RP 593(A)

Preliminary report, geology of the lake Lagacé area

GOUVERNEMENT DU QUÉBEC
DEPARTMENT OF NATURAL RESOURCES
MINES BRANCH

GEOLOGICAL EXPLORATION SERVICE

GEOLOGY OF THE

LAKE LAGACE AREA

PRELIMINARY REPORT

by

Roger Charre

QUEBEC
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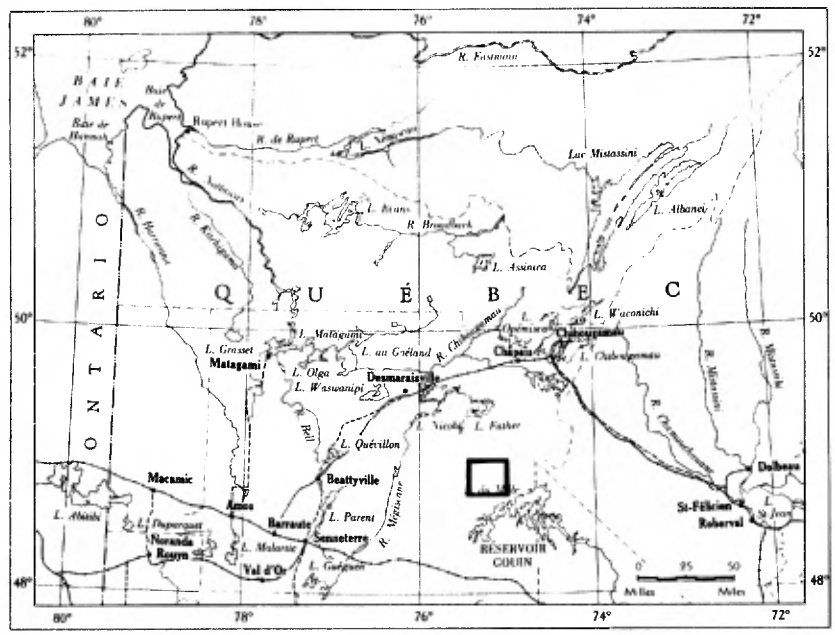

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INTRODUCTION

The Lake Lagacé area, mapped during the summer of 1969, is in Abitibi county, 100 miles northeast of Senneterre and approximately midway between Senneterre and Chibougamau.

This area of 392 square miles is covered by the 1:50,000-scale provisional topographic map 32 B/14 and is bounded by latitudes 48°45' and 49°00' North and longitudes 75°00' and 75°30' West.

The area is easily accessible by float plane from Senneterre or Chibougamau. It can also be reached from Bourgmont Station, by following Kekek, Mégiscane and Pascagama rivers. Bourgmont Station is on the Quebec - Val-d'Or railway line and about 80 miles east of Senneterre. A winter road from the vicinity of the Bourgmont area extends into the northwest part of the region. Travel within the area is difficult, since there are no roads and Pascagama river is strewn with numerous rapids. Nevertheless, the large number of lakes permits access by float plane to all parts of the area.

The region has a subdued relief. The west and northwest parts of the map-area contain numerous swamps at altitudes between 1,300 and 1,400 feet. The southeast part is

characterized by numerous hills with a generally steep to cliffed northwest side; the maximum altitude is 1,939 feet.

The area is on a drainage divide. Rencontre creek flows into Gouin reservoir, which drains to the St. Lawrence by way of St. Maurice river. The waters of pascagama and Aigle rivers, on the other hand, drain into Hudson bay. The streams of the area are therefore, of only minor importance and are strewn with rapids, whereas the lakes are generally small. Only Rencontre and Larouche lakes in the southeast and Lacroix lake in the northwest are of any appreciable size.

GENERAL GEOLOGY

Unconsolidated glacial material - heterogeneous deposits, moraines and eskers - is abundant in the area studied and covers much of the crystalline formations. Six different rock types have been distinguished, based on structural and mineralogical criteria.

