

June 20, 2023

Baseline Water Project: 10-9000

Lor-Al Springs  
Box 200  
Rimbey, Alberta  
T0C 2J0

Attn: Stacey Johnson

**RE: 2023 Water Source Testing – SW 12-044-02 W5M****INTRODUCTION**

Baseline Water Resource Inc. (Baseline Water) was retained by Lor-Al Springs to conduct annual water sampling at a spring located within SW 12-044-02 W5M on May 11, 2023. The spring is the source of high-quality groundwater produced for an active bottled water operation.

**SAMPLING PROCEDURE**

Testing was completed by collecting water samples from the 4-inch source discharge pipe at the spring. Water samples were submitted to ALS Laboratories (ALS) in Calgary, Alberta for analysis of routine potability, microbiological (*E. coli*, Total Coliform Bacteria), turbidity, and total metals analysis.

Additionally, a second water sample was collected from within the bottling operation plant and this sample was analyzed for microbiological parameters.

**WATER QUALITY RESULTS**Groundwater Spring

Field parameters including electrical conductivity (EC), pH, temperature and flow rate were measured prior to water sample collection. Field parameter results are listed below.

pH	EC (µS/cm)	Temperature (°C)	Flow Rate (L/min)
6.80	600	6.4	68.2

Water quality analytical results were compared to the “Guidelines for Canadian Drinking Water Quality” (GCDWQ) (Health Canada, 2022). Complete laboratory results are summarized in Tables 1 – 3. A copy of the 2023 laboratory certificate of analysis (COA) is attached.

#### Plant Sampling

At the plant sampling point, Total Coliform Bacteria and *E.coli* results were below laboratory detection. The microbiological results of the plant water sample are included within the ALS 2023 laboratory COA report.

## **DISCLAIMER**

Baseline Water has used proficient skill and diligence conducting the water testing and preparation of this report. This report is a representation of the conditions and information present and available at the time of the water testing. Information received from all other sources is considered to be accurate but cannot be guaranteed. Baseline Water Resource Inc. is not responsible for any individual interpretation of this material, nor any decisions based upon findings in this report.

## **CLOSURE**

Baseline Water Resource Inc. is pleased to submit this report as fulfillment of Lor-Al Springs' request for spring water source testing.

Respectfully submitted,

**Baseline Water Resource Inc.**

S. Brent Bowerman, P.Geol.  
President

## **REFERENCE**

Health Canada. 2022. Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario, Canada.

Table 1: Water Analytical Results: Routine Potability (Lor-AI Springs)

