510	0.059 mg/kg	112	70.0	130	
Metals (QCLot:	994843)								
	SCP SS-2	Aluminum	7429-90-5	E440	9817 mg/kg	108	70.0	130	
	SCP SS-2	Antimony	7440-36-0	E440	3.99 mg/kg	92.0	70.0	130	
	SCP SS-2	Arsenic	7440-38-2	E440	3.73 mg/kg	104	70.0	130	
	SCP SS-2	Barium	7440-39-3	E440	105 mg/kg	102	70.0	130	
	SCP SS-2	Beryllium	7440-41-7	E440	0.349 mg/kg	109	70.0	130	
	SCP SS-2	Boron	7440-42-8	E440	8.5 mg/kg	128	40.0	160	
	SCP SS-2	Cadmium	7440-43-9	E440	0.91 mg/kg	96.6	70.0	130	

22 of 22 VA23B3448 Amendment 1 Work Order:



Sub-Matrix:					Refere	ence Material (RM) Re	eport		
					RM Target	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot:	994843) - continued								
	SCP SS-2	Calcium	7440-70-2	E440	31082 mg/kg	107	70.0	130	
	SCP SS-2	Chromium	7440-47-3	E440	101 mg/kg	115	70.0	130	
	SCP SS-2	Cobalt	7440-48-4	E440	6.9 mg/kg	98.2	70.0	130	
	SCP SS-2	Copper	7440-50-8	E440	123 mg/kg	96.6	70.0	130	
	SCP SS-2	Iron	7439-89-6	E440	23558 mg/kg	101	70.0	130	
	SCP SS-2	Lead	7439-92-1	E440	267 mg/kg	101	70.0	130	
	SCP SS-2	Lithium	7439-93-2	E440	9.5 mg/kg	105	70.0	130	
	SCP SS-2	Magnesium	7439-95-4	E440	5509 mg/kg	109	70.0	130	
	SCP SS-2	Manganese	7439-96-5	E440	269 mg/kg	107	70.0	130	
	SCP SS-2	Molybdenum	7439-98-7	E440	1.03 mg/kg	99.1	70.0	130	
	SCP SS-2	Nickel	7440-02-0	E440	26.7 mg/kg	99.8	70.0	130	
	SCP SS-2	Phosphorus	7723-14-0	E440	752 mg/kg	87.4	70.0	130	
	SCP SS-2	Potassium	7440-09-7	E440	1587 mg/kg	118	70.0	130	
	SCP SS-2	Sodium	7440-23-5	E440	797 mg/kg	100	70.0	130	
	SCP SS-2	Strontium	7440-24-6	E440	86.1 mg/kg	104	70.0	130	
	SCP SS-2	Thallium	7440-28-0	E440	0.0786 mg/kg	96.1	40.0	160	
	SCP SS-2	Tin	7440-31-5	E440	10.6 mg/kg	97.2	70.0	130	
	SCP SS-2	Titanium	7440-32-6	E440	839 mg/kg	118	70.0	130	
	SCP SS-2	Uranium	7440-61-1	E440	0.52 mg/kg	106	70.0	130	
	SCP SS-2	Vanadium	7440-62-2	E440	32.7 mg/kg	106	70.0	130	
	SCP SS-2	Zinc	7440-66-6	E440	297 mg/kg	96.0	70.0	130	
	SCP SS-2	Zirconium	7440-67-7	E440	5.73 mg/kg	89.3	70.0	130	

Chain of Custody (COC) / Analytical Request Form

COC Number: 21 -

Page of 2

Canada Toll Free: 1 800 668 9878

Environmental Division Vancouver Work Order Reference VA23B3448
MAL NO. BUILD

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ALS Sample #	Sample Identi	fication and/or Coordinates		Date	Time	County Ton	1≅	Me	Salinity (Ē)+ X										SAMPL	臣	S
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Are samples for	human consumption/ use?	Running TH23-12B (No	ng TH23-12B (Not a typo)					IN	IITIAL	COOLE	RTEM	PERATU	RES °C				FINA	r cool	ER TE	MPERAT	URES *	<u>c</u>	
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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY, By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

Chain of Custody (COC) / Analytical Request Form

COC Number: 21 -





ALS		Canada Toll Free: 1 800 668 9878										<u>د</u>	. 1	_									
(ALS)) www.alsglobal.com																						
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Contact:	Victoria Amson		Merge QC/QCI	Reports with COA	A 🗹 YES 🔲 I	NO N/A						M-F - 20						AFFI)	X ALS	BARC	ODE L	ABEL H	IERE
Phone:	7785841382		Compare Resu	ults to Criteria on Repor	rt - provide details be	atow if box checked	□ 3°	day (P	3] if rec	eived b	y 3pm	M-F - 25	5% rus	sh surch	arge mi	inimum	١. ١			(ALS u			- : .
	Company address below will appear	r on the final report	Select Distributi	ion: 🖸 EMAIL	MAIL [FAX						M-F - 50 M-F - 100											
Street:	Suite 500 - 3960 Quadra St		Email 1 or Fax	vamson@mcelha	anney.com		-					10am M-9											
City/Province:	Victoria, BC			bwhite@mcelhan					Additio	nal fee:	s may a	apply to ru	ısh req	uests o	n week	ends, st	tatutory	y holiday	s and f	or non-n	outine te	sts.	-
Postal Code:	V8X 4A3		Email 3	mmanzi@mcelha	anney.com			Date ar	nd Tim	e Requ	ired fo	rall E&P	TATs:	\top									
Invoice To	Same as Report To	✓ YES NO		Invoice R	Recipients		For all tests with rush TATs requested, please contact your AM to confirm availability.																
	Copy of Invoice with Report [YES NO	Select Invoice [Distribution: 🔽 E	EMAIL MAIL	☐ FAX								Anal	ysis F	Reque	est						
Company:			Email 1 or Fax	vamson@mcelha	anney.com		छ			Indicate	e Filtere	ed (F), Pre	eserve	d (P) or	Filtered	d and Pr	reserve	ad (F/P)	below		\top	Τσ	T
Contact:			Email 2	bwhite@mcelhan	nney.com		世					ГΤ					\exists	\neg	\Box		7		į
	Project Information	on	Oil	l and Gas Require	ed Fields (client	t use)	CONTAINERS					П					\neg		T		٦,	STORAGE REQUIRED	٥
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Job #:	2241-20128-00 T2017		Major/Minor Code:		Routing Code:		lδ			'				ļ						- 1	5	2 병	₽
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ALS Sample #	Sample Iden	tification and/or Coordinates		Date	Time		ĪĒ	CSR Metals	ilty (}		Ì		- 1				1		2		🖁
(ALS use only)	1	otion will appear on the report)		(dd-mmm-yy)	(hh:mm)	Sample Type]]	SSR	Salinity	🔠	at E				ľ					- 1	Į₫	\$ E	1 %
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	HA23-03			12-Jun-23	AM	Soil	5	R	R	R	\vdash	\vdash	-	_		+	-+	+	十	+	十	+	+-
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Drinking	Ing Water (DW) Samples (client use) Notes / Specif			valuation by select	ling from drop-dc	own below				·		SAMPL	E RE	CEIP	r DET	AILS	(ALS	use o	nly)				
	<u> </u>	e). == ==				Cooli	ing Me	ethod:		NONE	E [] 1	ICE	ICE	PACKS	s 🗌	FROZ	ZEN		COOL	ING IN	ITIATED		
· _	en from a Regulated DW System?						Submission Comments identified on Sample Receipt Notification:XESNo																
	res 🛭 No					Cooler Custody Seals Intact: YES N/A Sample Custody Seals Intact: YES					N/A												
Are samples for	-human consumption/ use?	ntion/ use?					<u> </u>	ŧΝ	IITIAL (COOLE	RTEM	#PERATU	RES º	C	耳		FIN	AL COC	OLER 1	TEMPER	ATURE	S °C	
Y	/ES ☑ NO	-				16 17																	
	SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)																			
Released by: M	by: Michael Manzi Date: June 13 2023 Time:					Time: Received by: Date: JUN			N 1	N 1 4 2023				an									

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

ALS Canada Ltd.

Contact



CERTIFICATE OF ANALYSIS

Dean Watt

1 of 10 Work Order : VA23B3105 Page

Client Laboratory : McElhanney Ltd. : Vancouver - Environmental **Account Manager**

Address : # 500 - 3960 Quadra Street Address 8081 Lougheed Highway

> Victoria BC Canada V8X 4A3 Burnaby BC Canada V5A 1W9

Telephone : 250 370 9221 Telephone : +1 604 253 4188 Date Samples Received **Project** : 09-Jun-2023 11:00 : 2241-20182-00

PO ----**Date Analysis Commenced** : 12-Jun-2023

C-O-C number **Issue Date** : 20-909141 : 19-Jun-2023 10:29

Sampler : MM Site

Quote number : BC/Yukon Standing Offer - 2022 update

: Victoria Amson

No. of samples received : 16 No. of samples analysed : 10

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

General Comments

- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Kate Dimitrova	Analsyt	Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia

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General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances LOR: Limit of Reporting (detection limit).

Unit	Description	
-	no units	
%	percent	
μg/g	micrograms per gram	
μg/L	micrograms per litre	
mg/kg	milligrams per kilogram	
pH units	pH units	

<: less than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.
DLHM	Detection Limit Adjusted: Sample has high moisture content.
DLQ	Detection Limit raised due to co-eluting interference. Mass Spectrometry qualifier ion ratio did not meet acceptance criteria.

>: greater than.

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Sub-Matrix: Soil/Solid			Cli	ent sample ID	TH23-01A	TH23-02A	TH23-03A	TH23-04A	TH23-05A
(Matrix: Soil/Solid)									
			Client samp	ling date / time	08-Jun-2023 07:30	08-Jun-2023 08:20	08-Jun-2023 09:00	08-Jun-2023 09:45	08-Jun-2023 10:45
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3105-001	VA23B3105-003	VA23B3105-005	VA23B3105-007	VA23B3105-009
Physical Tests					Result	Result	Result	Result	Result
Physical Tests % Saturation		E141/VA	1.0	%	67.3	21.7	114	36.3	91.3
Moisture		E144/VA	0.25	%	21.9	4.64	26.0	17.6	22.0
pH (1:2 soil:water)		E108/VA	0.10	pH units	5.92	6.70	6.52	5.20	5.53
Saturated Paste Extractables			0.10	pri dinto	0.02	5	0.02	0.20	0.00
Chloride, soluble ion content	16887-00-6	EC239A.CI/V	1.0	μg/g	31.6	4.3	38.8	156	<18.3
Chloride, soluble ion content	16887-00-6	A E230 CIA/A	20000	μg/L	47000	20000	34000	429000	<20000
Sodium, soluble ion content	17341-25-2		1.00		19.4	4.86	<22.9	80.6	<18.3
Sodium, soluble ion content	17341-25-2		20000	μg/g μg/L	28800	22400	<20000	222000	<20000
	17341-25-2	L772/VA	20000	μg/L	20000	22400	420000	222000	120000
Metals Aluminum	7429-90-5	Ε440Λ/Δ	50	μg/g	44600	19300	49600	28400	38700
Antimony	7429-90-3		0.10	μg/g μg/g	0.26	0.10	0.20	<0.10	0.27
Arsenic	7440-38-2		0.10	μg/g	7.14	2.59	4.06	2.25	3.58
Barium	7440-39-3		0.50	μg/g	91.1	29.0	231	43.6	81.2
Beryllium	7440-41-7		0.10	μg/g	0.46	0.20	0.90	0.32	0.52
Bismuth	7440-69-9		0.20	μg/g	<0.20	<0.20	<0.20	<0.20	<0.20
Boron	7440-42-8		5.0	μg/g	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	7440-43-9		0.020	μg/g	0.045	0.046	0.041	0.045	0.026
Calcium	7440-70-2		50	μg/g	5640	6970	5560	6980	4040
Chromium	7440-47-3	E440/VA	0.50	μg/g	80.2	29.4	67.7	37.9	65.1
Cobalt	7440-48-4	E440/VA	0.10	μg/g	18.2	11.4	17.4	10.1	10.8
Copper	7440-50-8	E440/VA	0.50	μg/g	59.5	36.3	59.2	37.9	48.5
Iron	7439-89-6	E440/VA	50	μg/g	45000	25200	33200	26200	41300
Lead	7439-92-1	E440/VA	0.50	μg/g	5.27	2.18	8.48	1.52	4.62
Lithium	7439-93-2	E440/VA	2.0	μg/g	20.5	10.6	20.3	5.8	16.5
Magnesium	7439-95-4	E440/VA	20	μg/g	14100	10400	8570	7180	8530
Manganese	7439-96-5	E440/VA	1.0	μg/g	642	477	432	294	348
Mercury	7439-97-6	E510/VA	0.0500	μg/g	<0.0500	<0.0500	<0.0500	<0.0500	0.0620
Molybdenum	7439-98-7	E440/VA	0.10	μg/g	0.29	0.17	0.59	0.32	0.30

