

CDN Resource Laboratories Ltd.

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REFERENCE MATERIAL: CDN-CM-46

Recommended value and the "Between Laboratory" two standard deviations

Gold	2.25 g/t ± 0.26 g/t	Certified value	30g FA / Instrumental
Copper	1.13 % ± 0.04 %	Certified value	4 Acid / ICP
Copper	1.13 % ± 0.03 %	Certified value	Aqua Regia / ICP or MS

PREPARED BY: CDN Resource Laboratories Ltd.
CERTIFIED BY: Duncan Sanderson, B.Sc., Licensed Assayer of British Columbia
INDEPENDENT GEOCHEMIST: Dr. Barry Smee., Ph.D., P. Geo.
DATE OF CERTIFICATION: September 22nd, 2020

ORIGIN OF REFERENCE MATERIAL:

Standard CDN-CM-46 was prepared using ore from the Minto Mine (Minto Explorations) in Yukon, Canada, supplied as coarse reject from diamond drilling blended with 40 kg of Hecla's Greens Creek deposit and 10 kg of copper concentrate and spiked with 10kg of high-grade gold. Mineralization in Minto mine is primary chalcopyrite and bornite pervasively disseminated and as stringers within foliated granodiorite units rich in secondary biotite. Sulphide mineralization is typically accompanied by magnetite. Gold is intimately associated with the bornite mineralization and rarely observed as free gold.

The Greens Creek deposit is a polymetallic, stratiform, massive sulfide deposit. The host rock consists of predominantly marine sedimentary, and mafic to ultramafic volcanic and plutonic rocks, which have been subjected to multiple periods of deformation. Mineralization occurs discontinuously along the contact between a structural hanging wall of quartz mica carbonate phyllites, and a structural footwall of graphitic and calcareous argillite.

Ore lithologies fall into two broad groups: massive ores with over 50% sulfides and white ores with less than 50% sulfides. The massive ores are further subdivided as either being base-metal or pyrite dominant. Massive ores vary greatly in precious-metal grade from uneconomic to bonanza Au (>.5 opt) and Ag (>100 opt). White ores are subdivided into three groups by the dominant gangue mineralogy; white carbonate, white siliceous, and white baritic ore. These ores tend to be base-metal poor and precious-metal rich. Major sulfide minerals are pyrite, sphalerite, galena, and tetrahedrite/tennantite.

METHOD OF PREPARATION:

Reject ore material was dried, crushed, pulverized and then passed through a 270-mesh screen. The +270 material was discarded. The -270 material was mixed for 5 days in a double-cone blender. Splits were taken and sent to 15 commercial laboratories for round robin assaying.

ASSAY PROCEDURES:

Au: 30 gr Fire assay pre-concentration, AA or ICP finish.

Cu: 4-acid digestion, AA or ICP finish and Aqua regia digestion and ICP-OES or MS finish

Whole rock analysis and 30 element ICP analysis (4-acid digestion) were also conducted on 5 samples.

APPROXIMATE CHEMICAL COMPOSITION (by whole rock analysis):

Analyte	Percent	Analyte	Percent
SiO ₂	59.2	Na ₂ O	3.1
Al ₂ O ₃	14.5	MgO	2.3
Fe ₂ O ₃	7.8	K ₂ O	2.7
CaO	4.0	TiO ₂	0.5
MnO	<0.1	LOI	3.3
Total S	1.4	Total C	0.4

STATISTICAL PROCEDURES:

The final limits were calculated after first determining if all data was compatible within a spread normally expected for similar analytical methods done by reputable laboratories. Data from any one laboratory was removed from further calculations when the mean of all analyses from that laboratory failed a t test of the global means of the other laboratories. The mean and standard deviation were calculated using all remaining data. Any analysis that fell outside of the mean ± 2 standard deviations was removed from the ensuing data base. The mean and standard deviations were again calculated using the remaining data. This method is different from that used by Government agencies in that the actual "between-laboratory" standard deviation is used in the calculations. This produces upper and lower limits that reflect actual individual analyses rather than a grouped set of analyses. The limits can therefore be used to monitor accuracy from individual analyses, unlike the Confidence Limits published on other standards.