Table of Formations

Pleistocene and Holocene	Glacial deposits	Moraines, eskers
Unconformity		
PRECAMBRIAN	Gabbro	
	Biotite granite	gneissic, containing quartz and muscovite leucocratic, with muscovite
	Granodiorite	gneissic fine-grained
	Hornblende gneiss	with biotite and, in places, garnet; banded; with amphibolite lenses
	Biotite gneiss	banded texture granitic texture
	Amphibolite	fine-grained or banded; in places interstratified with impure muscovite-bearing quartzite; in places, granular or massive

Amphibolites

Different facies of amphibolites were encountered. In the northern part of the area, where they form tongues projecting into other formations, is a facies made up of amphibole, feldspar, epidote, garnet and quartz. These amphibolites have a grain which is very fine and oriented and show a banding which indicates the presence of isoclinal folds, specially in places where these are accentuated by quartz-rich bands. The orientation of the hornblende is parallel to the isoclinal fold axes. Locally, intercalations of impure muscovite-bearing quartzite, a few centimeters or decimeters thick, may be of some importance.

These amphibolites were also noted in the southern part of the area, intercalated within the hornblende gneiss or biotite gneiss; some were not large enough to be indicated on the map.

Fine granular homogeneous facies, generally cut by veins of pegmatite or aplite, are exposed south of Lacroix lake. Massive facies, with grains a few centimeters across, are commonly associated with the metagabbros. Amphibole is the dominant mineral, along with feldspar, garnet and quartz.

Biotite Gneiss

The biotite gneiss near Buteux lake is granitic and medium grained. A vague and commonly distorted layering or an ill-defined orientation has been observed in places. In addition to quartz, feldspar and biotite, these rocks contain muscovite, chlorite and, in places, minor garnet and epidote.

In the southern part of the area, the biotite gneiss is more widespread and heterogeneous and varies from fine to coarse grained; homogeneous, well-foliated or vaguely foliated facies have also been noted. This gneiss contains quartz, feldspar, biotite and, rarely, garnet, and is locally closely associated with the heterogeneous amphibole gneiss. Isoclinal and asymmetric folds related to bedding have been noted along with a mineral foliation that is independant of the bedding and the isoclinal folds.

Hornblende Gneiss

These rocks are very heterogeneous and may be finely bedded or made up of decimetric alternating bands. They consist of mafic layers wherein hornblende is the main constituent and layers, ill-defined in places or containing inclusions of granular amphibolite. They are medium grained and, in many cases, heterogranular. They are made up of quartz, feldspar,

biotite and garnet, with local epidote to the north. A secondary foliation has been observed as well as isoclinal folds which deform the bedding and, in Lacasse township, asymmetric folding which affects the preceding folds.

Granodiorites

The granodiorites are easily recognizable, homogeneous and fine to medium grained. They are made up of small automorphic feldspar, amphibole, biotite (locally chloritized) and quartz. They may show a locally planar orientation (gneissic granodiorite), even a mylonitization.

An associated fine-grained gray, white-weathering facies contains amphibole, feldspar (automorphic in places), biotite and locally abundant pyrite. This facies is confined to dikes, with either sharp or gradational contacts bordering the granodiorite which outcrops mainly in the northern part of the area. The facies also includes horizons of fine-grained biotite gneiss, which cut across the schistosity. The contacts with the fine-grained amphibolites are sharp, the granodiorite in places interfingering along joint systems.

Biotite Granite

Granite is abundant to the northwest, near Lacroix lake. It is gneissic, with a vague mineral orientation. The typical facies is coarse grained and contains quartz, feldspar, biotite (much of it chloritized) and muscovite. The grain size becomes finer toward the south. A leucocratic facies, with abundant muscovite and chlorobiotite, has been noted near the boundary between Lacroix and Buteux townships.

The observed contacts with amphibolite, hornblende gneiss and granodiorite are sharp and commonly marked by the aplite or pegmatite that cuts these rocks.

Muscovite-bearing pegmatites and aplites are abundant. They cut the granite and the enclosing formations, and, in many places, they form an orthogonal system of mutually intersecting dikes.