Water Well Name	Sample Date	Laboratory	Chloride (Cl) (mg/L)	Fluoride (F) (mg/L)	Nitrate & Nitrite as Nitrogen (mg/L)	Nitrate-Nitrogen (NO <sub>3</sub> -N) (mg/L)	Nitrite-Nitrogen (NO <sub>2</sub> -N) (mg/L)	Sulphate (SO <sub>4</sub> ) (mg/L)	pH	Electrical Conductivity (EC) (µS/cm)	Ion Balance	Bicarbonate (HCO <sub>3</sub> ) (mg/L)	Carbonate (CO <sub>3</sub> ) (mg/L)	Hydroxide (OH) (mg/L)	P-Alkalinity (as CaCO <sub>3</sub> ) (mg/L)	T-Alkalinity (as CaCO <sub>3</sub> ) (mg/L)
<b>GCDWQ<sup>1</sup> Criteria</b>			<b>250</b>	<b>1.5</b>	<b>nr<sup>2</sup></b>	<b>10</b>	<b>1</b>	<b>500</b>	<b>7.0-10.5</b>	<b>nr</b>	<b>nr</b>	<b>nr</b>	<b>nr</b>	<b>nr</b>	<b>nr</b>	<b>nr</b>
<b>Type of Objective (MAC, AO or OG)<sup>3</sup></b>			<b>AO</b>	<b>MAC</b>	<b>-</b>	<b>MAC</b>	<b>MAC</b>	<b>AO</b>	<b>OG</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
Lor-AI Springs	07-Dec-87	AEC <sup>4</sup>	1.0	0.20	0.020	na <sup>5</sup>	0.005	10.0	9.30	577	1.01	293	32.0	na	na	294
	22-May-91	AEC	2.0	0.08	0.798	na	0.001	7.0	8.16	442	1.00	280	na	na	na	230
	4-Jan-01	U of A <sup>6</sup>	1.1	0.07	0.660	na	na	8.0	8.32	504	1.10	312	2.0	0	na	259
	9-Jul-04	MAI <sup>7</sup>	16.6	0.14	0.340	0.340	<0.003	20.2	7.67	656	1.02	390	<0.5	<0.5	<0.5	320
	18-Jul-05	MAI	15.0	<0.10	0.500	0.500	<0.06	18.0	7.90	604	0.98	403	<1.0	<1.0	<1.0	330
	3-Dec-06	MAI	<0.5	0.12	0.225	0.225	<0.003	25.5	8.20	535	0.91	329	<0.5	<0.5	<0.5	270
	27-Jun-07	MAI	20.0	na	1.900	1.900	<0.06	9.0	8.30	543	0.94	304	2.0	<1.0	2.0	253
	6-Dec-07	ALS <sup>8</sup>	9.9	<0.10	0.770	0.770	<0.05	12.4	8.10	538	95.3	339	<5.0	<5.0	na	278
	5-Aug-08	ALS	31.0	0.08	0.400	0.400	<0.05	14.8	8.10	658	98.0	363	<5.0	<5.0	na	297
	11-Feb-09	ALS	10.3	<0.10	0.240	0.240	<0.05	16.0	7.98	613	100	393	<5.0	<5.0	na	322
	18-May-10	ALS	49.5	<0.10	0.453	0.453	<0.050	23.7	8.00	607	95.0	395	<5.0	<5.0	na	324
	13-Aug-10	ALS	22.7	<0.10	1.400	1.400	<0.050	11.4	8.24	534	97.9	327	<5.0	<5.0	na	268
	16-May-11	ALS	30.9	<0.10	1.560	1.560	<0.050	10.6	8.16	595	93.4	317	<5.0	<5.0	na	260
	10-May-12	ALS	21.2	<0.10	0.614	0.614	<0.050	14.8	7.68	535	101.0	365	<5.0	<5.0	na	299
	22-May-13	ALS	18.3	<0.10	0.611	0.611	<0.050	12.5	8.08	587	94.3	337	<5.0	<5.0	na	276
	13-May-14	ALS	18.7	<0.10	1.210	1.210	<0.020	9.0	7.99	490	102.0	305	<5.0	<5.0	na	250
	26-May-15	ALS	31.4	0.062	0.545	0.545	<0.010	15.1	8.09	606	93.0	347	<5.0	<5.0	na	285
	12-May-16	AGAT <sup>9</sup>	46	0.070	0.410	0.410	<0.01	19.0	8.27	743	107.0	364	<5.0	<5.0	<5.0	300
	9-May-17	AGAT	28	0.010	0.520	0.520	<0.01	17.0	7.88	701	93.0	387	<5.0	<5.0	<5.0	317
	3-May-18	AGAT	31	0.090	0.880	0.880	<0.01	17.0	8.16	659	97.0	377	<5.0	<5.0	<5.0	309
16-May-19	AGAT	29	0.060	0.610	0.610	<0.01	20.0	8.05	650	98.0	397	<5	<5	<5	325	
5-May-20	AGAT	20.5	<0.01	0.68	0.68	<0.01	19.6	8.13	681	116	366	<5	<5	<5	300	
13-May-21	AGAT	55.5	0.05	0.54	0.54	<0.01	18.3	8.05	785	100	361	<5	<5	<5	290	
24-May-22	AGAT	78.1	0.08	0.38	0.38	<0.01	17.2	8.06	898	107	349	<5	<5	<5	286	
11-May-23	ALS	96.8	0.067	0.564	0.564	<0.010	17.3	8.06	869	105	382	<1.0	<1.0	na	313	

- NOTES:**
- Health Canada, 2022. "Guidelines for Canadian Drinking Water Quality Summary Table (Prepared by the Federal-Provincial-Territorial Committee on Drinking Water)
  - 'nr' denotes parameter not directly regulated.
  - MAC denotes "Maximum Acceptable Concentration", AO denotes "Aesthetic Objective" and OG denotes "Operational Guidance Value".
  - Alberta Environmental Centre in Vegreville, Alberta conducted the water analysis.
  - 'na' denotes value not applicable or not available.
  - University of Alberta (U of A) in Edmonton, Alberta conducted the water analysis.
  - Maxxam Analytics Inc. in Edmonton, Alberta conducted the water analysis.
  - ALS Laboratory Group (ALS) in Calgary, Alberta conducted the water analysis.
  - AGAT Laboratories (AGAT) in Calgary, Alberta conducted the water analysis.
  - BOLD** denotes an exceedance in Health Canada (2020) MAC or AO criteria.
  - 'na' and values below the laboratory reportable detection limit have been greyed-out for readability.