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Sub-Matrix: Soil/Solid		C	lient sample ID	TH23-01A	TH23-02A	TH23-03A	TH23-04A	TH23-05A
(Matrix: Soil/Solid)								
Analyte	CAS Number Method/Lab	Client samp	oling date / time Unit	08-Jun-2023 07:30 VA23B3105-001	08-Jun-2023 08:20 VA23B3105-003	08-Jun-2023 09:00 VA23B3105-005	08-Jun-2023 09:45 VA23B3105-007	08-Jun-2023 10:45 VA23B3105-009
-				Result	Result	Result	Result	Result
Metals								
Nickel	7440-02-0 E440/VA	0.50	μg/g	51.6	27.8	51.9	20.0	32.6
Phosphorus	7723-14-0 E440/VA	50	μg/g	243	428	397	432	176
Potassium	7440-09-7 E440/VA	100	μg/g	940	410	540	320	660
Selenium	7782-49-2 E440/VA	0.20	μg/g	0.40	<0.20	0.35	0.50	0.33
Silver	7440-22-4 E440/VA	0.10	μg/g	<0.10	<0.10	<0.10	0.13	<0.10
Sodium	7440-23-5 E440/VA	50	μg/g	329	199	329	436	184
Strontium	7440-24-6 E440/VA	0.50	μg/g	41.9	25.6	40.4	30.0	35.4
Sulfur	7704-34-9 E440/VA	1000	μg/g	<1000	<1000	<1000	<1000	<1000
Thallium	7440-28-0 E440/VA	0.050	μg/g	0.087	<0.050	0.139	<0.050	0.078
Tin	7440-31-5 E440/VA	2.0	μg/g	<2.0	<2.0	<2.0	<2.0	<2.0
Titanium	7440-32-6 E440/VA	1.0	μg/g	2140	1260	1100	2170	1290
Tungsten	7440-33-7 E440/VA	0.50	μg/g	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium	7440-61-1 E440/VA	0.050	μg/g	0.542	0.182	1.11	0.366	0.653
Vanadium	7440-62-2 E440/VA	0.20	µg/g	125	62.4	97.6	105	130
Zinc	7440-66-6 E440/VA	2.0	μg/g	62.1	39.4	57.1	27.3	40.8
Zirconium	7440-67-7 E440/VA	1.0	μg/g	4.7	2.2	1.9	5.1	4.6
Volatile Organic Compounds [Fuels]								
Benzene	71-43-2 E611A/VA	0.0050	μg/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Ethylbenzene	100-41-4 E611A/VA	0.015	μg/g	<0.015	<0.015	<0.015	<0.015	<0.015
Methyl-tert-butyl ether [MTBE]	1634-04-4 E611A/VA	0.200	μg/g	<0.200	<0.200	<0.200	<0.200	<0.200
Styrene	100-42-5 E611A/VA	0.050	μg/g	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	108-88-3 E611A/VA	0.050	μg/g	<0.050	<0.050	<0.050	<0.050	<0.050
Xylene, m+p-	179601-23-1 E611A/VA	0.050	μg/g	<0.050	<0.050	<0.050	<0.050	<0.050
Xylene, o-	95-47-6 E611A/VA	0.050	μg/g	<0.050	<0.050	<0.050	<0.050	<0.050
Xylenes, total	1330-20-7 E611A/VA	0.075	μg/g	<0.075	<0.075	<0.075	<0.075	<0.075
Hydrocarbons								
EPH (C10-C19)	E601A/VA	200	μg/g	<200	<200	<200	<200	<200
EPH (C19-C32)	E601A/VA	200	μg/g	<200	<200	<200	<200	<200
VHs (C6-C10)	E581.VH+F1/ VA	10	μg/g	<10	<10	<10	<10	<10

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Sub-Matrix: Soil/Solid		C	lient sample ID	TH23-01A	TH23-02A	TH23-03A	TH23-04A	TH23-05A
(Matrix: Soil/Solid)								
		Client samp	oling date / time	08-Jun-2023 07:30	08-Jun-2023 08:20	08-Jun-2023 09:00	08-Jun-2023 09:45	08-Jun-2023 10:45
Analyte	CAS Number Method/Lab	LOR	Unit	VA23B3105-001	VA23B3105-003	VA23B3105-005	VA23B3105-007	VA23B3105-009
				Result	Result	Result	Result	Result
Hydrocarbons								
HEPHs	EC600A/VA	200	μg/g	<200	<200	<200	<200	<200
LEPHs	EC600A/VA	200	μg/g	<200	<200	<200	<200	<200
VPHs	EC580A/VA	10	μg/g	<10	<10	<10	<10	<10
Hydrocarbons Surrogates								
Bromobenzotrifluoride, 2- (EPH surrogate)	392-83-6 E601A/VA	1.0	%	89.7	97.2	96.2	96.3	97.9
Dichlorotoluene, 3,4-	95-75-0 E581.VH+F1/	1.0	%	112	106	97.6	108	114
	VA							
Volatile Organic Compounds Surrogates	50440	0.40		20.0	24.2	77.0	04.5	24.0
Bromofluorobenzene, 4-	460-00-4 E611A/VA	0.10	%	83.9	91.6	77.8	91.5	81.3
Difluorobenzene, 1,4-	540-36-3 E611A/VA	0.10	%	91.9	104	88.4	103	91.5
Polycyclic Aromatic Hydrocarbons								
Acenaphthene	83-32-9 E641A-L/VA	0.0050	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	208-96-8 E641A-L/VA	0.0050	μg/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acridine	260-94-6 E641A-L/VA	0.010	µg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Anthracene	120-12-7 E641A-L/VA	0.0040	μg/g	<0.0041 DLHM	<0.0040	<0.0043 DLHM	<0.0040	<0.0041 DLHM
Benz(a)anthracene	56-55-3 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(a)pyrene	50-32-8 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(b+j)fluoranthene	n/a E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(b+j+k)fluoranthene	n/a E641A-L/VA	0.015	μg/g	<0.015	<0.015	<0.015	<0.015	<0.015
Benzo(g,h,i)perylene	191-24-2 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(k)fluoranthene	207-08-9 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Chrysene	218-01-9 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Dibenz(a,h)anthracene	53-70-3 E641A-L/VA	0.0050	μg/g	0.0084	<0.0050	0.0066	<0.0050	<0.0050
Fluoranthene	206-44-0 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Fluorene	86-73-7 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Indeno(1,2,3-c,d)pyrene	193-39-5 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Methylnaphthalene, 1-	90-12-0 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Methylnaphthalene, 2-	91-57-6 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Naphthalene	91-20-3 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Phenanthrene	85-01-8 E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010

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Analytical Results

Sub-Matrix: Soil/Solid			CI	lient sample ID	TH23-01A	TH23-02A	TH23-03A	TH23-04A	TH23-05A
(Matrix: Soil/Solid)									
			Client samp	oling date / time	08-Jun-2023 07:30	08-Jun-2023 08:20	08-Jun-2023 09:00	08-Jun-2023 09:45	08-Jun-2023 10:45
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3105-001	VA23B3105-003	VA23B3105-005	VA23B3105-007	VA23B3105-009
					Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons									
Pyrene	129-00-0 ^E	641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Quinoline	91-22-5 E	641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
B(a)P total potency equivalents [B(a)P TPE]	E	641A-L/VA	0.020	μg/g	<0.020	<0.020	<0.020	<0.020	<0.020
IACR (CCME)	E	641A-L/VA	0.150	-	<0.150	<0.150	<0.150	<0.150	<0.150
Polycyclic Aromatic Hydrocarbons Surrogates									
Acridine-d9	34749-75-2 E	641A-L/VA	0.1	%	74.6	87.7	92.2	89.0	93.7
Chrysene-d12	1719-03-5 E	641A-L/VA	0.1	%	86.1	92.8	97.6	93.3	98.6
Naphthalene-d8	1146-65-2 E	641A-L/VA	0.1	%	102	110	108	104	110
Phenanthrene-d10	1517-22-2 E	E641A-L/VA	0.1	%	97.0	105	103	99.8	106