Diffuse pegmatitic bodies likewise occur in the biotite gneiss and hornblende gneiss throughout the area.

Gabbros

This group is generally represented by a metagabbro containing amphibole, plagioclase and garnet. The gabbros are usually fine grained and their doleritic structure is easily

recognizable. They form narrow concordant sills (one of which, to the southwest, can be followed for several miles) in all of the formations. The contacts of these sills are generally marked by border zones of garnet-bearing amphibolite. Diabase is found as offshoots from the gabbro sills or as small isolated bodies, particularly in the northern part of the area.

STRUCTURE

Field observations and structural determinations indicate that at least two successive stages of deformation affected the area. The oldest phase, with an apparent north-south direction, is characterized by isoclinal bedding folds, easily recognizable in the amphibolites and the gneisses. It is accompanied by recrystallization phenomena, such as the orientation of the amphiboles along the isoclinal fold axes in the banded amphibolites.

The second stage of deformation, trending roughly east-northeast, has affected the first-stage lineaments, such as the axial planes, the isoclinal fold axes, and the mineral orientation of the amphibolites. It is characterized by asymmetric folds, sub-vertical on the north-northwest side and with a longer, gently inclined side facing south-southeast. These folds are quite apparent, at varying scales, in the southeast part of the area. Here, some of the elongated hills reflect the fold pattern, with steep northwest sides, corresponding to the sub-vertical beds, horizontal bedding at the top of the hill and a gentle, southeast-facing slope, corresponding to the gently dipping side of the fold. This second stage of deformation is accompanied by recrystallization, particularly in the biotite and hornblende gneiss, where the planar orientation of the minerals is parallel to the axial plane of the asymmetric folds.

The disposition of the various formations, as shown on the accompanying map, results from the interaction of these two stages of deformation.

The second stage of deformation is quite apparent in the southeast, where structural determinations in the biotite and amphibole gneiss reveal a succession of asymmetric anticlines and synclines oriented east-northeast. The north-south phase of the first stage of deformation is indicated by the alignment, along this direction, of flexures shown by both the outlines of the formations and the dips.

ECONOMIC GEOLOGY

Three group of claims were staked some time ago in Buteux township at the northern boundary of the area. Some stripping work was done.

On the Sigouin-Griffith claims (A on the map), a network of quartz veins and diabase dikes is enclosed in the gneissic and slightly mylonitized granodiorite. The fine-grained facies outcrops nearby. Minor pyrite is disseminated in the vein quartz, and traces of native gold were also identified (Freeman, 1943).

On the Griffith claims (B), dikelets of quartz mineralized with pyrite are enclosed in garnetiferous amphibolites and the intercalated muscovite-bearing quartzites. Minor gold values were revealed by a chemical analysis of the quartz (Freeman, 1943).

The Golden Eagle Syndicate claims (C), half a mile to the west of (B), contain dikelets of diabase and quartz enclosed in the fine-grained granodiorite facies. The analysis of these rocks revealed minor gold values (Freeman, 1943).

In 1965, Southwest Potash Corporation carried out magnetic and electromagnetic work on a group of claims near the northern limit of the area (Group 6) and drilled a hole 89 feet deep. Here, pyrrhotite was noted in the fine-grained amphibolites near their contact with the granodiorite.

The traces of mineralization observed in the area studied are essentially disseminations of pyrite and pyrrhotite in metagabbros and the fine-grained granodiorite facies. Pyrite also appears in the quartz- and chlorite-filled fractures, particularly in the granodiorite which outcrops to the southeast of Buteux township (M on the map).

REFERENCES

Freeman, B.C., - 1943 - Buteaux Area, G.R. 15, Quebec Department of Mines.

Gallagher, J., - 1965 - Drilling log, Quebec Department of Natural Resources, GM-16782.

Londry, J., - 1965 - Geological and Geophysical Report, Quebec Department of Natural Resources GM-16781.

Milner, R.L., - 1943 - Barry Lake Area, G.R. 14, Quebec Department of Mines.