**Table 1: Water Analytical Results: Routine Potability (Lor-AI Springs) Continued**

Water Well Name	Sample Date	Laboratory	Calcium (Ca) - Dissolved (mg/L)	Iron (Fe) - Total (mg/L)	Iron (Fe) - Dissolved (mg/L)	Magnesium (Mg) - Dissolved (mg/L)	Manganese (Mn) - Total (mg/L)	Manganese (Mn) - Dissolved (mg/L)	Potassium (K) - Dissolved (mg/L)	Sodium (Na) - Dissolved (mg/L)	Total Dissolved Solids (TDS) (mg/L)	Hardness (as CaCO <sub>3</sub> ) (mg/L)	Turbidity (NTU)	Colour (TCU)	Flow Rate (L/min)
GCDWQ <sup>1</sup> Criteria			nr <sup>2</sup>	0.3	0.3	nr	0.02	0.02	nr	200	500	nr	0.1 <sup>3</sup>	15	nr
Type of Objective (MAC, AO or OG) <sup>4</sup>			-	AO	AO	-	AO	AO	-	AO	AO	-	OG	AO	-
Lor-AI Springs	07-Dec-87	AEC <sup>5</sup>	1.0	na	0.020	1.0	na	na	0.30	139.0	328	5	na	na	na
	22-May-91	AEC	54.0	na	<0.010	22.0	na	na	1.50	8.0	236	225	na	na	na
	4-Jan-01	U of A <sup>7</sup>	60.0	na	<0.020	28.0	na	na	2.00	15.0	272	263	na	na	na
	9-Jul-04	MAI <sup>8</sup>	73.1	na	0.050	33.2	na	<0.0040	2.10	23.3	362	320	0.30	na	71
	18-Jul-05	MAI	70.5	na	0.033	33.8	na	<0.0010	2.00	20.8	372	320	0.20	na	na
	3-Dec-06	MAI	32.3	na	<0.060	16.0	na	<0.0040	1.70	56.0	295	150	0.20	na	na
	27-Jun-07	MAI	58.9	na	<0.060	24.2	na	<0.0040	1.70	14.2	289	250	na	na	na
	6-Dec-07	ALS <sup>9</sup>	59.5	0.061	<0.030	26.4	<0.005	<0.0050	1.70	15.5	296	257	na	na	164
	5-Aug-08	ALS	69.8	<0.050	<0.050	29.8	<0.010	<0.0100	1.60	24.0	351	297	na	na	na
	11-Feb-09	ALS	67.1	<0.030	<0.030	31.5	<0.005	<0.0005	2.22	25.4	347	297	0.35	<5.0	na
	18-May-10	ALS	73.4	<0.030	<0.030	34.2	<0.005	<0.0050	2.22	33.2	413	324	<0.20	na	na
	13-Aug-10	ALS	61.7	<0.030	<0.030	26.2	<0.005	<0.0050	1.93	21.1	312	262	<0.20	na	144
	16-May-11	ALS	58.9	<0.030	<0.030	25.3	<0.005	<0.0050	1.84	20.9	311	251	<0.20	<5.0	192
	10-May-12	ALS	67.7	<0.030	<0.030	30.1	<0.005	<0.0050	2.08	24.5	342	293	0.20	<5.0	132
	22-May-13	ALS	60.1	<0.030	<0.030	23.9	<0.005	<0.0050	1.82	22.3	307	248	0.12	<5.0	227
	13-May-14	ALS	60.4	<0.030	<0.030	23.6	<0.005	<0.0050	1.91	20.3	289	248	0.16	na	176
	26-May-15	ALS	62.3	<0.030	<0.030	25.0	<0.005	<0.0050	1.82	27.1	337	261	0.12	<5.0	97
	12-May-16	AGAT <sup>10</sup>	72.3	<0.100	<0.100	32.8	<0.005	<0.0050	2.00	43.7	440	316	<0.2	na	82
	9-May-17	AGAT	61.7	<0.100	<0.100	26.6	<0.005	<0.0050	1.90	38.6	366	264	<0.2	na	111
	3-May-18	AGAT	66.2	<0.100	<0.100	27.9	<0.005	<0.0050	2.10	37.2	371	280	<0.2	na	114
16-May-19	AGAT	68.9	<0.1	<0.1	29.7	<0.005	<0.005	2.00	38.4	386	294	<0.2	na	114	
5-May-20	AGAT	70.9	<0.1	<0.1	33.2	<0.005	<0.005	2.3	42.8	372	314	0.2	na	114	
13-May-21	AGAT	74.9	<0.1	<0.1	30.8	<0.005	<0.005	2.0	36.3	398	314	<0.2	na	79	
24-May-22	AGAT	77.2	<0.1	<0.1	33.5	<0.005	<0.005	2.0	52.2	434	331	<0.2	na	90	
11-May-23	ALS	78.2 <sup>13</sup>	<0.010	na	38.3 <sup>13</sup>	<0.00010	na	2.46 <sup>13</sup>	62.9 <sup>13</sup>	498	353	0.22	na	68	

- NOTES:**
- Health Canada, 2022. "Guidelines for Canadian Drinking Water Quality Summary Table (Prepared by the Federal-Provincial-Territorial Committee on Drinking Water)
  - 'nr' denotes parameter not directly regulated.
  - Guideline is based on conventional treatment (0.3 mg/L), slow sand or diatomaceous earth filtration (1.0 mg/L), and membrane filtration (0.1 mg/L). This guideline is intended specifically for water treatment facilities, and is not directly comparable to private water wells or springs.
  - MAC denotes "Maximum Acceptable Concentration", AO denotes "Aesthetic Objective" and OG denotes "Operational Guidance Value".
  - Alberta Environmental Centre in Vegreville, Alberta conducted the water analysis.
  - 'na' denotes value not applicable or not available.
  - University of Alberta (U of A) in Edmonton, Alberta conducted the water analysis.
  - Maxxam Analytics Inc. in Edmonton, Alberta conducted the water analysis.
  - ALS Laboratory Group (ALS) in Calgary, Alberta conducted the water analysis.
  - AGAT Laboratories (AGAT) in Calgary, Alberta conducted the water analysis.
  - BOLD** denotes an exceedance in Health Canada (2020) MAC or AO criteria.
  - 'na' and values below the laboratory reportable detection limit have been greyed-out for readability.
  - Value represents total ion concentration and not dissolved ion concentration