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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Sub-Matrix: Soil/Solid			CI	ient sample ID	TH23-06B	HA23-01	HA23-04	HA23-05	DUP-A
(Matrix: Soil/Solid)									
			Client samp	ling date / time	08-Jun-2023 11:30	06-Jun-2023 12:30	06-Jun-2023 12:45	06-Jun-2023 13:00	06-Jun-2023 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3105-012	VA23B3105-013	VA23B3105-014	VA23B3105-015	VA23B3105-016
Physical Tests					Result	Result	Result	Result	Result
% Saturation		E141/VA	1.0	%	75.3	38.7	80.5	79.2	97.9
Moisture		E144/VA	0.25	%	21.1	12.1	7.52	13.8	27.0
pH (1:2 soil:water)		E108/VA	0.10	pH units	5.82	5.25	5.97	5.54	6.44
Saturated Paste Extractables									
Chloride, soluble ion content	16887-00-6	EC239A.CI/V	1.0	μg/g	19.6	<7.7	<16.1	<15.8	32.3
Chloride, soluble ion content	16887-00-6	A E239.CI/VA	20000	μg/L	26000	<20000	<20000	<20000	33000
Sodium, soluble ion content	17341-25-2	EC442/VA	1.00	μg/g	<15.1	<7.75	<16.1	<15.8	<19.6
Sodium, soluble ion content	17341-25-2		20000	μg/L	<20000	<20000	<20000	<20000	<20000
Metals									
Aluminum	7429-90-5	E440/VA	50	µg/g	33200	19700	25600	26200	42000
Antimony	7440-36-0	E440/VA	0.10	µg/g	0.22	0.20	1.05	0.87	0.24
Arsenic	7440-38-2	E440/VA	0.10	μg/g	4.93	3.06	4.32	5.48	4.68
Barium	7440-39-3	E440/VA	0.50	μg/g	71.7	59.4	142	149	195
Beryllium	7440-41-7	E440/VA	0.10	μg/g	0.39	0.33	0.31	0.37	0.76
Bismuth	7440-69-9	E440/VA	0.20	µg/g	<0.20	<0.20	<0.20	<0.20	<0.20
Boron	7440-42-8	E440/VA	5.0	μg/g	<5.0	<5.0	<5.0	<5.0	<5.0
Cadmium	7440-43-9	E440/VA	0.020	μg/g	0.020	0.084	0.235	0.918	0.050
Calcium	7440-70-2	E440/VA	50	μg/g	4230	7060	8780	7840	5940
Chromium	7440-47-3	E440/VA	0.50	μg/g	65.3	31.7	48.9	46.2	68.4
Cobalt	7440-48-4	E440/VA	0.10	μg/g	12.9	12.7	15.2	13.4	16.6
Copper	7440-50-8	E440/VA	0.50	μg/g	40.6	45.2	64.9	54.8	53.3
Iron	7439-89-6	E440/VA	50	μg/g	38600	27800	33700	33200	36000
Lead	7439-92-1	E440/VA	0.50	μg/g	4.72	5.08	143	115	6.47
Lithium	7439-93-2	E440/VA	2.0	μg/g	18.6	10.5	12.3	14.8	20.5
Magnesium	7439-95-4	E440/VA	20	μg/g	9970	8300	11200	9350	9380
Manganese	7439-96-5	E440/VA	1.0	μg/g	458	658	688	860	492
Mercury	7439-97-6	E510/VA	0.0500	μg/g	<0.0500	<0.0500	<0.0500	0.0900	<0.0500
Molybdenum	7439-98-7	E440/VA	0.10	μg/g	0.32	0.42	0.84	0.76	0.64
Nickel	7440-02-0	E440/VA	0.50	μg/g	38.3	24.4	33.9	31.8	47.8
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Analytical Results								
Sub-Matrix: Soil/Solid		C	lient sample ID	TH23-06B	HA23-01	HA23-04	HA23-05	DUP-A
(Matrix: Soil/Solid)								
		Client samp	oling date / time	08-Jun-2023 11:30	06-Jun-2023 12:30	06-Jun-2023 12:45	06-Jun-2023 13:00	06-Jun-2023 09:00
Analyte	CAS Number Method/Lab	LOR	Unit	VA23B3105-012	VA23B3105-013	VA23B3105-014	VA23B3105-015	VA23B3105-016
				Result	Result	Result	Result	Result
Metals	544004	50		110	700	700	1000	
Phosphorus	7723-14-0 E440/VA	50	μg/g	148	769	769	1880	337
Potassium	7440-09-7 E440/VA	100	μg/g	480	520	1010	690	530
Selenium	7782-49-2 E440/VA	0.20	μg/g	0.29	0.21	0.21	0.23	0.32
Silver	7440-22-4 E440/VA	0.10	μg/g	<0.10	<0.10	<0.10	0.14	<0.10
Sodium	7440-23-5 E440/VA	50	μg/g	194	316	292	250	295
Strontium	7440-24-6 E440/VA	0.50	μg/g	28.1	29.7	36.1	37.5	43.4
Sulfur	7704-34-9 E440/VA	1000	μg/g	<1000	<1000	<1000	<1000	<1000
Thallium	7440-28-0 E440/VA	0.050	μg/g	0.067	<0.050	<0.050	0.058	0.112
Tin	7440-31-5 E440/VA	2.0	μg/g	<2.0	<2.0	<2.0	3.4	<2.0
Titanium	7440-32-6 E440/VA	1.0	µg/g	1120	1240	1540	1160	1110
Tungsten	7440-33-7 E440/VA	0.50	µg/g	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium	7440-61-1 E440/VA	0.050	μg/g	0.433	0.291	0.261	0.400	1.06
Vanadium	7440-62-2 E440/VA	0.20	μg/g	100	72.6	86.9	81.0	103
Zinc	7440-66-6 E440/VA	2.0	μg/g	46.3	57.8	191	242	52.4
Zirconium	7440-67-7 E440/VA	1.0	μg/g	3.4	2.0	2.3	<1.0	1.3
Volatile Organic Compounds [Fuels]								
Benzene	71-43-2 E611A/VA	0.0050	μg/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Ethylbenzene	100-41-4 E611A/VA	0.015	μg/g	<0.015	<0.015	<0.015	<0.015	<0.015
Methyl-tert-butyl ether [MTBE]	1634-04-4 E611A/VA	0.200	μg/g	<0.200	<0.200	<0.200	<0.200	<0.200
Styrene	100-42-5 E611A/VA	0.050	μg/g	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	108-88-3 E611A/VA	0.050	μg/g	< 0.050	<0.050	<0.050	<0.050	<0.050
Xylene, m+p-	179601-23-1 E611A/VA	0.050	μg/g	< 0.050	<0.050	<0.050	<0.050	<0.050
Xylene, o-	95-47-6 E611A/VA	0.050	μg/g	<0.050	<0.050	<0.050	<0.050	<0.050
Xylenes, total	1330-20-7 E611A/VA	0.075	μg/g	<0.075	<0.075	<0.075	<0.075	<0.075
Hydrocarbons								
EPH (C10-C19)	E601A/VA	200	μg/g	<200	<200	<200	<200	<200
EPH (C19-C32)	E601A/VA	200	μg/g	<200	<200	<200	<200	<200
VHs (C6-C10)	E581.VH+F1/ VA	10	µg/g	<10	<10	<10	<10	<10
HEPHs	EC600A/VA	200	μg/g	<200	<200	<200	<200	<200

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(Martine 0 - 11/0 - 11-1)			On	ient sample ID	TH23-06B	HA23-01	HA23-04	HA23-05	DUP-A
(Matrix: Soil/Solid)									
	CASAlumbar	Method/Lab	Client samp	ling date / time Unit	08-Jun-2023 11:30 VA23B3105-012	06-Jun-2023 12:30 VA23B3105-013	06-Jun-2023 12:45 VA23B3105-014	06-Jun-2023 13:00 VA23B3105-015	06-Jun-2023 09:00 VA23B3105-016
Analyte	CAS Number	Welliou/Lab	LOR	Onn	Result	Result	Result	Result	Result
Hydrocarbons					Nesuit	Nesuit	Nesuit	Nesuit	Nesuit
LEPHs	E	C600A/VA	200	μg/g	<200	<200	<200	<200	<200
VPHs	E	C580A/VA	10	μg/g	<10	<10	<10	<10	<10
Hydrocarbons Surrogates									
Bromobenzotrifluoride, 2- (EPH surrogate)	392-83-6 E	601A/VA	1.0	%	101	89.0	93.1	94.0	102
Dichlorotoluene, 3,4-	95-75-0 E	581.VH+F1/	1.0	%	111	105	113	104	86.4
	V	/A							
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4 E		0.10	%	84.1	84.3	87.2	81.2	83.4
Difluorobenzene, 1,4-	540-36-3	611A/VA	0.10	%	94.5	96.1	98.8	92.4	91.2
Polycyclic Aromatic Hydrocarbons									
Acenaphthene		641A-L/VA	0.0050	µg/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	208-96-8 E		0.0050	μg/g	<0.0050	<0.0050	0.0080	0.0138	<0.0050
Acridine		641A-L/VA	0.010	µg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Anthracene		641A-L/VA	0.0040	μg/g	<0.0042 DLHM	<0.0040	<0.0080 DLQ	<0.0120 DLQ	<0.0040
Benz(a)anthracene		641A-L/VA	0.010	μg/g	<0.010	<0.010	0.028	0.038	<0.010
Benzo(a)pyrene		641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.050 DLQ	0.044	<0.010
Benzo(b+j)fluoranthene	n/a E	641A-L/VA	0.010	μg/g	<0.010	<0.010	0.077	0.066	<0.010
Benzo(b+j+k)fluoranthene	10.20	641A-L/VA	0.015	μg/g	<0.015	<0.015	0.100	0.085	<0.015
Benzo(g,h,i)perylene	191-24-2 E		0.010	μg/g	<0.010	<0.010	0.080	0.048	<0.010
Benzo(k)fluoranthene	207-08-9 E	641A-L/VA	0.010	μg/g	<0.010	<0.010	0.023	0.019	<0.010
Chrysene	218-01-9 E	641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.070 DLCI	<0.060 DLCI	<0.010
Dibenz(a,h)anthracene		641A-L/VA	0.0050	μg/g	<0.0050	<0.0050	0.0094	0.0087	<0.0050
Fluoranthene	206-44-0 E		0.010	μg/g	<0.010	<0.010	0.092	0.073	<0.010
Fluorene	86-73-7 E	641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Indeno(1,2,3-c,d)pyrene		641A-L/VA	0.010	μg/g	<0.010	<0.010	0.052	0.042	<0.010
Methylnaphthalene, 1-	90-12-0 E	641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Methylnaphthalene, 2-	91-57-6 E	641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Naphthalene		641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
Phenanthrene	85-01-8 E	641A-L/VA	0.010	μg/g	<0.010	<0.010	0.039	0.032	<0.010
Pyrene	129-00-0 E	641A-L/VA	0.010	μg/g	<0.010	<0.010	0.080	0.073	<0.010

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Analytical Results

Sub-Matrix: Soil/Solid			Cl	ient sample ID	TH23-06B	HA23-01	HA23-04	HA23-05	DUP-A
(Matrix: Soil/Solid)									
			Client samp	ling date / time	08-Jun-2023 11:30	06-Jun-2023 12:30	06-Jun-2023 12:45	06-Jun-2023 13:00	06-Jun-2023 09:00
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23B3105-012	VA23B3105-013	VA23B3105-014	VA23B3105-015	VA23B3105-016
					Result	Result	Result	Result	Result
Polycyclic Aromatic Hydrocarbons									
Quinoline	91-22-5	E641A-L/VA	0.010	μg/g	<0.010	<0.010	<0.010	<0.010	<0.010
B(a)P total potency equivalents [B(a)P TPE]		E641A-L/VA	0.020	μg/g	<0.020	<0.020	0.054	0.070	<0.020
IACR (CCME)		E641A-L/VA	0.150	-	<0.150	<0.150	0.866	0.840	<0.150
Polycyclic Aromatic Hydrocarbons Surrogates									
Acridine-d9	34749-75-2	E641A-L/VA	0.1	%	94.6	83.9	73.7	62.2	98.7
Chrysene-d12	1719-03-5	E641A-L/VA	0.1	%	102	95.6	93.6	94.4	109
Naphthalene-d8	1146-65-2	E641A-L/VA	0.1	%	114	119	106	101	114
Phenanthrene-d10	1517-22-2	E641A-L/VA	0.1	%	107	111	98.2	95.1	108

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : VA23B3105 Page : 1 of 21

Client : McElhanney Ltd. Laboratory : Vancouver - Environmental

Contact : Victoria Amson : Dean Watt

Address :# 500 - 3960 Quadra Street Address :8081 Lougheed Highway

Victoria BC Canada V8X 4A3

Burnaby, British Columbia Canada V5A 1W9

 Telephone
 : 250 370 9221
 Telephone
 : +1 604 253 4188

 Project
 : 2241-20182-00
 Date Samples Received
 : 09-Jun-2023 11:00

PO : ---- Issue Date : 19-Jun-2023 10:31

C-O-C number : 20-909141
Sampler : MM

Quote number : BC/Yukon Standing Offer - 2022 update

No. of samples received :16
No. of samples analysed :10

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Site

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers: Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers: Analysis Holding Time Compliance (Breaches) ■ No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

<u>No</u> Quality Control Sample Frequency Outliers occur.



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Outliers: Quality Control Samples
Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: Soil/Solid

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Metals	Anonymous	Anonymous	Uranium	7440-61-1	E440	74.5 % DUP-H	30%	Duplicate RPD does not
								meet the DQO for this test.

Result Qualifiers

Qualifier	Description		
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.		



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Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and/or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

 Matrix: Soil/Solid
 Evaluation: x = Holding time exceedance; √ = Within Holding Time

 Analyte Group
 Method
 Sampling Date
 Extraction / Preparation
 Analysis

 Container / Client Sample ID(s)
 Preparation
 Analysis Date
 Holding Times
 Eval

Container / Client Sample ID(s)			Preparation		Times	Eval	Analysis Date	Holding Rec		Eval
			Date	Rec	Actual			Rec	Actual	
Hydrocarbons : BC PHCs - EPH by GC-FID										
Glass soil jar/Teflon lined cap TH23-01A	E601A	08-Jun-2023	14-Jun-2023	14 days	6 days	✓	16-Jun-2023	40 days	2 days	✓
Hydrocarbons : BC PHCs - EPH by GC-FID										
Glass soil jar/Teflon lined cap TH23-02A	E601A	08-Jun-2023	14-Jun-2023	14 days	6 days	✓	16-Jun-2023	40 days	2 days	√
Hydrocarbons : BC PHCs - EPH by GC-FID										
Glass soil jar/Teflon lined cap TH23-03A	E601A	08-Jun-2023	14-Jun-2023	14 days	6 days	✓	16-Jun-2023	40 days	2 days	4
Hydrocarbons : BC PHCs - EPH by GC-FID										
Glass soil jar/Teflon lined cap TH23-04A	E601A	08-Jun-2023	14-Jun-2023	14 days	6 days	1	16-Jun-2023	40 days	2 days	✓
Hydrocarbons : BC PHCs - EPH by GC-FID										
Glass soil jar/Teflon lined cap TH23-05A	E601A	08-Jun-2023	14-Jun-2023	14 days	6 days	√	16-Jun-2023	40 days	2 days	✓
Hydrocarbons : BC PHCs - EPH by GC-FID										
Glass soil jar/Teflon lined cap TH23-06B	E601A	08-Jun-2023	14-Jun-2023	14 days	6 days	1	16-Jun-2023	40 days	2 days	✓
Hydrocarbons : BC PHCs - EPH by GC-FID										
Glass soil jar/Teflon lined cap DUP-A	E601A	06-Jun-2023	14-Jun-2023	14 days	8 days	1	16-Jun-2023	40 days	2 days	✓

