
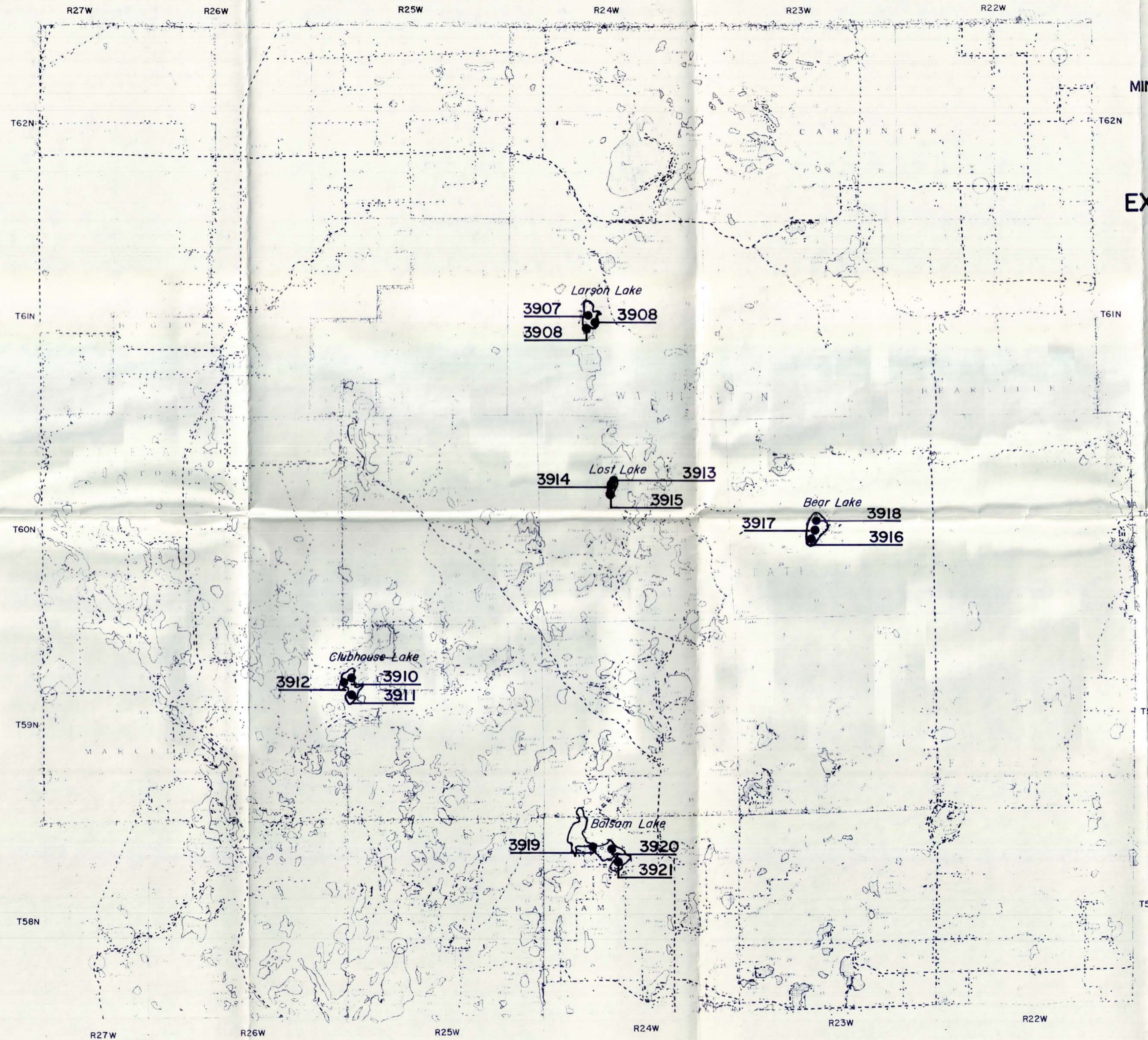
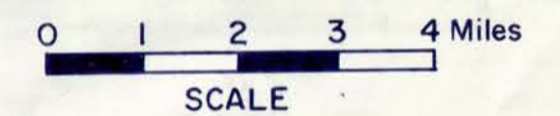


MINNESOTA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF MINERALS
**ORGANIC-RICH LAKE SEDIMENT
EXPLORATION GEOCHEMICAL PILOT
SURVEY, ITASCA COUNTY**

1977

By D.G. Meineke, M.K. Vadis and A.W. Klaysmat
D.G. Meineke, Supervisor of Mineral Exploration

 3921 Sample site with sample number



Base from Minnesota Department of Transportation
General Highway map for northeastern Itasca County