Sample No. on the map	Code No. of sample in files of Dept.	RESULTS OF ANALYSES IN P.P.M.												
		Cu	Zn	Pb	Mo	Ni	U(1)	Co	W	Mn(2)	Sn	Au	Ag(1)	Sb
1	1189	0	25	10	0	7	5	0	Element not detected or insufficient sample	5	0	Element not detected or insufficient sample	0	4
2	1187	0	25	10	0	24	X	4		X	X		X	X
3	1188	0	15	4	0	8	5	4		14	0		0	0
4	1176	0	15	10	8	7	5	2		X	X		X	X
5	972	10	50	100	0	15	40	10		49	X		9	4
6	973	0	15	40	0	15	20	8		X	X		X	X
7	898	0	75	60	0	10	5	0		30	0		4	0
8	899	0	40	40	0	3	5	0		10	0		6	0
9	909	10	5	16	0	8	10	0		28	2		0	4
10	900	4	50	30	0	13	5	0		66	6		6	0
11	901	10	50	16	0	25	20	0		41	0		9	0
12	903	4	50	30	1	18	40	30		180	2		0	5
13	910	6	10	20	0	18	10	0		12	2		6	0
14	908	10	10	20	0	18	40	0		55	0		0	0
15	1050	0	15	10	0	5	0	0		4	X		0	0
16	1049	6	100	40	0	35	0	55		X	0		X	X
17	838	2	10	20	0	6	X	0		X	X		X	X
18	837	2	10	20	0	X	X	X		X	X		X	X
19	834	2	5	20	0	3	5	0		25	0		0	0
20	835	4	50	20	0	3	10	0		X	0		X	X
21	831	2	15	4	0	3	X	0		X	X		X	X
22	832	4	10	10	0	X	X	X		X	X		X	X
23	836	4	5	24	0	3	20	0		6	0		4	0
24	1042	4	40	60	0	12	X	7		X	X		X	X
25	881	0	0	16	0	X	X	X		X	X		X	X
26	970	6	0	6	0	7	5	2		9	0		4	0
27	978	6	50	100	4	20	10	23		63	0		4	5
28	977	0	0	100	0	10	X	0		X	X		X	X
29	979	4	40	70	0	10	10	3		X	X		X	X
30	976	0	0	40	0	7	10	0		X	X		X	X
31	950	0	0	10	0	7	5	0		3	0		0	0
32	904	2	40	24	0	3	10	0		3	0		4	0
33	905	2	15	40	0	3	20	0		3	0		0	0
34	907	4	15	30	0	16	20	0		X	0		X	X
35	911	2	10	16	0	5	5	0		79	2		0	0
36	902	4	40	20	1	13	20	18		81	2		0	11
37	916	6	125	60	0	20	30	53		138	2		4	11
38	912	6	15	16	2	6	30	0		21	4		0	6
39	913	2	5	10	0	8	10	0		6	0		0	0
40	914	4	25	16	0	25	20	125		175	6		11	8
41	915	2	75	10	0	13	10	18		23	4		0	9
42	833	2	5	10	0	3	10	0		3	0		0	0
43	849	2	10	16	0	5	5	0		1	2		0	0
44	852	2	10	16	0	5	5	0		1	2		0	0
45	853	2	5	20	0	5	10	0		6	4		4	0
46	848	4	15	40	0	6	60	0		X	X		X	X
47	1056	0	15	10	0	X	X	X		X	X		X	X
48	1057	0	15	16	0	3	5	2		3	0		0	0
49	1041	0	15	20	0	3	5	0		2	0		0	0
50	1058	4	25	80	1	10	X	0		X	X		X	X
51	1059	6	50	40	0	10	5	0		5	0		4	4
52	1062	4	40	40	0	10	5	5		10	0		4	5
53	1190	0	40	16	0	10	X	0		X	X		X	X
54	1192	0	25	6	0	8	0	3		8	0		4	5
55	1191	0	40	10	0	12	0	5		11	X		0	5