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atir. John John							riolaling time exce			
Analyte Group	Method	Sampling Date	Ext	raction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Hydrocarbons : BC PHCs - EPH by GC-FID										
Glass soil jar/Teflon lined cap										
HA23-01	E601A	06-Jun-2023	14-Jun-2023	14	8 days	1	16-Jun-2023	40 days	2 days	✓
				days						
Hydrocarbons : BC PHCs - EPH by GC-FID			4000							
Glass soil jar/Teflon lined cap										
HA23-04	E601A	06-Jun-2023	14-Jun-2023	14	8 days	✓	16-Jun-2023	40 days	2 days	✓
				days						
Hydrocarbons : BC PHCs - EPH by GC-FID										
Glass soil jar/Teflon lined cap				<u> </u>	<u> </u>		<u> </u>	<u> </u>		
HA23-05	E601A	06-Jun-2023	14-Jun-2023	14	8 days	✓	16-Jun-2023	40 days	2 davs	✓
				days					,	
hadroneshama VIII and E4 hadroness CO FID				daye						
Hydrocarbons : VH and F1 by Headspace GC-FID Glass soil methanol vial										
TH23-01A	E581.VH+F1	08-Jun-2023	12-Jun-2023				12-Jun-2023	40 days	A dave	√
11125-01A	2001.71111	00-0411-2020	12-0011-2020				12-3411-2023	40 days	4 days	,
Hydrocarbons: VH and F1 by Headspace GC-FID									I	
Glass soil methanol vial	EE04.\/\\.E4	00 1 2002	40 1 2002				40 1 0000	10 -1	4 -1	√
TH23-02A	E581.VH+F1	08-Jun-2023	12-Jun-2023				12-Jun-2023	40 days	4 days	*
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
TH23-03A	E581.VH+F1	08-Jun-2023	12-Jun-2023				12-Jun-2023	40 days	4 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
TH23-04A	E581.VH+F1	08-Jun-2023	12-Jun-2023				12-Jun-2023	40 days	4 days	✓
	/									
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
TH23-05A	E581.VH+F1	08-Jun-2023	12-Jun-2023				12-Jun-2023	40 days	4 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial										
	EE041/01/E4	00 1 0000	40 1 0000				12-Jun-2023	40 days	1 days	√
TH23-06B	E581.VH+F1	08-Jun-2023	12-Jun-2023					40 030	4 (Javs	

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latrix: Soil/Solid						diddion.	Holding time exce			riolaling i
Analyte Group	Method	Sampling Date		raction / Pi	•			Analys		
Container / Client Sample ID(s)			Preparation Date	Holdin Rec	g Times Actual	Eval	Analysis Date	Holding Rec	7 Times Actual	Eval
lydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial DUP-A	E581.VH+F1	06-Jun-2023	12-Jun-2023				12-Jun-2023	40 days	6 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID			A 100							
Glass soil methanol vial										
HA23-01	E581.VH+F1	06-Jun-2023	12-Jun-2023				12-Jun-2023	40 days	6 days	✓
lydrocarbons : VH and F1 by Headspace GC-FID		- 115 - 176								
Glass soil methanol vial HA23-04	E581.VH+F1	06-Jun-2023	12-Jun-2023	-			12-Jun-2023	40 days	6 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass soil methanol vial HA23-05	E581.VH+F1	06-Jun-2023	12-Jun-2023				12-Jun-2023	40 days	6 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap DUP-A	E510	06-Jun-2023	15-Jun-2023				15-Jun-2023	28 days	10 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap HA23-01	E510	06-Jun-2023	15-Jun-2023				15-Jun-2023	28 days	10 days	✓
Metals : Mercury in Soil/Solid by CVAAS		- (15.11)								
Glass soil jar/Teflon lined cap HA23-04	E510	06-Jun-2023	15-Jun-2023				15-Jun-2023	28 days	10 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap HA23-05	E510	06-Jun-2023	15-Jun-2023				15-Jun-2023	28 days	10 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap TH23-01A	E510	08-Jun-2023	15-Jun-2023				15-Jun-2023	28 days	8 days	✓

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Matrix: Soil/Solid						/aiuation. * =	Holding time exce	suarice , •	= \vitiiii	Holding Till
Analyte Group	Method	Sampling Date	Ext	raction / P.	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date		Times	Eval
			Date	Rec	Actual			Rec	Actual	
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
TH23-02A	E510	08-Jun-2023	15-Jun-2023				15-Jun-2023	28 days	8 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
TH23-03A	E510	08-Jun-2023	15-Jun-2023				15-Jun-2023	28 days	8 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
TH23-04A	E510	08-Jun-2023	15-Jun-2023				15-Jun-2023	28 days	8 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap			_							
TH23-05A	E510	08-Jun-2023	15-Jun-2023				15-Jun-2023	28 days	8 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
TH23-06B	E510	08-Jun-2023	15-Jun-2023				15-Jun-2023	28 days	8 days	✓
		V								
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
DUP-A	E440	06-Jun-2023	15-Jun-2023				16-Jun-2023	180	10 days	✓
								days		
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
HA23-01	E440	06-Jun-2023	15-Jun-2023				16-Jun-2023	180	10 days	✓
								days		
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
HA23-04	E440	06-Jun-2023	15-Jun-2023				16-Jun-2023	180	10 days	✓
								days		
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
HA23-05	E440	06-Jun-2023	15-Jun-2023				16-Jun-2023	180	10 days	✓
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Matrix: Soil/Solid						valuation. * =	Holding time excee	suarice ,	- •	Holding Hill
Analyte Group	Method	Sampling Date	Ext	traction / P.	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
TH23-01A	E440	08-Jun-2023	15-Jun-2023				16-Jun-2023	180	8 days	✓
								days		
Metals : Metals in Soil/Solid by CRC ICPMS			4 1 1 1							
Glass soil jar/Teflon lined cap										
TH23-02A	E440	08-Jun-2023	15-Jun-2023				16-Jun-2023	180	8 days	✓
								days		
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap					l					
TH23-03A	E440	08-Jun-2023	15-Jun-2023				16-Jun-2023	180	8 days	✓
								days		
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap					T T					
TH23-04A	E440	08-Jun-2023	15-Jun-2023				16-Jun-2023	180	8 days	✓
								days		
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
TH23-05A	E440	08-Jun-2023	15-Jun-2023				16-Jun-2023	180	8 days	✓
								days		
Metals : Metals in Soil/Solid by CRC ICPMS		A								
Glass soil jar/Teflon lined cap										
TH23-06B	E440	08-Jun-2023	15-Jun-2023				16-Jun-2023	180	8 days	✓
								days		
Physical Tests : Moisture Content by Gravimetry	400									
Glass soil jar/Teflon lined cap										
DUP-A	E144	06-Jun-2023					14-Jun-2023			
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap					<u> </u>					
HA23-01	E144	06-Jun-2023					14-Jun-2023			
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap	I									
HA23-04	E144	06-Jun-2023					14-Jun-2023			
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 Matrix: Soil/Solid

 Analyte Group
 Method
 Sampling Date
 Extraction / Preparation
 Extraction / Preparation
 Analysis

 Container / Client Sample ID(s)
 Preparation
 Holding Times
 Fival
 Analysis Date
 Holding Times
 Fival

Analyte Group	Method	Sampling Date	Ext	raction / Pr	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual		-	Rec	Actual	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
HA23-05	E144	06-Jun-2023					14-Jun-2023			
Physical Tests : Moisture Content by Gravimetry			4 1 1 1 1							
Glass soil jar/Teflon lined cap										
TH23-01A	E144	08-Jun-2023					14-Jun-2023			
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
TH23-02A	E144	08-Jun-2023					14-Jun-2023			
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap			_							
TH23-03A	E144	08-Jun-2023					14-Jun-2023			
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
TH23-04A	E144	08-Jun-2023					14-Jun-2023			
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
TH23-05A	E144	08-Jun-2023					14-Jun-2023			
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
TH23-06B	E144	08-Jun-2023					14-Jun-2023			
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
TH23-01A	E108	08-Jun-2023	15-Jun-2023				15-Jun-2023	30 days	7 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
TH23-02A	E108	08-Jun-2023	15-Jun-2023				15-Jun-2023	30 days	7 days	✓
	1									

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Physical Tests : Saturation Percentage Glass soil jar/Teflon lined cap

DUP-A



Matrix: Soil/Solid Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date Physical Tests: pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap E108 08-Jun-2023 15-Jun-2023 15-Jun-2023 30 days 7 days 1 TH23-03A Physical Tests: pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap 30 days TH23-04A E108 08-Jun-2023 15-Jun-2023 15-Jun-2023 7 days ✓ Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap TH23-05A E108 08-Jun-2023 15-Jun-2023 15-Jun-2023 30 days 7 days ✓ Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap 08-Jun-2023 E108 TH23-06B 15-Jun-2023 15-Jun-2023 30 days 7 days Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap DUP-A E108 06-Jun-2023 15-Jun-2023 15-Jun-2023 30 days 9 days ✓ Physical Tests: pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap E108 06-Jun-2023 HA23-01 15-Jun-2023 15-Jun-2023 30 days 9 days ----Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap HA23-04 E108 06-Jun-2023 15-Jun-2023 15-Jun-2023 30 days 9 days ✓ Physical Tests : pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap HA23-05 30 days 9 days ✓ E108 06-Jun-2023 15-Jun-2023 15-Jun-2023

06-Jun-2023

14-Jun-2023

E141

0 days

14-Jun-2023

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Watrix. 3011/3011d							libiding time excee	,		
Analyte Group	Method	Sampling Date	Ext	raction / Pi	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
HA23-01	E141	06-Jun-2023	14-Jun-2023				14-Jun-2023		0 days	
Physical Tests : Saturation Percentage			ATTI							
Glass soil jar/Teflon lined cap										
HA23-04	E141	06-Jun-2023	14-Jun-2023				14-Jun-2023		0 days	
Physical Tests : Saturation Percentage		- 1 - 1 - 1								
Glass soil jar/Teflon lined cap										
HA23-05	E141	06-Jun-2023	14-Jun-2023				14-Jun-2023		0 days	
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
TH23-01A	E141	08-Jun-2023	14-Jun-2023				14-Jun-2023		0 days	
Physical Tests : Saturation Percentage									'	
Glass soil jar/Teflon lined cap										
TH23-02A	E141	08-Jun-2023	14-Jun-2023				14-Jun-2023		0 days	
		Y								
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
TH23-03A	E141	08-Jun-2023	14-Jun-2023				14-Jun-2023		0 days	
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
TH23-04A	E141	08-Jun-2023	14-Jun-2023				14-Jun-2023		0 days	
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
TH23-05A	E141	08-Jun-2023	14-Jun-2023				14-Jun-2023		0 days	
Physical Tests : Saturation Percentage										
Glass soil jar/Teflon lined cap										
TH23-06B	E141	08-Jun-2023	14-Jun-2023				14-Jun-2023		0 days	
									1	

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Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
TH23-01A	E641A-L	08-Jun-2023	14-Jun-2023	14	6 days	✓	15-Jun-2023	40 days	1 days	✓
				days						
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)			4000							
Glass soil jar/Teflon lined cap										
TH23-02A	E641A-L	08-Jun-2023	14-Jun-2023	14	6 days	✓	15-Jun-2023	40 days	1 days	✓
				days						
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
TH23-03A	E641A-L	08-Jun-2023	14-Jun-2023	14	6 days	✓	15-Jun-2023	40 days	1 days	✓
				days	,			,	,	
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)				,						
Glass soil jar/Teflon lined cap										
TH23-04A	E641A-L	08-Jun-2023	14-Jun-2023	14	6 days	✓	15-Jun-2023	40 days	1 days	√
11120-047		00 04.11 2020	11 0411 2020	days	o dayo	·	10 0411 2020	10 days	, dayo	
DALLE OF THE CONTROL				days						
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)							I			
Glass soil jar/Teflon lined cap TH23-05A	E641A-L	08-Jun-2023	14-Jun-2023	14	6 days	✓	15-Jun-2023	40 days	1 days	√
1H25-05A	LO4 IA-L	00-Juli-2023	14-3011-2023		0 days	•	13-3u11-2023	40 days	i uays	,
				days						
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap	ECAMA	00 1 0000	4.4 1 0000		0.1	√	45 0000	40 1	4 1	√
TH23-06B	E641A-L	08-Jun-2023	14-Jun-2023	14	6 days	•	15-Jun-2023	40 days	1 days	Y
				days						
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap	E0///	00 1	44 1				45 1	40 :		
DUP-A	E641A-L	06-Jun-2023	14-Jun-2023	14	8 days	✓	15-Jun-2023	40 days	1 days	✓
				days						
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
HA23-01	E641A-L	06-Jun-2023	14-Jun-2023	14	8 days	✓	15-Jun-2023	40 days	1 days	✓
				days						
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
	1			1						
Glass soil jar/Teflon lined cap										
Glass soil jar/Teflon lined cap HA23-04	E641A-L	06-Jun-2023	14-Jun-2023	14	8 days	✓	15-Jun-2023	40 days	1 days	✓