**Table 2: Water Analytical Results: Microbiological Parameters (Lor-AI Springs)**

Water Well Name	Sample Date	Laboratory	Total Coliform Bacteria (MPN/100mL)	Eschereria coli Bacteria (CFU/100mL)	Iron Related Bacteria (CFU/mL)	Sulfate Reducing Bacteria (CFU/mL)
<b>GCDWQ <sup>1</sup> Criteria</b>			<b>0</b>	<b>0</b>	<b>nr <sup>2</sup></b>	<b>nr</b>
<b>Type of Objective (MAC, AO or OG) <sup>3</sup></b>			<b>MAC</b>	<b>MAC</b>	<b>-</b>	<b>-</b>
Lor-AI Springs	07-Dec-87	AEC <sup>4</sup>	na <sup>5</sup>	na	na	na
	22-May-91	AEC	na	na	na	na
	04-Jan-01	U of A <sup>6</sup>	na	na	na	na
	09-Jul-04	MAI <sup>7</sup>	na	na	520	<1
	18-Jul-05	MAI	na	na	na	<1
	03-Dec-06	MAI	<1	<1	9000	<200
	27-Jun-07	MAI	na	na	<30	<200
	19-Dec-07	ALS <sup>8</sup>	<1	na	9000	<200
	5-Aug-08	ALS	<1	na	9000	<200
	11-Feb-09	ALS	<1	<1	500	<200
	18-May-09	ALS	<1	<1	2300	<200
	16-May-11	ALS	<1	<1	9000	<200
	10-May-12	ALS	<1	<1	9000	<200
	22-May-13	ALS	<1	<1	9000	<200
	13-May-14	ALS	<1	<1	9000	<200
	26-May-15	ALS	<1	<1	9000	<200
	12-May-16	AGAT <sup>9</sup>	<1	<1	8	<1
	9-May-17	AGAT	<1	<1	150	<1
	3-May-18	AGAT	<1	<1	500	<1
	16-May-19	AGAT	<1	<1	9000	<1
5-May-20	AGAT	<b>2</b>	<1	9000	<1	
13-May-21	AGAT	<1	<1	500	<1	
24-May-22	AGAT	<1	<1	na	na	
11-May-23	ALS	<1	<1	na	na	

**NOTES:**

1. Health Canada, 2022. "Guidelines for Canadian Drinking Water Quality Summary Table (Prepared by the Federal-Provincial-Territorial Committee on Drinking Water)".
2. 'nr' denotes parameter not directly regulated.
3. MAC denotes "Maximum Acceptable Concentration", AO denotes "Aesthetic Objective" and OG denotes "Operational Guidance Value".
4. Alberta Environmental Centre in Vegreville, Alberta conducted the water analysis.
5. 'na' denotes value not applicable or not available.
6. University of Alberta (U of A) in Edmonton, Alberta conducted the water analysis.
7. Maxxam Analytics Inc. in Edmonton, Alberta conducted the water analysis.
8. ALS Laboratory Group (ALS) in Calgary, Alberta conducted the water analysis.
9. AGAT Laboratories (AGAT) in Calgary, Alberta conducted the water analysis.
10. **BOLD** denotes an exceedance in Health Canada (2020) MAC or AO criteria.
11. 'na' and values below the laboratory reportable detection limit have been greyed-out for readability.