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Map Location

Sample Number	Lake Name	Rock Type	Sample Depth (feet)	Ag (ppm)	As (ppm)	Co (ppm)	Cu (ppm)	Mo (ppm)	Ni (ppm)	Pb (ppm)	Zn (ppm)	Fe (%)	Mn (ppm)	LOI (%)	Ca (%)	Mg (%)	Al (%)
3907	Larson	GS	105-120	.2	6.2	18	17	<20	29	22	85	7.27	7900	33.4	13.7	1.0	.36
3908	Larson	GS	53- 58	.3	1.2	13	16	<20	24	23	46	4.97	2063	37.6	13.3	1.1	.37
3909	Larson	GS	50- 60	.5	2.7	14	14	<20	22	36	62	2.06	7200	37.4	17.7	1.1	.45
3910	Clubhouse	GS	95-100	.4	4.9	16	10	<20	14	16	30	10.51	52100	37.9	7.5	0.7	.18
3911	Clubhouse	GS	65- 70	.1	5.7	10	11	<20	10	11	30	11.49	38400	38.6	5.4	0.8	.25
3912	Clubhouse	GS	83- 87	.2	2.5	17	13	<20	16	25	29	5.50	16600	37.5	14.2	0.9	.22
3913	Lost	GS	25	<.01	2.5	9	17	<20	13	7	76	9.42	2680	51.5	3.3	1.1	.56
3914	Lost	GS	25	<.01	2.5	9	17	<20	13	11	75	9.27	2732	50.3	2.9	0.9	.56
3915	Lost	GS	21	<.01	1.7	10	16	<20	10	7	63	9.27	2809	50.4	2.2	0.6	.53
3916	Bear	GS	12- 14	<.01	0.8	23	16	<20	23	14	198	8.56	989	40.7	2.4	0.9	1.57
3917	Bear	GS	10- 14	<.01	0.2	21	15	<20	26	11	196	9.11	1125	39.9	2.6	1.0	1.59
3918	Bear	GS	11	.2	1.0	18	15	<20	19	14	185	8.67	1060	37.9	2.1	0.7	1.36
3919	Balsam	GR	27- 28	.4	1.0	7	15	<20	12	10	44	7.10	2240	44.9	2.3	0.8	.42
3920	Balsam	GR	26	.1	1.2	11	14	<20	12	9	46	10.63	2496	46.1	4.9	1.0	.41
3921	Balsam	GR	31	.1	0.8	7	10	<20	10	10	35	5.61	2824	39.9	2.8	0.5	.30

** pH of surface water

Sample Number	Water pH	Sediment pH	Area (square miles)
3907	8.4	7.0	.35
3908	8.4	7.0	.35
3909	8.4	7.0	.35
3910	8.4	6.7	.36
3911	8.0	6.6	.36
3912	8.3	6.9	.36
3913	8.2	6.6	.14
3914	8.0	6.5	.14
3915	8.2	6.4	.14
3916	7.5	6.5	.44
3917	7.7	6.6	.44
3918	7.8	6.7	.44
3919	8.3	6.5	.95
3920	8.5	6.6	.95
3921	8.6	6.4	.95

ROCK TYPE*

GS = greenstone

GR = granite

* Rock types from: Sims, P. K., Ojakangas, R. W. and Viswanathan, S., 1970, Geologic Map of Minnesota - Hibbing Sheet: Minnesota Geological Survey.

All elements analyzed by atomic absorption on unignited sample. Ag, Co, Cu, Mo, Ni, Pb, Zn, Fe and Mn extracted in 4M HNO₃ - 1M HCl. As, Ca, Mg and Al extracted in concentrated HCl. LOI determined by ignition at 800°C.

COEFFICIENTS OF DETERMINATION (r²)

	Ag	As	Co	Cu	Ni	Pb	Zn	Fe	Mn	Ca	Mg	Al	LOI	pH Water	pH Sediment
LOI	*.24	*.13	*.31	.12	*.38	*.44	*.01	.15	*.11	*.34	.00	.03			
Fe	*.37	.01	.00	.00	*.11	*.68	.03		.01	*.27	*.03	.01			
Mn	.15	.68	*.01	*.37	*.06	.09	*.42	.01		.11	*.04	*.39			
Ca	.33	.27	.03	*.02	.16	.72	*.21	*.27	.11		.23	*.22			
Mg	.01	.01	.08	.29	.31	.18	.02	*.03	*.04	.23		.02			
Al	*.19	*.34	.24	.31	.18	*.05	.89	.01	*.39	*.22	.02				
WD	.34	.56	.04	*.11	.04	.35	*.29	*.03	.67	.65	.02	*.55	*.39	.24	.43
AREA														.11	*.06

r² determined by log y = a + b log x, except water depth (y) where r² determined by y = a + b log x, and y = a + bx for lake area, water depth and pH.

* negative relation

WD = water depth at sample site

AREA = area of lake

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