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Matrix: Soil/Solid						araaraara.	Holding time exce	• • • • • • • • • • • • • • • • • • • •	***********	riolaling riii
Analyte Group	Method	Sampling Date	Ext	traction / Pr	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Polycyclic Aromatic Hydrocarbons : PAHs by Hex:Ace GC-MS (Low Level CCME)										
Glass soil jar/Teflon lined cap										
HA23-05	E641A-L	06-Jun-2023	14-Jun-2023	14	8 days	✓	15-Jun-2023	40 days	1 days	✓
				days						
Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste	, mg/L)									
Glass soil jar/Teflon lined cap										
TH23-06B	E442	08-Jun-2023	14-Jun-2023	365	6 days	✓	15-Jun-2023	180	1 days	✓
				days				days		
Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste	, mg/L)									
Glass soil jar/Teflon lined cap										
TH23-01A	E442	08-Jun-2023	14-Jun-2023	365	7 days	✓	15-Jun-2023	180	1 days	✓
				days				days		
Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste	, mg/L)									
Glass soil jar/Teflon lined cap										
TH23-02A	E442	08-Jun-2023	14-Jun-2023	365	7 days	✓	15-Jun-2023	180	1 days	✓
				days				days		
Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste	mg/L)									
Glass soil jar/Teflon lined cap										
TH23-03A	E442	08-Jun-2023	14-Jun-2023	365	7 days	✓	15-Jun-2023	180	1 days	✓
		, i		days				days		
Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste	mg/L)									
Glass soil jar/Teflon lined cap										
TH23-04A	E442	08-Jun-2023	14-Jun-2023	365	7 days	✓	15-Jun-2023	180	1 days	✓
				days				days		
Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste	mg/L)									
Glass soil jar/Teflon lined cap										
TH23-05A	E442	08-Jun-2023	14-Jun-2023	365	7 days	✓	15-Jun-2023	180	1 days	✓
				days				days		
Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste	, mg/L)									
Glass soil jar/Teflon lined cap										
HA23-01	E442	06-Jun-2023	14-Jun-2023	365	8 days	✓	15-Jun-2023	180	1 days	✓
				days				days		
Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste	, mg/L)									
Glass soil jar/Teflon lined cap										
HA23-04	E442	06-Jun-2023	14-Jun-2023	365	8 days	✓	15-Jun-2023	180	1 days	✓
				days				days		

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Analyte Group	Method	Sampling Date	Ext	raction / Pi	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste,	mg/L)									
Glass soil jar/Teflon lined cap										
HA23-05	E442	06-Jun-2023	14-Jun-2023	365	8 days	✓	15-Jun-2023	180	1 days	✓
				days				days		
Saturated Paste Extractables : Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste,	mg/L)									
Glass soil jar/Teflon lined cap										
DUP-A	E442	06-Jun-2023	14-Jun-2023	365	9 days	✓	15-Jun-2023	180	1 days	✓
				days				days		
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
TH23-06B	E239.Cl	08-Jun-2023	14-Jun-2023	365	6 days	✓	15-Jun-2023	28 days	0 days	✓
				days						
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
TH23-01A	E239.CI	08-Jun-2023	14-Jun-2023	365	7 days	✓	15-Jun-2023	28 days	0 days	✓
				days						
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
TH23-02A	E239.CI	08-Jun-2023	14-Jun-2023	365	7 days	✓	15-Jun-2023	28 days	0 days	✓
				days						
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
TH23-03A	E239.CI	08-Jun-2023	14-Jun-2023	365	7 days	✓	15-Jun-2023	28 days	0 days	✓
				days						
Saturated Paste Extractables : Chloride by IC (Saturated Paste)	400									
Glass soil jar/Teflon lined cap										
TH23-04A	E239.CI	08-Jun-2023	14-Jun-2023	365	7 days	✓	15-Jun-2023	28 days	0 days	✓
				days						
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
TH23-05A	E239.Cl	08-Jun-2023	14-Jun-2023	365	7 days	✓	15-Jun-2023	28 days	0 days	✓
				days						
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
Glass soil jai/ renoil lined cap								1		
HA23-01	E239.CI	06-Jun-2023	14-Jun-2023	365	8 days	✓	15-Jun-2023	28 days	0 days	✓

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Matrix: Soil/Soild						raidation. • =	nolding time excel	cuarioc ,	- vvicinii	Tiolding Time
Analyte Group	Method	Sampling Date	Ext	raction / P.	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
HA23-04	E239.CI	06-Jun-2023	14-Jun-2023	365	8 days	*	15-Jun-2023	28 days	0 days	✓
				days						
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
HA23-05	E239.CI	06-Jun-2023	14-Jun-2023	365	8 days	✓	15-Jun-2023	28 days	0 days	✓
				days						
Saturated Paste Extractables : Chloride by IC (Saturated Paste)										
Glass soil jar/Teflon lined cap										
DUP-A	E239.Cl	06-Jun-2023	14-Jun-2023	365	9 days	✓	15-Jun-2023	28 days	0 days	✓
				days						
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass soil methanol vial										
TH23-01A	E611A	08-Jun-2023	12-Jun-2023				12-Jun-2023	40 days	4 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass soil methanol vial										
TH23-02A	E611A	08-Jun-2023	12-Jun-2023				12-Jun-2023	40 days	4 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass soil methanol vial										
TH23-03A	E611A	08-Jun-2023	12-Jun-2023				12-Jun-2023	40 days	4 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass soil methanol vial										
TH23-04A	E611A	08-Jun-2023	12-Jun-2023				12-Jun-2023	40 days	4 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass soil methanol vial										
TH23-05A	E611A	08-Jun-2023	12-Jun-2023				12-Jun-2023	40 days	4 days	✓
Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS										
Glass soil methanol vial										
TH23-06B	E611A	08-Jun-2023	12-Jun-2023				12-Jun-2023	40 days	4 days	✓
					1					

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Matrix: Soil/Solid

Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time Extraction / Preparation Analyte Group Sampling Date Analysis Method Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Actual Rec Actual Rec Date Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS Glass soil methanol vial DUP-A E611A 06-Jun-2023 12-Jun-2023 12-Jun-2023 40 days 6 days 1 Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS Glass soil methanol vial ✓ HA23-01 E611A 06-Jun-2023 12-Jun-2023 12-Jun-2023 40 days 6 days Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS Glass soil methanol vial HA23-04 E611A 06-Jun-2023 12-Jun-2023 12-Jun-2023 40 days 6 days 1 Volatile Organic Compounds [Fuels] : BTEX by Headspace GC-MS

06-Jun-2023

12-Jun-2023

E611A

Legend & Qualifier Definitions

Glass soil methanol vial

HA23-05

Rec. HT: ALS recommended hold time (see units).

40 days 6 days

12-Jun-2023

✓

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Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Soil/Solid		Evaluation	: 🗴 = QC freque	ency outside spe	ecification; ✓ = (QC frequency wit	hin specificatio
Quality Control Sample Type				unt		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
BC PHCs - EPH by GC-FID	E601A	989133	1	10	10.0	5.0	✓
BTEX by Headspace GC-MS	E611A	984135	1	20	5.0	5.0	✓
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442	989130	1	16	6.2	5.0	✓
Chloride by IC (Saturated Paste)	E239.CI	989128	1	16	6.2	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	989125	1	16	6.2	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	989124	1	16	6.2	5.0	✓
Moisture Content by Gravimetry	E144	989135	1	16	6.2	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	989134	1	10	10.0	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	989127	1	16	6.2	5.0	✓
Saturation Percentage	E141	989129	1	16	6.2	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	984134	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
BC PHCs - EPH by GC-FID	E601A	989133	1	10	10.0	5.0	✓
BTEX by Headspace GC-MS	E611A	984135	1	20	5.0	5.0	✓
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442	989130	2	16	12.5	10.0	✓
Chloride by IC (Saturated Paste)	E239.CI	989128	2	16	12.5	10.0	✓
Mercury in Soil/Solid by CVAAS	E510	989125	2	16	12.5	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	989124	2	16	12.5	10.0	✓
Moisture Content by Gravimetry	E144	989135	1	16	6.2	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	989134	1	10	10.0	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	989127	1	16	6.2	5.0	✓
Saturation Percentage	E141	989129	2	16	12.5	10.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	984134	1	16	6.2	5.0	✓
Method Blanks (MB)							
BC PHCs - EPH by GC-FID	E601A	989133	1	10	10.0	5.0	✓
BTEX by Headspace GC-MS	E611A	984135	1	20	5.0	5.0	✓
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442	989130	1	16	6.2	5.0	✓
Chloride by IC (Saturated Paste)	E239.CI	989128	1	16	6.2	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	989125	1	16	6.2	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	989124	1	16	6.2	5.0	✓
Moisture Content by Gravimetry	E144	989135	1	16	6.2	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	989134	1	10	10.0	5.0	✓
Saturation Percentage	E141	989129	1	16	6.2	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	984134	1	16	6.2	5.0	✓
Matrix Spikes (MS)							

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Matrix: **Soil/Solid**Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Co	unt	Frequency (%)				
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Matrix Spikes (MS) - Continued							
BC PHCs - EPH by GC-FID	E601A	989133	1	10	10.0	5.0	✓
BTEX by Headspace GC-MS	E611A	984135	1	20	5.0	5.0	✓
PAHs by Hex:Ace GC-MS (Low Level CCME)	E641A-L	989134	1	10	10.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	984134	1	16	6.2	5.0	✓