**Table 3: Water Analytical Results: Dissolved & Total Metals (Lor-AI Springs)**

Water Well Name	Sample Date	Laboratory	Aluminum (Al) (mg/L)	Antimony (Sb) (mg/L)	Arsenic (As) (mg/L)	Barium (Ba) (mg/L)	Beryllium (Be) (mg/L)	Bismuth (Bi) (mg/L)	Boron (B) (mg/L)	Bromate (mg/L)	Bromide (mg/L)	Cadmium (Cd) (mg/L)	Chromium (Cr) (mg/L)	Cobalt (Co) (mg/L)	Copper (Cu) (mg/L)	Iron (Fe) (mg/L)	Lead (Pb) (mg/L)
<b>GCDWQ<sup>1</sup> Criteria</b>			<b>0.1</b>	<b>0.006</b>	<b>0.010</b>	<b>2.0</b>	<b>nr<sup>2</sup></b>	<b>nr</b>	<b>5</b>	<b>0.01</b>	<b>nr</b>	<b>0.007</b>	<b>0.05</b>	<b>nr</b>	<b>1.0</b>	<b>0.3</b>	<b>0.005</b>
<b>Type of Objective (MAC, AO or OG)<sup>3</sup></b>			<b>OG</b>	<b>MAC</b>	<b>MAC</b>	<b>MAC</b>	<b>-</b>	<b>-</b>	<b>MAC</b>	<b>MAC</b>	<b>-</b>	<b>MAC</b>	<b>MAC</b>	<b>-</b>	<b>AO</b>	<b>AO</b>	<b>MAC</b>
Lor-AI Springs	07-Dec-87	AEC <sup>4</sup>	na <sup>5</sup>	na	na	na	na	na	na	na	na	na	na	na	na	na	na
	22-May-91	AEC	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
	04-Jan-01	U of A <sup>6</sup>	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
	09-Jul-04	MAI <sup>7</sup>	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
	18-Jul-05	MAI	<0.04	<0.02	<0.02	0.128	<0.001	<0.2	<0.05	na	na	<0.002	<0.007	<0.005	<0.009	0.033	<0.1
	03-Dec-06	MAI	<0.04	<0.0002	<0.001	0.08	<0.001	na	0.06	na	na	<0.0002	<0.01	<0.0003	0.0017	<0.06	<0.0002
	27-Jun-07	MAI	<0.04	na	na	0.10	na	na	<0.02	na	na	na	<0.01	na	na	<0.06	na
	05-Aug-08	ALS <sup>8</sup>	na	na	na	na	na	na	na	na	na	na	na	na	na	<0.05	na
	11-Feb-09	ALS	0.027	<0.00050	<0.00050	0.115	<0.0025	<0.0025	<0.050	<0.01	na	<0.00025	<0.0025	<0.00050	0.00089	na	0.00062
	18-May-10	ALS	<0.025	<0.00050	<0.00050	0.147	<0.0025	<0.0025	<0.050	na	<0.10	<0.00025	<0.0025	<0.00050	<0.00050	na	<0.00050
	16-May-11	ALS	<0.0050	<0.00010	0.00011	0.107	<0.00050	<0.00050	0.016	na	<0.10	<0.000050	<0.00050	<0.00010	0.00048	na	<0.00010
	10-May-12	ALS	<0.010	<0.00020	<0.00020	0.125	<0.0010	<0.0010	<0.020	na	<0.10	<0.00010	<0.0010	<0.00020	0.00045	na	<0.00020
	22-May-13	ALS	<0.0050	<0.00010	<0.00010	0.128	<0.00050	na	0.019	na	na	<0.000050	<0.00050	<0.00010	0.00034	<0.030	<0.00010
	13-May-14	ALS	<0.0010	<0.00010	<0.00010	0.115	<0.00050	na	0.013	na	na	<0.000010	0.00023	<0.00010	0.00020	<0.030	<0.000050
	26-May-15	ALS	0.0043	<0.00010	<0.00010	0.132	<0.00010	na	0.023	na	<0.10	0.0000116	0.00022	<0.00010	0.00036	<0.030	<0.000050
	12-May-16	AGAT <sup>9</sup>	<0.0040	<0.0010	<0.0010	0.140	<0.0010	na	0.030	na	<0.10	<0.000016	<0.0010	na	<0.00080	<0.1	<0.00050
	9-May-17	AGAT	<0.0040	<0.0010	<0.0010	0.120	<0.0010	na	0.020	na	<0.10	<0.000016	<0.0010	na	<0.00080	<0.1	<0.00050
	3-May-18	AGAT	<0.0040	<0.0010	<0.0010	0.120	<0.0010	na	0.020	na	<0.10	<0.000016	<0.001	na	<0.0008	<0.1	<0.0005
	16-May-19	AGAT	<0.004	<0.001	<0.001	0.130	<0.001	na	0.030	na	<0.1	0.0000190	<0.001	na	<0.0008	<0.1	<0.0005
	5-May-20	AGAT	<0.004	<0.001	<0.001	0.14	<0.001	na	0.02	na	<0.1	<0.000016	<0.001	<0.0009	<0.0008	<0.1	<0.0005
13-May-21	AGAT	<0.004	<0.001	<0.001	0.15	<0.001	na	0.02	na	<0.1	<0.000016	<0.001	<0.0009	<0.0008	<0.1	<0.0005	
24-May-22	AGAT	<0.004	<0.001	<0.001	0.16	<0.0005	na	0.03	na	na	<0.000016	<0.0005	<0.0009	<0.0008	<0.1	<0.0001	
11-May-23	ALS	<0.0030	<0.00010	<0.00010	0.180	<0.000020	<0.000050	0.024	na	na	0.0000122	<0.00050	<0.00010	<0.00050	<0.010	<0.000050	

**NOTES:**

1. Health Canada, 2022. "Guidelines for Canadian Drinking Water Quality Summary Table (Prepared by the Federal-Provincial-Territorial Committee on Drinking Water)
2. 'nr' denotes parameter not directly regulated.
3. MAC denotes "Maximum Acceptable Concentration", AO denotes "Aesthetic Objective" and OG denotes "Operational Guidance Value".
4. Alberta Environmental Centre in Vegreville, Alberta conducted the water analysis.
5. 'na' denotes value not applicable or not available.
6. University of Alberta (U of A) in Edmonton, Alberta conducted the water analysis.
7. Maxxam Analytics Inc. in Edmonton, Alberta conducted the water analysis.
8. ALS Laboratory Group (ALS) in Calgary, Alberta conducted the water analysis.
9. AGAT Laboratories (AGAT) in Calgary, Alberta conducted the water analysis.
10. **BOLD** denotes an exceedance in Health Canada (2020) MAC or AO criteria.
11. 'na' and values below the laboratory reportable detection limit have been greyed-out for readability.
12. Results are for Total Metals beginning in 2022