Sample No. on the map	Code No. of sample in files of Dept.	RESULTS OF ANALYSES IN P.P.M.												
		Cu	Zn	Pb	Mo	Ni	U	Co	W	Mn	Sn	Au	Ag	Sb
56	1178	0	25	6	0	8	0	0	Element not detected or insufficient sample	4	0	Element not detected or insufficient sample	0	5
57	969	4	0	10	0	6	10	0		X	X		X	X
58	1179	0	25	10	0	6	0	0		4	0		0	4
59	1177	6	50	80	0	20	X	0		X	X		X	X
60	947	0	0	10	0	7	0	0		4	16		0	0
61	948	0	0	16	0	13	0	5		X	8		X	X
62	949	6	0	16	0	12	0	2		5	12		0	0
63	917	2	50	20	0	3	10	0		3	0		0	5
64	803	0	25	30	0	10	20	0		4	0		0	0
65	804	0	25	20	0	5	5	0		8	2		0	0
66	805	6	40	60	1	18	30	98		225	0		4	0
67	806	4	25	20	0	8	10	0		4	0		0	0
68	807	10	75	125	2	23	20	95		450	0		0	0
69	808	10	140	200	2	43	30	55		755	2		4	0
70	809	4	20	30	0	8	10	0		X	0		X	X
71	810	2	15	20	1	8	10	0		19	2		0	0
72	887	2	10	10	0	18	20	0		35	0		0	5
73	894	4	10	20	0	6	10	0		3	0		8	4
74	895	6	2	16	0	5	10	0		10	0		0	4
75	850	2	5	16	0	3	X	0		X	0		X	X
76	896	4	10	10	0	5	50	0		4	0		0	0
77	897	0	5	10	0	5	5	0		2	0		0	0
78	851	6	15	20	1	3	10	0		X	X		X	X
79	1060	2	50	40	0	12	0	4		5	X		4	0
80	1061	4	25	70	0	10	0	3		X	0		X	X
81	1066	4	15	40	0	7	0	0		4	0		0	0
82	1063	6	15	20	0	5	5	0		3	0		0	0
83	1065	4	50	80	0	12	0	2		6	0		0	5
84	886	6	0	80	0	X	X	X		X	X		X	X
85	964	0	0	10	0	6	5	2		3	0		0	0
86	885	0	0	24	0	X	X	X		X	X		X	X
87	968	0	0	16	0	3	0	0		2	0		0	0
88	880	0	0	10	0	3	0	0		4	8		0	0
89	1181	0	25	16	0	7	X	0		X	X		X	X
90	879	0	0	10	0	7	0	0		3	8		0	0
91	960	0	0	16	0	5	5	0		17	0		0	0
92	959	0	0	10	0	8	5	0		6	0		0	5
93	958	6	0	6	0	4	5	5		50	8		0	0
94	815	6	20	20	0	8	1	0		28	2		0	0
95	946	0	0	16	0	10	5	3		12	8		0	0
96	889	4	5	30	0	X	X	X		X	X		X	X
97	830	4	15	4	0	3	5	0		2	0		0	0
98	891	2	15	20	0	3	5	0		2	0		0	0
99	890	2	10	16	0	5	5	0		4	0		0	0
100	800	6	25	20	0	5	5	0		3	2		0	0
101	801	0	15	16	0	5	5	0		4	2		0	0
102	802	0	15	16	0	5	10	0		9	2		0	0
103	892	6	15	30	4	13	30	33		200	2		6	9
104	813	4	25	20	0	6	10	0		X	X		X	X
105	812	6	40	40	0	18	10	0		X	X		X	X
106	811	4	25	20	0	3	5	0		3	0		5	0
107	845	2	25	10	0	5	5	0		X	0		X	X
108	843	6	40	40	0	13	X	0		X	2		X	X
109	893	4	10	40	0	6	X	0		X	X		X	X
110	839	4	5	16	0	6	10	0		X	0		X	X