Our certified gold values are based on 30 g Fire Assay determinations. For optimal results, we strongly recommend you assay our standards with similar methods using "at least" 30 g of material. Using a smaller sample weight may result in erratic values.

RESULTS FROM ROUND ROBIN ASSAYING:

Sample	Lab 1	Lab 2	Lab 3	Lab 4	Lab 5	Lab 6	Lab 7	Lab 8	Lab 9	Lab 10	Lab 11	Lab 12	Lab 13	Lab 14	Lab 15
Au by Fire Assay, 30g sample size and Instrumental finish															
CM-46-1	2.363	2.12	2.10	1.995	2.50	2.24	2.35	2.456	1.720	2.312	2.716	2.167	2.22	2.344	2.66
CM-46-2	2.240	2.14	2.17	2.270	2.12	2.30	2.27	2.248	2.074	2.376	2.062	2.388	2.21	2.313	2.20
CM-46-3	2.053	2.11	2.19	2.590	2.31	2.14	2.35	2.354	2.328	2.374	2.146	2.402	2.36	2.194	2.49
CM-46-4	2.016	2.14	2.28	2.680	2.34	2.20	2.40	2.297	2.540	2.320	2.220	2.204	2.32	2.218	2.38
CM-46-5	1.937	2.39	2.03	2.640	2.36	2.50	2.30	2.268	2.061	2.377	2.200	2.413	2.16	2.314	2.55
CM-46-6	2.178	2.32	1.99	2.210	2.54	2.47	2.32	2.154	2.451	2.365	2.070	2.378	2.16	2.216	2.61
CM-46-7	2.257	2.02	2.04	2.330	2.69	2.63	2.22	2.261	2.162	2.363	2.170	2.199	2.24	2.185	2.27
CM-46-8	2.189	2.24	2.21	2.160	2.35	2.23	2.32	2.290	2.276	2.320	2.187	2.348	2.14	2.113	2.52
CM-46-9	1.946	2.19	2.13	2.010	2.26	2.35	2.44	2.451	2.524	2.314	2.190	2.323	2.15	2.267	2.58
CM-46-10	1.967	2.12	2.13	2.520	2.34	2.51	2.28	2.112	2.120	2.383	2.200	2.161	2.33	2.257	2.35
Mean	2.115	2.18	2.13	2.341	2.38	2.36	2.33	2.289	2.226	2.350	2.216	2.298	2.23	2.242	2.46
Std. Devn.	0.150	0.110	0.090	0.254	0.159	0.162	0.064	0.111	0.252	0.030	0.184	0.103	0.082	0.071	0.153
% RSD	7.094	5.034	4.223	10.872	6.677	6.870	2.752	4.849	11.334	1.269	8.295	4.499	3.660	3.151	6.232
Cu by 4 Acid digestion /Instrumental finish															
CM-46-1	1.12	1.10	1.13	1.135	1.15	1.155	1.13		1.152	1.14	1.118	1.1369	1.11	1.14	1.095
CM-46-2	1.11	1.10	1.15	1.125	1.13	1.095	1.14		1.14	1.16	1.164	1.1553	1.11	1.15	1.130
CM-46-3	1.13	1.14	1.14	1.130	1.09	1.125	1.14		1.141	1.16	1.147	1.1292	1.10	1.16	1.145
CM-46-4	1.12	1.12	1.13	1.125	1.11	1.150	1.14		1.143	1.14	1.136	1.1376	1.12	1.14	1.140
CM-46-5	1.10	1.13	1.09	1.130	1.13	1.150	1.13		1.143	1.13	1.149	1.1212	1.13	1.15	1.120
CM-46-6	1.11	1.11	1.14	1.115	1.14	1.145	1.16		1.177	1.14	1.134	1.1304	1.11	1.14	1.130
CM-46-7	1.11	1.10	1.14	1.130	1.10	1.125	1.16		1.165	1.14	1.117	1.1383	1.10	1.13	1.180
CM-46-8	1.12	1.12	1.12	1.130	1.10	1.110	1.16		1.158	1.14	1.151	1.1386	1.12	1.14	1.150
CM-46-9	1.09	1.08	1.11	1.130	1.10	1.095	1.16		1.175	1.15	1.136	1.1103	1.11	1.14	1.125
CM-46-10	1.10	1.11	1.13	1.115	1.11	1.110	1.16		1.156	1.13	1.137	1.1421	1.09	1.15	1.115
Mean	1.11	1.11	1.13	1.127	1.11	1.126	1.15		1.155	1.14	1.139	1.1340	1.11	1.14	1.133
Std. Devn.	0.012	0.017	0.018	0.007	0.020	0.023	0.013		0.014	0.011	0.015	0.012	0.012	0.008	0.023
% RSD	1.078	1.556	1.552	0.594	1.805	2.049	1.147		1.194	0.927	1.277	1.077	1.040	0.737	2.019
Cu by Aqua Regia digestion /Instrumental finish															
CM-46-1	1.21	1.11	1.17	1.135	1.155	1.085	1.12	1.120	1.106	1.12	1.111	1.1247	1.09		1.12
CM-46-2	1.16	1.14	1.12	1.150	1.120	1.125	1.15	1.131	1.110	1.12	1.146	1.1398	1.09		1.13
CM-46-3	1.18	1.17	1.15	1.150	1.155	1.125	1.12	1.112	1.108	1.12	1.142	1.1083	1.03		1.13
CM-46-4	1.19	1.13	1.16	1.145	1.150	1.125	1.15	1.081	1.118	1.14	1.131	1.0941	1.06		1.13
CM-46-5	1.20	1.13	1.11	1.145	1.150	1.120	1.15	1.121	1.115	1.13	1.140	1.1503	1.08		1.12
CM-46-6	1.16	1.08	1.12	1.140	1.155	1.105	1.17	1.116	1.117	1.14	1.147	1.1391	1.08		1.12
CM-46-7	1.11	1.14	1.15	1.160	1.160	1.090	1.15	1.112	1.124	1.14	1.139	1.1450	1.03		1.13
CM-46-8	1.13	1.14	1.15	1.140	1.155	1.120	1.15	1.126	1.121	1.12	1.138	1.1498	1.08		1.12
CM-46-9	1.15	1.13	1.13	1.150	1.120	1.115	1.14	1.117	1.140	1.13	1.148	1.1300	1.06		1.11
CM-46-10	1.12	1.12	1.14	1.135	1.130	1.110	1.13	1.116	1.119	1.12	1.129	1.1348	1.08		1.14
Mean	1.16	1.13	1.14	1.145	1.145	1.112	1.14	1.115	1.118	1.13	1.137	1.1316	1.07		1.12
Std. Devn.	0.034	0.023	0.019	0.008	0.015	0.015	0.016	0.013	0.010	0.009	0.011	0.018	0.023		0.009
% RSD	2.941	2.065	1.705	0.683	1.350	1.310	1.371	1.202	0.868	0.815	0.980	1.612	2.108		0.758