**Table 3: Water Analytical Results: Dissolved & Total Metals (Lor-AI Springs) Continued**

Water Well Name	Sample Date	Laboratory	Lithium (Li) (mg/L)	Diss Magnesium (Mg) (mg/L)	Manganese (Mn) (mg/L)	Mercury (Hg) (mg/L)	Molybdenum (Mo) (mg/L)	Nickel (Ni) (mg/L)	Selenium (Se) (mg/L)	Silver (Ag) (mg/L)	Strontium (Sr) (mg/L)	Thallium (Tl) (mg/L)	Tin (Sn) (mg/L)	Titanium (Ti) (mg/L)	Uranium (U) (mg/L)	Vanadium (V) (mg/L)	Zinc (Zn) (mg/L)
<b>GCDWQ<sup>1</sup> Criteria</b>			<b>nr<sup>2</sup></b>	<b>nr</b>	<b>0.02</b>	<b>0.001</b>	<b>nr</b>	<b>nr</b>	<b>0.05</b>	<b>nr</b>	<b>7.0</b>	<b>nr</b>	<b>nr</b>	<b>nr</b>	<b>0.02</b>	<b>nr</b>	<b>5.0</b>
<b>Type of Objective (MAC, AO or OG)<sup>3</sup></b>			<b>-</b>	<b>-</b>	<b>AO</b>	<b>MAC</b>	<b>-</b>	<b>-</b>	<b>MAC</b>	<b>-</b>	<b>MAC</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>MAC</b>	<b>-</b>	<b>AO</b>
Lor-AI Springs	07-Dec-87	AEC <sup>4</sup>	na <sup>5</sup>	na	na	na	na	na	na	na	na	na	na	na	na	na	na
	22-May-91	AEC	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
	04-Jan-01	U of A <sup>6</sup>	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
	09-Jul-04	MAI <sup>7</sup>	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
	18-Jul-05	MAI	0.03	34.1	0.001	na	<0.00600	<0.0080	<0.03	<0.01	0.720	<0.050	<0.040	<0.006	<1.00	<0.050	<0.005
	03-Dec-06	MAI	0.03	16.0	<0.004	na	0.00500	0.0014	<0.001	<0.0001	0.380	<0.0002	<0.001	0.002	0.0033	<0.001	0.035
	27-Jul-07	MAI	<0.02	24.2	<0.004	na	na	na	na	na	0.560	na	na	na	na	na	na
	05-Aug-08	ALS <sup>8</sup>	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
	11-Feb-09	ALS	<0.025	na	na	<0.00005	0.00333	<0.0025	<0.0050	<0.000050	0.613	<0.00050	<0.00050	<0.0050	0.00494	<0.0050	<0.025
	18-May-10	ALS	<0.025	na	na	<0.00005	0.00327	<0.0025	<0.0050	<0.000050	0.704	<0.00050	<0.00050	<0.0050	0.00489	<0.0050	<0.025
	16-May-11	ALS	0.0176	na	na	<0.00005	0.00276	<0.0005	<0.0010	<0.000010	0.518	<0.00010	<0.00010	<0.0010	0.00337	<0.0010	<0.0050
	10-May-12	ALS	0.0200	na	na	<0.00005	0.00302	<0.0010	<0.0020	<0.000020	0.583	<0.00020	<0.00025	<0.0020	0.00423	<0.0020	<0.010
	22-May-13	ALS	0.0205	23.9	<0.005	<0.00010	0.00309	<0.00050	<0.0010	<0.000010	na	<0.00010	<0.00010	<0.0010	0.00423	<0.0010	<0.0050
	13-May-14	ALS	0.0159	23.6	<0.005	<0.00005	0.00267	0.00021	0.00043	<0.000010	na	<0.000050	<0.00010	<0.00030	0.00319	0.00036	<0.0050
	26-May-15	ALS	0.0221	25.6	<0.005	<0.000005	0.00320	<0.00050	0.000687	<0.000010	na	<0.000010	<0.00010	<0.00030	0.00463	<0.00050	0.0025
	12-May-16	AGAT <sup>9</sup>	na	32.8	<0.005	<0.000025	0.00300	<0.0030	0.000700	<0.000050	na	<0.00050	na	<0.001	0.00500	na	<0.01
	9-May-17	AGAT	na	26.6	<0.005	<0.000025	0.00300	<0.0030	<0.000500	<0.000050	na	<0.00050	na	0.004	0.00500	na	<0.01
	3-May-18	AGAT	na	27.9	<0.005	<0.000025	0.00300	<0.0030	0.000800	<0.00005	na	<0.0001	na	0.003	0.00500	na	<0.005
	16-May-19	AGAT	na	29.7	<0.005	<0.000025	0.00300	<0.003	<0.0005	0.00007	na	<0.0001	na	0.003	0.005	na	<0.005
	5-May-20	AGAT	na	33.2	<0.005	<0.0000025	0.003	<0.003	<0.0005	<0.0001	na	<0.0001	na	0.003	0.005	na	<0.005
13-May-21	AGAT	na	30.8	<0.005	<0.0000025	0.003	<0.003	<0.0005	<0.0001	na	<0.0001	na	<0.001	0.005	na	<0.005	
24-May-22	AGAT	na	33.5	<0.005	na	0.003	<0.003	<0.0005	<0.00005	na	<0.0001	na	<0.001	0.005	na	<0.004	
11-May-23	ALS	0.0250	na	<0.00010	na	0.00326	<0.00050	0.000455	<0.000010	0.804	<0.000010	<0.00010	<0.00030	0.00516	0.00055	<0.0030	