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Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 Vancouver - Environmental	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally 20 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 °C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Saturation Percentage	E141 Vancouver - Environmental	Soil/Solid	CSSS Ch. 15 (mod)/AER D50	Saturation Percentage (SP) is determined as the total volume of water present in a saturated paste (in mL) divided by the dry weight of the sample (in grams), expressed as a percentage.
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Chloride by IC (Saturated Paste)	E239.Cl Vancouver - Environmental	Soil/Solid	CSSS Ch. 15 (mod)/EPA 300.1 (mod)	Inorganic anions are analyzed by obtaining a soil extract produced by the saturated paste extraction procedure which is then analyzed by Ion Chromatography with conductivity and/or UV detection.
Metals in Soil/Solid by CRC ICPMS	E440 Vancouver - Environmental	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCI. Dependent on sample matrix, some metals may be only partially recovered, including AI, Ba, Be, Cr, Sr, Ti, TI, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Ca, K, Mg, and Na by CRC ICPMS (Saturated Paste, mg/L)	E442 Vancouver - Environmental	Soil/Solid	CSSS CH15/EPA 6020B (mod)	A soil extract produced by the saturated paste extraction procedure is analyzed for Calcium, Magnesium, Potassium and Sodium by Collision/Reaction Cell ICPMS as per "Soil Sampling Methods of Analysis" By M Carter.
Mercury in Soil/Solid by CVAAS	E510 Vancouver - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCI, followed by CVAAS analysis.
VH and F1 by Headspace GC-FID	E581.VH+F1 Vancouver - Environmental	Soil/Solid	BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod)	Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
BC PHCs - EPH by GC-FID	E601A	Soil/Solid	BC MOE Lab Manual	Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions.
			(EPH in Solids by	
	Vancouver -		GC/FID) (mod)	
	Environmental			
BTEX by Headspace GC-MS	E611A	Soil/Solid	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS.
	.,			Samples are prepared in headspace vials and are heated and agitated on the
	Vancouver -			headspace autosampler, causing VOCs to partition between the aqueous phase and
PAHs by Hex:Ace GC-MS (Low Level CCME)	Environmental	Soil/Solid	EPA 8270E (mod)	the headspace in accordance with Henry's law.
FAITS BY HEX.ACE GC-IVIS (LOW LEVEL CCIVIE)	E641A-L	3011/30114	EPA 6270E (IIIOU)	Polycyclic Aromatic Hydrocarbons (PAHs) are extracted with hexane/acetone and
	Vancouver -			analyzed by GC-MS. If reported, IACR (index of additive cancer risk, unitless) and B(a)P toxic potency equivalent (in soil concentration units) are calculated as per CCME
	Environmental			PAH Soil Quality Guidelines fact sheet (2010) or ABT1.
Chloride by IC (Saturated Paste) (mg/kg)	EC239A.CI	Soil/Solid	CSSS Ch. 15	Inorganic anions are analyzed by obtaining a soil extract produced by the saturated
	2020371.01		(mod)/EPA 300.1	paste extraction procedure which is then analyzed by lon Chromatography with
	Vancouver -		(mod)	conductivity and/or UV detection.
	Environmental		, ,	
Ca, K, Mg, Na by ICPMS (Saturated Paste,	EC442	Soil/Solid	CSSS CH15/EPA	A soil extract produced by the saturated paste extraction procedure is analyzed for
mg/kg)			6020B (mod)	Calcium, Magnesium, Potassium, Sodium by ICPMS.
	Vancouver -			
	Environmental			
VPH: VH-BTEX-Styrene	EC580A	Soil/Solid	BC MOE Lab Manual	Volatile Petroleum Hydrocarbons (VPH) is calculated as follows: VH-BTEX = Volatile
			(VPH in Water and	Hydrocarbons (VH6-10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and
	Vancouver - Environmental		Solids) (mod)	styrene.
LEPH and HEPH: EPH-PAH	EC600A	Soil/Solid	BC MOE Lab Manual	Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum
EET TY AND THE THE ET THE TAIL	LCOOOA	Goll, Golla	(LEPH and HEPH)	Hydrocarbons (HEPH) are calculated as follows: LEPH = Extractable Petroleum
	Vancouver -		(EEI TI dild TEI TI)	Hydrocarbons (EPH10-19) minus Naphthalene and Phenanthrene; HEPH = Extractable
	Environmental			Petroleum Hydrocarbons (EPH19-32) minus Benz(a)anthracene,
				Benzo(b+j+k)fluoranthene, Benzo(a)pyrene, Dibenz(a,h)anthracene,
				Indeno(1,2,3-cd)pyrene, and Pyrene.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108	Soil/Solid	BC WLAP METHOD:	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample
			PH, ELECTROMETRIC,	with deionized/distilled water at a 1:2 ratio of sediment to water.
	Vancouver -		SOIL	
	Environmental			
Digestion for Metals and Mercury	EP440	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl.
	.,			This method is intended to liberate metals that may be environmentally available.
	Vancouver -			
VOCa Mathanal Extraction for Llandanasa	Environmental EP581	Soil/Solid	EPA 5035A (mod)	VOCa in complex are extracted with methods! Extracts are then prepared in bands
VOCs Methanol Extraction for Headspace Analysis	EP381	3011/3011u	Li A 3033A (IIIou)	VOCs in samples are extracted with methanol. Extracts are then prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to
Allalysis	Vancouver -			partition between the aqueous phase and the headspace in accordance with Henry's
	Environmental			law.
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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PHCs and PAHs Hexane-Acetone Tumbler	EP601	Soil/Solid	CCME PHC in Soil - Tier	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted
Extraction			1 (mod)	with 1:1 hexane:acetone using a rotary extractor.
	Vancouver -			
	Environmental			



ALS Canada Ltd.



QUALITY CONTROL REPORT

Work Order :VA23B3105

Client : McElhanney Ltd.
Contact : Victoria Amson

Address :# 500 - 3960 Quadra Street

Victoria BC Canada V8X 4A3

Telephone

Project : 2241-20182-00

PO :----

C-O-C number : 20-909141

Sampler : MM 250 370 9221

Site : ---

Quote number : BC/Yukon Standing Offer - 2022 update

No. of samples received : 16
No. of samples analysed : 10

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Laboratory : Vancouver - Environmental

Account Manager : Dean Watt

Address : 8081 Lougheed Highway

Burnaby, British Columbia Canada V5A 1W9

Telephone :+1 604 253 4188

Date Samples Received :09-Jun-2023 11:00

Date Analysis Commenced : 12-Jun-2023

Issue Date : 19-Jun-2023 10:31

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Kate Dimitrova	Analsyt	Vancouver Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Vancouver Organics, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia

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General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Soil/Solid						Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
Physical Tests (QC	Lot: 989127)											
VA23A0774-003	Anonymous	pH (1:2 soil:water)		E108	0.10	pH units	8.47	8.43	0.5%	5%		
Physical Tests (QC	Lot: 989135)											
VA23A0774-003	Anonymous	Moisture		E144	0.25	%	15.6	14.8	5.93%	20%		
Saturated Paste Ex	tractables (QC Lot: 989	128)										
VA23A0774-003	Anonymous	Chloride, soluble ion content	16887-00-6	E239.CI	20	mg/L	4930	4690	5.01%	30%		
Saturated Paste Ex	tractables (QC Lot: 989	129)										
VA23A0774-003	Anonymous	% Saturation		E141	1.0	%	39.9	39.7	0.524%	20%		
Saturated Paste Ex	tractables (QC Lot: 989	130)										
VA23A0774-003	Anonymous	Sodium, soluble ion content	17341-25-2	E442	2.0	mg/L	2800	2700	3.81%	30%		
Metals (QC Lot: 98	9124)											
VA23A0774-003	Anonymous	Aluminum	7429-90-5	E440	50	mg/kg	9410	9160	2.78%	40%		
		Antimony	7440-36-0	E440	0.10	mg/kg	0.24	0.24	0.004	Diff <2x LOR		
		Arsenic	7440-38-2	E440	0.10	mg/kg	3.05	3.09	1.19%	30%		
		Barium	7440-39-3	E440	0.50	mg/kg	48.6	44.7	8.38%	40%		
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.20	0.19	0.01	Diff <2x LOR		
		Bismuth	7440-69-9	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR		
		Boron	7440-42-8	E440	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR		
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.100	0.107	0.008	Diff <2x LOR		
		Calcium	7440-70-2	E440	50	mg/kg	4630	4390	5.27%	30%		
		Chromium	7440-47-3	E440	0.50	mg/kg	29.1	27.3	6.18%	30%		
		Cobalt	7440-48-4	E440	0.10	mg/kg	7.88	7.55	4.25%	30%		
		Copper	7440-50-8	E440	0.50	mg/kg	13.6	13.5	1.10%	30%		
		Iron	7439-89-6	E440	50	mg/kg	17600	17800	0.843%	30%		
		Lead	7439-92-1	E440	0.50	mg/kg	2.27	2.23	0.04	Diff <2x LOR		
		Lithium	7439-93-2	E440	2.0	mg/kg	7.4	7.8	0.4	Diff <2x LOR		
		Magnesium	7439-95-4	E440	20	mg/kg	8000	7760	3.02%	30%		
		Manganese	7439-96-5	E440	1.0	mg/kg	316	319	1.02%	30%		
		Molybdenum	7439-98-7	E440	0.10	mg/kg	0.39	0.36	0.02	Diff <2x LOR		
		Nickel	7440-02-0	E440	0.50	mg/kg	33.6	33.8	0.540%	30%		
		Phosphorus	7723-14-0	E440	50	mg/kg	418	410	1.99%	30%		

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Sub-Matrix: Soil/Solid							Labora	tory Duplicate (D	OUP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie
Metals (QC Lot: 98	9124) - continued										
VA23A0774-003	Anonymous	Potassium	7440-09-7	E440	100	mg/kg	620	620	0.505%	40%	
		Selenium	7782-49-2	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	
		Silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	
		Sodium	7440-23-5	E440	50	mg/kg	1450	1850	24.5%	40%	
		Strontium	7440-24-6	E440	0.50	mg/kg	26.1	26.5	1.52%	40%	
		Sulfur	7704-34-9	E440	1000	mg/kg	<1000	<1000	0	Diff <2x LOR	
		Thallium	7440-28-0	E440	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	
		Tin	7440-31-5	E440	2.0	mg/kg	<2.0	<2.0	0	Diff <2x LOR	
		Titanium	7440-32-6	E440	1.0	mg/kg	824	800	3.02%	40%	
		Tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	
		Uranium	7440-61-1	E440	0.050	mg/kg	0.254	0.556	74.5%	30%	DUP-H
		Vanadium	7440-62-2	E440	0.20	mg/kg	40.7	38.6	5.24%	30%	
		Zinc	7440-66-6	E440	2.0	mg/kg	36.0	38.1	5.79%	30%	
		Zirconium	7440-67-7	E440	1.0	mg/kg	3.8	4.3	0.5	Diff <2x LOR	
Metals (QC Lot: 98	9125)										
VA23A0774-003	Anonymous	Mercury	7439-97-6	E510	0.0500	mg/kg	<0.0500	<0.0500	0	Diff <2x LOR	
Volatile Organic Co	mpounds (QC Lot: 9	84135)									
VA23B2778-010	Anonymous	Benzene	71-43-2	E611A	0.0050	mg/kg	0.0441	0.0466	5.54%	40%	
		Ethylbenzene	100-41-4	E611A	0.015	mg/kg	0.042	0.044	0.002	Diff <2x LOR	
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.200	mg/kg	<0.200	<0.200	0	Diff <2x LOR	
		Styrene	100-42-5	E611A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	
		Toluene	108-88-3	E611A	0.050	mg/kg	0.190	0.200	0.010	Diff <2x LOR	
		Xylene, m+p-	179601-23-1	E611A	0.030	mg/kg	0.148	0.160	7.74%	40%	
		Xylene, o-	95-47-6	E611A	0.030	mg/kg	<0.030	0.031	0.001	Diff <2x LOR	
Hydrocarbons (QC	Lot: 994134)										
VA23B2778-010	Anonymous	VHs (C6-C10)		E581.VH+F1	10	mg/kg	33	36	3	Diff <2x LOR	
Hydrocarbons (QC	Lot: 989133)										
VA23B3105-001	TH23-01A	EPH (C10-C19)		E601A	200	mg/kg	<200 μg/g	<200	0	Diff <2x LOR	
		EPH (C19-C32)		E601A	200	mg/kg	<200 μg/g	<200	0	Diff <2x LOR	
Polycyclic Arometic	Hydrocarbons (QC					3 0					
VA23B3105-001	TH23-01A	Acenaphthene	83-32-9	E641A-L	0.0050	mg/kg	<0.0050 µg/g	<0.0050	0	Diff <2x LOR	
		Acenaphthylene	208-96-8	E641A-L	0.0050	mg/kg	<0.0050 μg/g	<0.0050	0	Diff <2x LOR	
		Acridine	260-94-6	E641A-L	0.010	mg/kg	<0.010 μg/g	<0.010	0	Diff <2x LOR	
		Anthracene	120-12-7	E641A-L	0.0040	mg/kg	<0.010 μg/g <0.0041 μg/g	<0.010	0.0040	Diff <2x LOR	
		Anunacene	120-12-7	LUH IM-L	0.0040	ilig/kg	~0.0041 μg/g	\0.00 4 0	0.0040	DIII \ZX LUR	

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Sub-Matrix: Soil/Solid					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Polycyclic Aromatic	Hydrocarbons (QC Lot	: 989134) - continued									
VA23B3105-001	TH23-01A	Benz(a)anthracene	56-55-3	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Benzo(a)pyrene	50-32-8	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Benzo(b+j)fluoranthene	n/a	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Benzo(g,h,i)perylene	191-24-2	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Benzo(k)fluoranthene	207-08-9	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Chrysene	218-01-9	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Dibenz(a,h)anthracene	53-70-3	E641A-L	0.0050	mg/kg	0.0084 µg/g	<0.0050	0.0034	Diff <2x LOR	
		Fluoranthene	206-44-0	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Fluorene	86-73-7	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Methylnaphthalene, 1-	90-12-0	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Methylnaphthalene, 2-	91-57-6	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Naphthalene	91-20-3	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Phenanthrene	85-01-8	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Pyrene	129-00-0	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	
		Quinoline	91-22-5	E641A-L	0.010	mg/kg	<0.010 µg/g	<0.010	0	Diff <2x LOR	

Qualifiers

Qualifier Description

DUP-H Duplicate results outside ALS DQO, due to sample heterogeneity.