Notes:

Labs 14 did not report Cu assayed by Aqua Regia digestion with instrumental finish methods.

Au results from Lab 15 were removed for failing the t test.

Cu results from Lab 13 utilizing AquaRegia digestion and Instrumental finish method were removed for failing the t test.

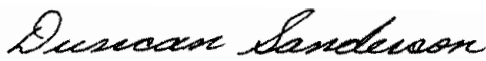
PARTICIPATING LABORATORIES: (not in same order as table of assays)

Activation Labs, Ancaster, Ontario, Canada	Bureau Veritas, Reno, NV, USA
Activation Labs, Thunder bay, Ontario, Canada	Bureau Veritas, Vancouver, BC, Canada
AGAT Labs, Ontario, Canada	Certimin S.A., Lima, Peru
ALS, Loughrea, Ireland	MS Analytical, Langley, BC, Canada
ALS, Perth Australia	SGS, Vancouver, BC, Canada
ALS Reno, USA	Skyline Assayers & Laboratories, AZ, USA
ALS Canada, North Vancouver, BC, Canada	TSL Laboratories Ltd., Saskatoon, SK, Canada
Bureau Veritas, Perth, Australia	


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This certificate and the reference material described in it have been prepared with due care and attention. However, CDN Resource Laboratories Ltd. nor Barry Smee accept any liability for any decisions or actions taken following the use of the reference material. Our liability is limited solely to the cost of the reference material.

Certified by


Duncan Sanderson, Certified Assayer of B.C.

Geochemist


Dr. Barry Smee, Ph.D., P. Geo.