**NOTES:**

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- 'nr' denotes parameter not directly regulated.
- MAC denotes "Maximum Acceptable Concentration", AO denotes "Aesthetic Objective" and OG denotes "Operational Guidance Value".
- Alberta Environmental Centre in Vegreville, Alberta conducted the water analysis.
- 'na' denotes value not applicable or not available.
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- Maxxam Analytics Inc. in Edmonton, Alberta conducted the water analysis.
- ALS Laboratory Group (ALS) in Calgary, Alberta conducted the water analysis.
- AGAT Laboratories (AGAT) in Calgary, Alberta conducted the water analysis.
- BOLD** denotes an exceedance in Health Canada (2020) MAC or AO criteria.
- 'na' and values below the laboratory reportable detection limit have been greyed-out for readability.
- Results are for Total Metals beginning in 2022





## CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

<p><b>Work Order</b> : <b>CG2306015</b></p> <p><b>Client</b> : <b>Baseline Water Resources Inc.</b></p> <p><b>Contact</b> : Greg Farrell</p> <p><b>Address</b> : #10, 2115 - 27 Avenue NE Calgary AB Canada T2E 7E4</p> <p><b>Telephone</b> : 403-888-0465</p> <p><b>Project</b> : 10-9000</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : 20-931814</p> <p><b>Sampler</b> : GL</p> <p><b>Site</b> : SW 12-44-2 W5M</p> <p><b>Quote number</b> : Calgary General</p> <p><b>No. of samples received</b> : 2</p> <p><b>No. of samples analysed</b> : 2</p>	<p><b>Page</b> : 1 of 6</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 12-May-2023 05:42</p> <p><b>Date Analysis Commenced</b> : 12-May-2023</p> <p><b>Issue Date</b> : 19-May-2023 13:49</p>
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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
- Guideline Comparison

**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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
George Huang	Supervisor - Inorganic	Metals, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta

## 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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
%	percent
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres
NTU	nephelometric turbidity units
pH units	pH units

>: greater than.

<: less than.

Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).

For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit .



## Analytical Results

Analyte	Method/Lab	LOR	Unit	Client sample ID	CDWG	CDWG	CDWG				
				LOR - A1 SPRING	AO	MAC	OG				
Sub-Matrix: Water (Matrix: Water)		Sampling date/time		12-May-2023 00:00							
				CG2306015-001							
<b>Physical Tests</b>											
Alkalinity, bicarbonate (as HCO3)	E290/CG	1.0	mg/L	382	--	--	--	--	--	--	--
Alkalinity, carbonate (as CO3)	E290/CG	1.0	mg/L	<1.0	--	--	--	--	--	--	--
Alkalinity, hydroxide (as OH)	E290/CG	1.0	mg/L	<1.0	--	--	--	--	--	--	--
Alkalinity, total (as CaCO3)	E290/CG	1.0	mg/L	313	--	--	--	--	--	--	--
Conductivity	E100/CG	1.0	µS/cm	869	--	--	--	--	--	--	--
Hardness (as CaCO3), from total Ca/Mg	EC100A/CG	0.50	mg/L	353	80 - 100 mg/L	--	--	--	--	--	--
pH	E108/CG	0.10	pH units	8.06	7 - 10.5 pH units	--	--	--	--	--	--
Solids, total dissolved [TDS], calculated	EC103.B/CG	1.0	mg/L	498	--	--	--	--	--	--	--
Turbidity	E121/CG	0.10	NTU	0.22	1 NTU	--	--	--	--	--	--
<b>Anions and Nutrients</b>											
Chloride	E235.Cl/CG	0.50	mg/L	96.8	250 mg/L	--	--	--	--	--	--
Fluoride	E235.F/CG	0.020	mg/L	0.067	--	1.5 mg/L	--	--	--	--	--
Nitrate (as N)	E235.NO3/CG	0.020	mg/L	0.564	--	10 mg/L	--	--	--	--	--
Nitrate + Nitrite (as N)	EC235.N+N/C G	0.0032	mg/L	0.564	--	10 mg/L	--	--	--	--	--
Nitrite (as N)	E235.NO2/CG	0.010	mg/L	<0.010	--	1 mg/L	--	--	--	--	--
Sulfate (as SO4)	E235.SO4/CG	0.30	mg/L	17.3	500 mg/L	--	--	--	--	--	--
<b>Microbiological Tests</b>											
Coliforms, total	E010/CG	1	MPN/100mL	<1	--	1 MPN/100mL	--	--	--	--	--
Coliforms, Escherichia coli [E. coli]	E010/CG	1	MPN/100mL	<1	--	1 MPN/100mL	--	--	--	--	--
<b>Ion Balance</b>											
Ion balance (cations/anions)	EC101A/CG	0.01	%	105	--	--	--	--	--	--	--
<b>Total Metals</b>											
Aluminum, total	E420/CG	0.0030	mg/L	<0.0030	--	2.9 mg/L	0.1 mg/L	--	--	--	--
Antimony, total	E420/CG	0.00010	mg/L	<0.00010	--	0.006 mg/L	--	--	--	--	--
Arsenic, total	E420/CG	0.00010	mg/L	<0.00010	--	0.01 mg/L	--	--	--	--	--
Barium, total	E420/CG	0.00010	mg/L	0.180	--	2 mg/L	--	--	--	--	--
Beryllium, total	E420/CG	0.000020	mg/L	<0.000020	--	--	--	--	--	--	--