Sample No. on the map	Code No. of sample in files of Dept.	RESULTS OF ANALYSES IN P.P.M.												
		Cu	Zn	Pb	Mo	Ni	U	Co	W	Mn	Sn	Au	Ag	Sb
111	840	2	75	6	0	5	5	0	Element not detected or insufficient sample	3	4	Element not detected or insufficient sample	0	0
112	842	6	10	20	0	16	20	0		X	2		X	X
113	841	4	10	6	0	8	5	0		10	0		0	0
114	1064	2	50	80	0	15	0	0		X	X		X	X
115	975	0	0	24	0	3	5	0		2	0		0	0
116	1198	0	25	6	0	10	0	4		X	0		X	X
117	882	0	0	20	0	10	X	2		X	0		X	X
118	884	6	0	20	0	12	X	5		X	0		X	X
119	883	0	40	60	0	10	0	10		X	12		X	X
120	1047	0	15	16	0	5	5	0		X	0		X	X
121	967	0	0	10	0	3	5	0		2	0		0	0
122	965	6	50	16	0	13	20	7		14	0		0	4
123	966	0	0	10	0	5	5	0		2	0		0	0
124	1180	0	15	10	0	5	0	0		3	X		0	0
125	962	0	0	10	0	7	5	2		3	8		0	0
126	961	0	0	16	0	5	5	2		4	0		0	5
127	963	0	0	80	0	8	20	5		X	X		X	X
128	860	4	15	20	0	8	0	5		18	0		0	0
129	858	4	10	40	0	5	0	0		4	0		0	0
130	859	2	5	20	0	8	0	0		6	2		0	0
131	816	6	25	16	0	8	2	0		20	14		0	0
132	817	4	15	16	0	5	3	0		10	2		0	7
133	818	2	15	20	0	8	5	0		8	2		11	7
134	819	4	20	16	0	8	5	0		7	2		7	8
135	820	2	15	20	0	3	5	0		2	0		0	0
136	814	10	20	10	0	6	10	0		X	0		X	X
137	829	2	5	6	0	3	5	0		3	0		0	0
138	821	2	10	20	0	3	5	0		3	0		0	0
139	822	6	15	30	0	0	10	0		5	0		4	0
140	823	2	10	16	0	3	10	0		5	0		0	0
141	828	6	10	6	0	3	5	0		2	0		0	0
142	827	4	15	60	0	0	10	0		3	0		0	0
143	857	2	5	16	0	5	5	0		3	0		0	5
144	854	4	5	20	0	5	0	0		3	2		0	4
145	855	6	10	16	0	10	0	0		X	X		X	X
146	856	4	40	30	X	X	X	X		X	X		X	X
147	846	4	25	40	0	8	X	0		X	0		X	X
148	1086	6	25	16	0	6	X	0		X	X		X	X
149	1097	0	10	6	0	5	0	0		3	0		0	4
150	1085	0	15	10	0	4	0	10		2	0		0	0
151	1087	6	60	400	0	10	X	35		X	X		X	X
152	1048	0	10	10	0	3	X	0		X	X		X	X
153	1089	0	60	4	0	8	X	17		X	X		X	X
154	1090	0	15	6	0	5	0	0		7	X		0	5
155	863	2	5	10	0	8	5	0		6	0		0	4
156	862	2	10	16	0	5	0	0		6	2		0	5
157	953	0	0	6	0	8	5	0		4	28		0	0
158	954	0	0	10	0	7	5	0		6	0		0	0
159	861	2	10	16	0	3	0	0		5	0		0	0
160	824	2	15	16	0	3	10	0		5	4		0	0
161	825	4	15	10	0	3	10	0		3	4		0	0
162	826	6	10	16	0	0	20	0		4	0		0	0
163	938	0	0	6	0	3	10	0		2	0		0	0
164	940	4	0	16	0	10	5	4		1	28		0	0
165	937	0	0	10	0	7	10	2		4	52		0	0