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Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 989135)						
Moisture		E144	0.25	%	<0.25	
Saturated Paste Extractables (QCLo						
Chloride, soluble ion content	16887-00-6	E239.Cl	20	mg/L	<20	
Saturated Paste Extractables (QCLo	t: 989129)					
% Saturation		E141	1	%	50.0	
Saturated Paste Extractables (QCLo						
Sodium, soluble ion content	17341-25-2	E442	2	mg/L	<2.0	
Metals (QCLot: 989124)						
Aluminum	7429-90-5	E440	50	mg/kg	<50	
Antimony	7440-36-0	E440	0.1	mg/kg	<0.10	
Arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	
Barium	7440-39-3	E440	0.5	mg/kg	<0.50	
Beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	
Bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	
Boron	7440-42-8	E440	5	mg/kg	<5.0	
Cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	
Calcium	7440-70-2	E440	50	mg/kg	<50	
Chromium	7440-47-3	E440	0.5	mg/kg	<0.50	
Cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	
Iron	7439-89-6	E440	50	mg/kg	<50	
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	
Lithium	7439-93-2	E440	2	mg/kg	<2.0	
Magnesium	7439-95-4	E440	20	mg/kg	<20	
Manganese	7439-96-5	E440	1	mg/kg	<1.0	
Molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	
Phosphorus	7723-14-0	E440	50	mg/kg	<50	
Potassium	7440-09-7	E440	100	mg/kg	<100	
Selenium	7782-49-2	E440	0.2	mg/kg	<0.20	
Silver	7440-22-4	E440	0.1	mg/kg	<0.10	
Sodium	7440-23-5	E440	50	mg/kg	<50	

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nalyte	CAS Number Method	LOR	Unit	Result	Qualifier
letals (QCLot: 989124) - continued					
Strontium	7440-24-6 E440	0.5	mg/kg	<0.50	
Sulfur	7704-34-9 E440	1000	mg/kg	<1000	
Thallium	7440-28-0 E440	0.05	mg/kg	<0.050	
Tin	7440-31-5 E440	2	mg/kg	<2.0	
Titanium	7440-32-6 E440	1	mg/kg	<1.0	
Tungsten	7440-33-7 E440	0.5	mg/kg	<0.50	
Uranium	7440-61-1 E440	0.05	mg/kg	<0.050	
Vanadium	7440-62-2 E440	0.2	mg/kg	<0.20	
Zinc	7440-66-6 E440	2	mg/kg	<2.0	
Zirconium	7440-67-7 E440	1	mg/kg	<1.0	
letals (QCLot: 989125)					
Mercury	7439-97-6 E510	0.005	mg/kg	<0.0050	
olatile Organic Compounds (QCLot:	994135)				
Benzene	71-43-2 E611A	0.005	mg/kg	<0.0050	
Ethylbenzene	100-41-4 E611A	0.015	mg/kg	<0.015	
Methyl-tert-butyl ether [MTBE]	1634-04-4 E611A	0.04	mg/kg	<0.040	
Styrene	100-42-5 E611A	0.05	mg/kg	<0.050	
Toluene	108-88-3 E611A	0.05	mg/kg	<0.050	
Xylene, m+p-	179601-23-1 E611A	0.03	mg/kg	<0.030	
Xylene, o-	95-47-6 E611A	0.03	mg/kg	<0.030	
-	93-41-0 LOTIA	0.03	Під/ку	40.030	
ydrocarbons (QCLot: 984134)	E581.VH+F1	10	ma/ka	<10	
VHs (C6-C10)	E301.VH+F1	10	mg/kg	<10	
ydrocarbons (QCLot: 989133)	F004A	200		1000	
EPH (C10-C19)	E601A	200	mg/kg	<200	
EPH (C19-C32)	E601A	200	mg/kg	<200	
olycyclic Aromatic Hydrocarbons (C				10.0050	
Acenaphthene	83-32-9 E641A-L	0.005	mg/kg	<0.0050	
Acenaphthylene	208-96-8 E641A-L	0.005	mg/kg	<0.0050	
Acridine	260-94-6 E641A-L	0.01	mg/kg	<0.010	
Anthracene	120-12-7 E641A-L	0.004	mg/kg	<0.0040	
Benz(a)anthracene	56-55-3 E641A-L	0.01	mg/kg	<0.010	
Benzo(a)pyrene	50-32-8 E641A-L	0.01	mg/kg	<0.010	
Benzo(b+j)fluoranthene	n/a E641A-L	0.01	mg/kg	<0.010	
Benzo(g,h,i)perylene	191-24-2 E641A-L	0.01	mg/kg	<0.010	
Benzo(k)fluoranthene	207-08-9 E641A-L	0.01	mg/kg	<0.010	

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Sub-Matrix: Soil/Solid

Analyte	CAS Number	Method		LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbon	s (QCLot: 989134) - contin	ued					
Chrysene	218-01-9	E641A-L		0.01	mg/kg	<0.010	
Dibenz(a,h)anthracene	53-70-3	E641A-L		0.005	mg/kg	<0.0050	
Fluoranthene	206-44-0	E641A-L		0.01	mg/kg	<0.010	
Fluorene	86-73-7	E641A-L		0.01	mg/kg	<0.010	
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L		0.01	mg/kg	<0.010	
Methylnaphthalene, 1-	90-12-0	E641A-L		0.01	mg/kg	<0.010	
Methylnaphthalene, 2-	91-57-6	E641A-L		0.01	mg/kg	<0.010	
Naphthalene	91-20-3	E641A-L		0.01	mg/kg	<0.010	
Phenanthrene	85-01-8	E641A-L		0.01	mg/kg	<0.010	
Pyrene	129-00-0	E641A-L		0.01	mg/kg	<0.010	
Quinoline	91-22-5	E641A-L		0.01	mg/kg	<0.010	



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Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Soil/Solid		Laboratory Control Sample (LCS) Report								
					Spike	Recovery (%)	Recovery	Limits (%)		
Analyte	CAS Number Method	1	LOR	Unit	Concentration	LCS	Low	High	Qualifier	
Physical Tests (QCLot: 989127)										
pH (1:2 soil:water)	E108			pH units	6 pH units	100	95.0	105		
Physical Tests (QCLot: 989135)										
Moisture	E144		0.25	%	50 %	99.4	90.0	110		
Saturated Paste Extractables (QCLot: 989128										
Chloride, soluble ion content	16887-00-6 E239.0	I	20	mg/L	100 mg/L	99.9	80.0	120		
Saturated Paste Extractables (QCLot: 989129										
% Saturation	E141		1	%	100 %	100	80.0	120		
Saturated Paste Extractables (QCLot: 989130										
Sodium, soluble ion content	17341-25-2 E442		2	mg/L	50 mg/L	107	80.0	120		
Metals (QCLot: 989124)				4						
Aluminum	7429-90-5 E440		50	mg/kg	200 mg/kg	100	80.0	120		
Antimony	7440-36-0 E440		0.1	mg/kg	100 mg/kg	106	80.0	120		
Arsenic	7440-38-2 E440		0.1	mg/kg	100 mg/kg	105	80.0	120		
Barium	7440-39-3 E440		0.5	mg/kg	25 mg/kg	97.3	80.0	120		
Beryllium	7440-41-7 E440		0.1	mg/kg	10 mg/kg	99.8	80.0	120		
Bismuth	7440-69-9 E440		0.2	mg/kg	100 mg/kg	99.0	80.0	120		
Boron	7440-42-8 E440		5	mg/kg	100 mg/kg	90.8	80.0	120		
Cadmium	7440-43-9 E440		0.02	mg/kg	10 mg/kg	100	80.0	120		
Calcium	7440-70-2 E440		50	mg/kg	5000 mg/kg	98.0	80.0	120		
Chromium	7440-47-3 E440		0.5	mg/kg	25 mg/kg	99.5	80.0	120		
Cobalt	7440-48-4 E440		0.1	mg/kg	25 mg/kg	99.2	80.0	120		
Copper	7440-50-8 E440		0.5	mg/kg	25 mg/kg	95.7	80.0	120		
Iron	7439-89-6 E440		50	mg/kg	100 mg/kg	97.0	80.0	120		
Lead	7439-92-1 E440		0.5	mg/kg	50 mg/kg	101	80.0	120		
Lithium	7439-93-2 E440		2	mg/kg	25 mg/kg	97.9	80.0	120		
Magnesium	7439-95-4 E440		20	mg/kg	5000 mg/kg	108	80.0	120		
Manganese	7439-96-5 E440		1	mg/kg	25 mg/kg	102	80.0	120		
Molybdenum	7439-98-7 E440		0.1	mg/kg	25 mg/kg	96.2	80.0	120		
Nickel	7440-02-0 E440		0.5	mg/kg	50 mg/kg	96.1	80.0	120 120		
Phosphorus	7723-14-0 E440		50	mg/kg	1000 mg/kg	103	103 80.0			
Potassium	7440-09-7 E440		100	mg/kg	5000 mg/kg	101	80.0	120		

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Sub-Matrix: Soil/Solid			Laboratory Control Sample (LCS) Report								
					Spike	Recovery (%)	Recovery	Limits (%)			
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier		
Metals (QCLot: 989124) - continued											
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	102	80.0	120			
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	85.4	80.0	120			
Sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	101	80.0	120			
Strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	98.1	80.0	120			
Sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	99.4	80.0	120			
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	100	80.0	120			
Tin	7440-31-5	E440	2	mg/kg	50 mg/kg	96.2	80.0	120			
Titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	95.9	80.0	120			
Tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	97.0	80.0	120			
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	98.0	80.0	120			
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	99.1	80.0	120			
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	97.5	80.0	120			
Zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	90.8	80.0	120			
Metals (QCLot: 989125)											
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	104	80.0	120			
Volatile Organic Compounds (QCLot:	984135)										
Benzene	71-43-2	E611A	0.005	mg/kg	2.5 mg/kg	104	70.0	130			
Ethylbenzene	100-41-4	E611A	0.015	mg/kg	2.5 mg/kg	104	70.0	130			
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.04	mg/kg	2.5 mg/kg	109	70.0	130			
Styrene	100-42-5	E611A	0.05	mg/kg	2.5 mg/kg	103	70.0	130			
Toluene	108-88-3	E611A	0.05	mg/kg	2.5 mg/kg	110	70.0	130			
Xylene, m+p-	179601-23-1	E611A	0.03 mg/kg 5 mg/kg 109 70.0	109 70.0	130						
Xylene, o-	95-47-6	E611A	0.03	mg/kg	2.5 mg/kg	104	70.0	130			
Hydrocarbons (QCLot: 984134)											
VHs (C6-C10)		E581.VH+F1	10	mg/kg	85.8 mg/kg	104	70.0	130			
Hydrocarbons (QCLot: 989133)											
EPH (C10-C19)		E601A	200	mg/kg	1134.37 mg/kg	98.7	70.0	130			
EPH (C19-C32)		E601A	200	mg/kg	575.98 mg/kg	91.8	70.0	130			
		_									
Polycyclic Aromatic Hydrocarbons (Q	CLot: 989134)								•		
Acenaphthene	83-32-9	E641A-L	0.005	mg/kg	0.5 mg/kg	104	60.0	130			
Acenaphthylene	208-96-8	E641A-L	0.005	mg/kg	0.5 mg/kg	102	60.0	130			
Acridine	260-94-6	E641A-L	0.01	mg/kg	0.5 mg/kg	94.7	60.0	130			
Anthracene	120-12-7	E641A-L	0.004	mg/kg	0.5 mg/kg	109	60.0	130			
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Sub-Matrix: Soil/Solid					Laboratory Control Sample (LCS) Report								
					Spike	Recovery (%)	Recovery	Limits (%)					
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier				
Polycyclic Aromatic Hydrocarbons (QCLot: 989134) - continue	ed											
Benz(a)anthracene	56-55-3	E641A-L	0.01	mg/kg	0.5 mg/kg	89.4	60.0	130					
Benzo(a)pyrene	50-32-8	E641A-L	0.01	mg/kg	0.5 mg/kg	90.5	60.0	130					
Benzo(b+j)fluoranthene	n/a	E641A-L	0.01	mg/kg	0.5 mg/kg	99.1	60.0	130					
Benzo(g,h,i)perylene	191-24-2	E641A-L	0.01	mg/kg	0.5 mg/kg	128	60.0	130					
Benzo(k)fluoranthene	207-08-9	E641A-L	0.01	mg/kg	0.5 mg/kg	94.3	60.0	130					
Chrysene	218-01-9	E641A-L	0.01	mg/kg	0.5 mg/kg	93.5	60.0	130					
Dibenz(a,h)anthracene	53-70-3	E641A-L	0.005	mg/kg	0.5 mg/kg	96.7	60.0	130					
Fluoranthene	206-44-0	E641A-L	0.01	mg/kg	0.5 mg/kg	104	60.0	130					
Fluorene	86-73-7	E641A-L	0.01	mg/kg	0.5 mg/kg	105	60.0	130					
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.01	mg/kg	0.5 mg/kg	130	60.0	130					
Methylnaphthalene, 1-	90-12-0	E641A-L	0.01	mg/kg	0.5 mg/kg	102	60.0	130					
Methylnaphthalene, 2-	91-57-6	E641A-L	0.01	mg/kg	0.5 mg/kg	104	60.0	130					
Naphthalene	91-20-3	E641A-L	0.01	mg/kg	0.5 mg/kg	105	50.0	130					
Phenanthrene	85-01-8	E641A-L	0.01	mg/kg	0.5 mg/kg	105	60.0	130					
Pyrene	129-00-0	E641A-L	0.01	mg/kg	0.5 mg/kg	105	60.0	130					
Quinoline	91-22-5	E641A-L	0.01	mg/kg	0.5 mg/kg	92.2	60.0	130					