Analyte	Method/Lab	LOR	Unit	CG2306015-001 (Continued)	CDWG AO	CDWG MAC	CDWG OG			
<b>Total Metals - Continued</b>										
Bismuth, total	E420/CG	0.000050	mg/L	<0.000050	--	--	--	--	--	--
Boron, total	E420/CG	0.010	mg/L	0.024	--	5 mg/L	--	--	--	--
Cadmium, total	E420/CG	0.0000050	mg/L	0.0000122	--	0.007 mg/L	--	--	--	--
Calcium, total	E420/CG	0.050	mg/L	78.2	--	--	--	--	--	--
Cesium, total	E420/CG	0.000010	mg/L	<0.000010	--	--	--	--	--	--
Chromium, total	E420/CG	0.00050	mg/L	<0.00050	--	0.05 mg/L	--	--	--	--
Cobalt, total	E420/CG	0.00010	mg/L	<0.00010	--	--	--	--	--	--
Copper, total	E420/CG	0.00050	mg/L	<0.00050	1 mg/L	2 mg/L	--	--	--	--
Iron, total	E420/CG	0.010	mg/L	<0.010	0.3 mg/L	--	--	--	--	--
Lead, total	E420/CG	0.000050	mg/L	<0.000050	--	0.005 mg/L	--	--	--	--
Lithium, total	E420/CG	0.0010	mg/L	0.0250	--	--	--	--	--	--
Magnesium, total	E420/CG	0.0050	mg/L	38.3	--	--	--	--	--	--
Manganese, total	E420/CG	0.00010	mg/L	<0.00010	0.02 mg/L	0.12 mg/L	--	--	--	--
Molybdenum, total	E420/CG	0.000050	mg/L	0.00326	--	--	--	--	--	--
Nickel, total	E420/CG	0.00050	mg/L	<0.00050	--	--	--	--	--	--
Phosphorus, total	E420/CG	0.050	mg/L	<0.050	--	--	--	--	--	--
Potassium, total	E420/CG	0.050	mg/L	2.46	--	--	--	--	--	--
Rubidium, total	E420/CG	0.00020	mg/L	0.00037	--	--	--	--	--	--
Selenium, total	E420/CG	0.000050	mg/L	0.000455	--	0.05 mg/L	--	--	--	--
Silicon, total	E420/CG	0.10	mg/L	4.17	--	--	--	--	--	--
Silver, total	E420/CG	0.000010	mg/L	<0.000010	--	--	--	--	--	--
Sodium, total	E420/CG	0.050	mg/L	62.9	200 mg/L	--	--	--	--	--
Strontium, total	E420/CG	0.00020	mg/L	0.804	--	7 mg/L	--	--	--	--
Sulfur, total	E420/CG	0.50	mg/L	6.89	--	--	--	--	--	--
Tellurium, total	E420/CG	0.00020	mg/L	<0.00020	--	--	--	--	--	--
Thallium, total	E420/CG	0.000010	mg/L	<0.000010	--	--	--	--	--	--
Thorium, total	E420/CG	0.00010	mg/L	<0.00010	--	--	--	--	--	--
Tin, total	E420/CG	0.00010	mg/L	<0.00010	--	--	--	--	--	--
Titanium, total	E420/CG	0.00030	mg/L	<0.00030	--	--	--	--	--	--
Tungsten, total	E420/CG	0.00010	mg/L	<0.00010	--	--	--	--	--	--
Uranium, total	E420/CG	0.000010	mg/L	0.00516	--	0.02 mg/L	--	--	--	--
Vanadium, total	E420/CG	0.00050	mg/L	0.00055	--	--	--	--	--	--
Zinc, total	E420/CG	0.0030	mg/L	<0.0030	5 mg/L	--	--	--	--	--
Zirconium, total	E420/CG	0.00020	mg/L	<0.00020	--	--	--	--	--	--

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.



### Summary of Guideline Breaches by Sample

SampleID/Client ID	Matrix	Analyte	Analyte Summary	Guideline	Category	Result	Limit
LOR - A1 SPRING	Water	Hardness (as CaCO <sub>3</sub> ), from total Ca/Mg	Hardness levels between 80 and 100 mg/L (as CaCO <sub>3</sub> ) provide acceptable balance between corrosion and incrustation; where a water softener is used, a separate unsoftened supply for cooking and drinking purposes is recommended.	CDWG	AO	353 mg/L	80-100 mg/L

**Key:**

- CDWG Canada Guidelines for Canadian Drinking Water Quality (JAN, 2023)
- AO Aesthetic Objective
- MAC Maximum Acceptable Concentrations
- OG Operational Guidance