20.4.13A

Sample No. on the map	Code No. of sample in files of Dept.	RESULTS OF ANALYSES IN P.P.M.													
		Cu	Zn	Pb	Mo	Ni	U	Co	W	Mn	Sn	Au	Ag	Sb	
166	1067	6	25	10	0	23	0	17		5	0		0	0	
167	1071	0	15	16	0	5	0	0		3	0		0	0	
168	1068	0	25	10	0	8	0	0		5	0		0	0	
169	1070	0	10	20	0	5	0	0		4	0		0	0	
170	1069	0	15	16	0	5	0	0		X	X		X	X	
171	982	0	0	20	0	8	20	0		3	X		0	0	
172	996	0	0	40	0	6	5	2		3	0		0	0	
173	994	0	0	40	0	7	5	0		3	0		0	0	
174	1096	0	15	6	0	10	0	3		5	X		0	4	
175	1092	0	15	16	0	6	0	0		3	0		0	4	
176	1094	0	10	10	0	8	X	2		X	0		X	X	
177	1091	0	25	10	0	6	X	0		X	X		X	X	
178	921	0	0	30	0	13	10	2		X	28		X	X	
179	922	0	0	20	0	4	5	0		4	0		0	0	
180	920	0	0	16	0	8	5	0		X	0		X	X	
181	877	0	15	20	0	3	5	0		6	2		7	0	
182	919	0	0	20	0	5	5	2		X	0		X	X	
183	876	0	15	16	0	3	5	0		4	0		8	0	
184	878	0	10	16	0	5	10	0		11	0		0	4	
185	952	6	15	20	0	10	5	3		7	20		0	4	
186	951	0	0	10	0	5	5	3		3	0		0	0	
187	874	0	15	20	0	3	5	0		3	0		0	0	
188	957	0	0	16	0	2	X	0		X	0		X	X	
189	1037	4	15	10	0	7	10	0		4	0		0	0	
190	1038	0	0	6	0	3	5	0		1	0		0	0	
191	1036	6	15	10	0	10	10	0		3	0		0	0	
192	945	0	0	20	0	10	10	7		X	28		X	X	
193	941	6	0	60	0	X	X	X		X	15		X	X	
194	934	0	0	16	0	2	5	0		2	0		4	0	
195	936	0	0	10	0	5	5	2		1	12		0	0	
196	935	0	0	16	0	8	40	3		0	12		0	0	
197	1084	0	25	10	0	7	0	25		X	X		X	X	
198	997	0	0	20	0	12	X	7		X	X		X	X	
199	998	0	0	16	0	13	20	5		6	0		4	0	
200	999	0	50	80	0	10	X	5		X	X		X	X	
201	990	0	0	10	0	5	5	0		3	0		0	0	
202	989	6	0	20	0	7	5	0		3	X		0	0	
203	991	0	25	120	2	10	5	5		10	0		4	5	
204	981	0	0	10	0	3	0	0		5	0		0	[illegible]	
205	980	0	0	16	0	X	X	X		X	X		X	[illegible]	
206	1194	0	25	10	0	5	0	2		X	X		X	X	
207	1193	0	60	10	0	6	X	3		X	X		X	[illegible]	
208	1093	0	15	16	0	5	0	0		2	0		0	0	
209	872	4	10	16	0	6	5	0		X	0		X	X	
210	955	4	0	60	0	12	10	2		X	8		X	X	
211	923	10	50	60	0	12	5	3		X	16		X	X	
212	930	4	15	6	0	8	5	0		4	0		0	0	
213	929	6	40	80	0	12	10	0		6	16		0	5	
214	928	2	50	150	0	X	X	X		X	80		X	X	
215	864	4	25	20	0	6	5	0		2	0		0	0	
216	924	4	15	6	0	7	5	2		4	0		0	0	
217	927	4	15	6	0	7	10	2		X	8		X	X	
218	925	4	15	60	0	7	5	2		6	12		0	0	
219	926	2	10	50	0	5	5	0		3	8		0	0	
220	956	0	0	10	0	5	5	5		X	0		X	X	