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Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Soil/So	lid				Matrix Spike (MS) Report									
					Sp	ike	Recovery (%)	Recovery	Limits (%)					
Laboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier				
	Compounds (QCLo	t: 984135)												
VA23B2778-011	Anonymous	Benzene	71-43-2	E611A	2.74 mg/kg	3.125 mg/kg	102	60.0	140					
		Ethylbenzene	100-41-4	E611A	2.89 mg/kg	3.125 mg/kg	108	60.0	140					
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	2.92 mg/kg	3.125 mg/kg	109	60.0	140					
		Styrene	100-42-5	E611A	2.88 mg/kg	3.125 mg/kg	107	60.0	140					
		Toluene	108-88-3	E611A	2.94 mg/kg	3.125 mg/kg	109	60.0	140					
		Xylene, m+p-	179601-23-1	E611A	5.69 mg/kg	6.25 mg/kg	106	60.0	140					
		Xylene, o-	95-47-6	E611A	2.82 mg/kg	3.125 mg/kg	105	60.0	140					
lydrocarbons (QCLot: 984134)													
VA23B2778-012	Anonymous	VHs (C6-C10)		E581.VH+F1	147 mg/kg	171.9 mg/kg	81.4	60.0	140					
ydrocarbons (QCLot: 989133)													
/A23B3105-003	TH23-02A	EPH (C10-C19)		E601A	880 mg/kg	1134.37 mg/kg	96.8	60.0	140					
		EPH (C19-C32)		E601A	420 mg/kg	575.98 mg/kg	92.0	60.0	140					
olycyclic Arom	atic Hydrocarbons(QCLot: 989134)												
/A23B3105-003	TH23-02A	Acenaphthene	83-32-9	E641A-L	0.424 mg/kg	0.5 mg/kg	105	50.0	140					
		Acenaphthylene	208-96-8	E641A-L	0.419 mg/kg	0.5 mg/kg	104	50.0	140					
		Acridine	260-94-6	E641A-L	0.387 mg/kg	0.5 mg/kg	95.8	50.0	140					
		Anthracene	120-12-7	E641A-L	0.438 mg/kg	0.5 mg/kg	108	50.0	140					
		Benz(a)anthracene	56-55-3	E641A-L	0.376 mg/kg	0.5 mg/kg	93.1	50.0	140					
		Benzo(a)pyrene	50-32-8	E641A-L	0.377 mg/kg	0.5 mg/kg	93.4	50.0	140					
		Benzo(b+j)fluoranthene	n/a	E641A-L	0.397 mg/kg	0.5 mg/kg	98.4	50.0	140					
		Benzo(g,h,i)perylene	191-24-2	E641A-L	0.558 mg/kg	0.5 mg/kg	138	50.0	140					
		Benzo(k)fluoranthene	207-08-9	E641A-L	0.381 mg/kg	0.5 mg/kg	94.4	50.0	140					
		Chrysene	218-01-9	E641A-L	0.388 mg/kg	0.5 mg/kg	96.0	50.0	140					
		Dibenz(a,h)anthracene	53-70-3	E641A-L	0.394 mg/kg	0.5 mg/kg	97.6	50.0	140					
		Fluoranthene	206-44-0	E641A-L	0.421 mg/kg	0.5 mg/kg	104	50.0	140					
		Fluorene	86-73-7	E641A-L	0.422 mg/kg	0.5 mg/kg	104	50.0	140					
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A-L	0.486 mg/kg	0.5 mg/kg	120	50.0	140					
		Methylnaphthalene, 1-	90-12-0	E641A-L	0.420 mg/kg	0.5 mg/kg	104	50.0	140					
		Methylnaphthalene, 2-	91-57-6	E641A-L	0.431 mg/kg	0.5 mg/kg	107	50.0	140					
	1	Naphthalene	91-20-3	E641A-L	0.434 mg/kg	0.5 mg/kg	107	50.0	140					

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 McElhanney Ltd.

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Sub-Matrix: Soil/Soli	ub-Matrix: Soil/Solid						Matrix Spike (MS) Report									
					Spi	ke	Recovery (%)	Recovery	Limits (%)							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier						
Polycyclic Aroma	tic Hydrocarbons (QCL															
VA23B3105-003	TH23-02A	Phenanthrene	85-01-8	E641A-L	0.426 mg/kg	0.5 mg/kg	106	50.0	140							
		Pyrene	129-00-0	E641A-L	0.423 mg/kg	0.5 mg/kg	105	50.0	140							
		Quinoline	91-22-5	E641A-L	0.388 mg/kg	0.5 mg/kg	96.3	50.0	140							



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Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:		Reference Material (RM) Report								
					RM Target	Recovery (%)	Recovery I	Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier	
Saturated Paste	Extractables (QCLot: 9	989128)								
	RM	Chloride, soluble ion content	16887-00-6	E239.CI	1237 mg/L	87.3	70.0	130		
Saturated Paste	Extractables (QCLot: 9	989129)								
	RM	% Saturation		E141	48.3 %	107	70.0	130		
Saturated Paste	Extractables (QCLot: 9	989130)								
	RM	Sodium, soluble ion content	17341-25-2	E442	330 mg/L	92.2	70.0	130		
Metals (QCLot:	989124)									
	SCP SS-2	Aluminum	7429-90-5	E440	9817 mg/kg	111	70.0	130		
	SCP SS-2	Antimony	7440-36-0	E440	3.99 mg/kg	97.1	70.0	130		
	SCP SS-2	Arsenic	7440-38-2	E440	3.73 mg/kg	100	70.0	130		
	SCP SS-2	Barium	7440-39-3	E440	105 mg/kg	108	70.0	130		
	SCP SS-2	Beryllium	7440-41-7	E440	0.349 mg/kg	114	70.0	130		
	SCP SS-2	Boron	7440-42-8	E440	8.5 mg/kg	114	40.0	160		
	SCP SS-2	Cadmium	7440-43-9	E440	0.91 mg/kg	100	70.0	130		
	SCP SS-2	Calcium	7440-70-2	E440	31082 mg/kg	110	70.0	130		
	SCP SS-2	Chromium	7440-47-3	E440	101 mg/kg	112	70.0	130		
	SCP SS-2	Cobalt	7440-48-4	E440	6.9 mg/kg	103	70.0	130		
	SCP SS-2	Copper	7440-50-8	E440	123 mg/kg	106	70.0	130		
	SCP SS-2	Iron	7439-89-6	E440	23558 mg/kg	106	70.0	130		
	SCP SS-2	Lead	7439-92-1	E440	267 mg/kg	110	70.0	130		
	SCP SS-2	Lithium	7439-93-2	E440	9.5 mg/kg	107	70.0	130		
	SCP SS-2	Magnesium	7439-95-4	E440	5509 mg/kg	112	70.0	130		
	SCP SS-2	Manganese	7439-96-5	E440	269 mg/kg	110	70.0	130		
	SCP SS-2	Molybdenum	7439-98-7	E440	1.03 mg/kg	99.8	70.0	130		
	SCP SS-2	Nickel	7440-02-0	E440	26.7 mg/kg	102	70.0	130		
	SCP SS-2	Phosphorus	7723-14-0	E440	752 mg/kg	100	70.0	130		
	SCP SS-2	Potassium	7440-09-7	E440	1587 mg/kg	102	70.0	130		
	SCP SS-2	Sodium	7440-23-5	E440	797 mg/kg	96.2	70.0	130		
	SCP SS-2	Strontium	7440-24-6	E440	86.1 mg/kg	102	70.0	130		

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Sub-Matrix:	-Matrix:						Reference Material (RM) Report								
					RM Target	Recovery (%)	Recovery	Limits (%)							
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier						
Metals (QCLot: 9	89124) - continued														
	SCP SS-2	Thallium	7440-28-0	E440	0.0786 mg/kg	102	40.0	160							
	SCP SS-2	Tin	7440-31-5	E440	10.6 mg/kg	94.5	70.0	130							
	SCP SS-2	Titanium	7440-32-6	E440	839 mg/kg	110	70.0	130							
	SCP SS-2	Uranium	7440-61-1	E440	0.52 mg/kg	106	70.0	130							
	SCP SS-2	Vanadium	7440-62-2	E440	32.7 mg/kg	105	70.0	130							
	SCP SS-2	Zinc	7440-66-6	E440	297 mg/kg	98.6	70.0	130							
	SCP SS-2	Zirconium	7440-67-7	E440	5.73 mg/kg	90.5	70.0	130							
Metals (QCLot: 9)89125)							•	•						
	SCP SS-2	Mercury	7439-97-6	E510	0.059 mg/kg	105	70.0	130							



Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 909141



Canada Toll Free: 1 800 668 9878

Report To	Contact and company name below will appear on the final report	Reports / Recipients					Turnaround Time (TAT) Requested						-	Environmental Division				on
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Contact:	Victoria Amson	Merge QC/QC	Reports with COA	Z YES 🖺 NO	□ N/A		lay [P4] if re						· ,					_
Phone:	778 584 1382	Compare Resu	ults to Criteria on Report -	provide details below If	box checked	3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum								V	A23	3DJ	110	10
	Company address below will appear on the final report	Select Distribution	on: Æ BMAIL	☐ MAIL ☐	FAX		lay [P2]ifr Lay [E]ifre							_				
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Chain of Custody (COC) / Analytical Request Form



Canada Toll Free: 1 800 668 9878

coc Number: 20 - 995105

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Report To	Contact and company name below will appear on the final report	T	Reports / Recipients					Turna	round T	ime (TA	T) Requ	ested		٠.	* * *		* \ 8 4	1001	3.5	· · · · · · · · · · · · · · · · · · ·	4 4 W
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Phone:	778 584 1282	Compare Resu	ılts to Criteria on Report - p	vovide details below if I	box checked	3 day [93] if received by 3pm M-F - 25% rush surcharge minimum								AFFIX ALS BARCODE LABEL HERE (ALS use only)							
	Company address below will appear on the final report	Select Distribution	on: EMAIL	☐ MAIL ☐ F	FAX .	2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum															
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Are samples for hu	uman consumption/ use?						Cooler Custody Seals Intact. 1985 1785 1														
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Contact
Brian White, P.Eng
778-746-7409
bwhite@mcelhanney.com