Element not detected or insufficient sample

Element not detected or insufficient sample

Sample No. on the map	Code No. of sample in files of Dept.	RESULTS OF ANALYSES IN P.P.M.												
		Cu	Zn	Pb	Mo	Ni	U	Co	W	Mn	Sn	Au	Ag	Sb
221	1031	0	50	80	0	10	X	4		X	X		X	X
222	1035	4	25	40	0	8	20	2		7	0		0	0
223	1040	4	50	80	0	15	X	10		X	X		X	X
224	944	0	0	10	0	8	5	3		5	12		0	0
225	943	0	0	10	0	6	5	2		1	8		0	0
226	942	2	0	20	0	10	10	3		1	16		0	0
227	1081	0	25	10	0	3	0	0		2	0		0	0
228	1080	4	60	80	0	17	5	40		109	0		5	0
229	1182	0	15	10	0	10	0	0		3	0		0	0
230	1183	0	50	6	0	X	X	X		X	0		X	X
231	1083	0	25	16	0	7	0	3		4	X		0	0
232	1184	0	40	6	0	8	5	5		X	0		X	X
233	985	0	0	16	0	5	5	0		4	0		0	0
234	984	0	0	16	0	10	10	15		X	X		X	X
235	1186	0	25	10	0	7	5	3		98	0		0	6
236	1088	0	15	10	0	5	X	0		X	X		X	X
237	875	0	10	20	0	8	X	0		X	0		X	X
238	871	4	15	20	0	3	20	0		4	0		0	7
239	869	2	10	40	0	3	5	0		3	6		0	0
240	844	4	25	16	1	6	X	0		X	X		X	X
241	868	4	15	20	0	3	5	0		2	0		0	0
242	870	2	15	20	0	3	5	0		2	0		0	0
243	867	4	5	40	0	10	20	0		X	0		X	X
244	866	2	10	16	0	5	5	0		2	0		0	0
245	865	2	5	10	0	5	5	0		2	2		0	0
246	1074	0	10	10	0	8	0	2		2	0		0	0
247	1077	0	25	10	0	10	5	0		6	0		0	4
248	1073	0	15	16	0	3	0	0		3	0		0	0
249	1032	0	25	50	0	10	10	12		10	0		0	0
250	1033	0	0	30	0	5	5	0		3	0		0	0
251	1034	0	50	6	0	5	10	0		2	0		0	0
252	1078	0	15	6	0	5	0	0		2	0		0	6
253	1053	0	15	16	0	7	X	0		X	X		X	X
254	1079	0	15	8	0	7	0	0		X	0		X	X
255	1039	0	15	6	0	3	5	0		2	0		0	0
256	1052	0	25	10	0	3	0	0		2	0		0	0
257	1082	0	50	10	0	10	0	17		X	X		X	X
258	1185	0	50	16	0	10	5	5		X	0		X	X
259	993	0	0	60	0	5	5	2		4	X		0	0
260	992	0	0	16	0	3	5	0		X	X		X	X
261	1046	0	25	16	0	7	0	0		5	0		0	4
262	987	0	0	16	0	12	5	7		13	0		0	5
263	983	6	0	20	0	23	10	8		16	0		0	5
264	986	0	0	20	0	10	5	3		7	0		0	0
265	873	2	10	10	0	3	5	0		3	2		0	0
266	939	4	0	20	0	8	10	0		2	20		0	0
267	932	2	10	16	0	4	10	0		3	8		0	0
268	931	4	10	20	0	2	5	0		2	0		0	0
269	1075	0	15	10	0	5	0	0		X	0		X	X
270	1076	0	15	6	0	3	5	0		X	X		X	X
271	1054	0	15	16	0	5	0	0		3	0		0	0
272	1055	0	10	10	0	7	0	0		4	0		5	0
273	1051	4	25	6	1	6	X	8		X	X		X	X
274	988	6	50	20	0	20	5	13		60	0		0	5

Element not detected or insufficient sample

Element not detected or insufficient sample

(1) Ag and U: parts per 10,000,000

X - no determination

(2) Mn: parts per 100,000

O - element not detected