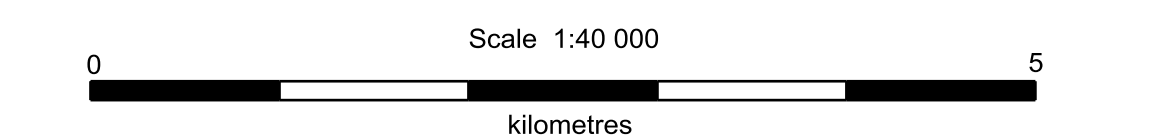


Bedrock geology of the upper Kutcho Creek area parts of NTS 104-I/01, 02 by Paul Schiarizza



Legend

Eocene
Edi Diorite, pyroxene-hornblende-biotite porphyry

Late Jurassic(?)
Ljp Hornblende-plagioclase-quartz porphyry, granodiorite

Bowser Basin
JBL Bowser Lake Group: chert-pebble conglomerate, sandstone, siltstone, shale

Quessen Terrane
Tjgd Granodiorite, tonalite, quartz diorite, diorite

Whitehorse Trough
JT Takwahoni Formation: slaty siltstone, sandstone, pebbly sandstone
Jl Itkin Formation: metasandstone, metasilstone, slate; locally includes conglomerate, limestone

Upper Triassic
UTS Sinwa Formation: limestone, marble

Middle - Upper Triassic(?)
Tcg Conglomerate unit: schistose metaconglomerate containing felsic volcanic and plutonic clasts that were probably derived from the Kutcho assemblage; locally includes metasandstone, phyllite, limestone

Triassic(?)
Tgb Metagabbro; locally grading to biotite-chlorite-actinolite-epidote-plagioclase semischist

Catche Creek Terrane
Late Permian - Middle Triassic
Kutcho assemblage
Intrusive rocks
PTKt Tonalite; locally grading to chlorite-sericite-plagioclase-quartz semischist
PTKd Metadiorite, chlorite-actinolite-epidote-plagioclase semischist

Northern division
PTKns Phyllite, metasilstone, metasandstone; commonly includes dikes and sills of metagabbro
PTKna Pyritic quartz-sericite schist, commonly with small quartz grains and/or flattened felsic lithic fragments
PTKnf Sericite-chlorite schist containing feldspar and quartz grains and, commonly, felsic lithic fragments; locally includes breccia, metasandstone, phyllite, quartz-plagioclase-phyrlic metalythite
PTKng Chlorite-sericite-plagioclase-quartz schist and fragmental schist characterized by large relict quartz grains; locally includes coarse breccia, metasandstone, metasilstone, phyllite, chert

Central division
PTKc Quartz-plagioclase-phyrlic metalythite and sericite-quartz schist; epidote-actinolite-chlorite-plagioclase schist (mafic metavolcanic); chlorite-sericite schist with quartz, feldspar and felsic lithic fragments (felsic volcaniclastic rocks); pyritic chert (exhalite); metasandstone, metasilstone, phyllite, bedded chert
PTKcr Quartz-plagioclase-phyrlic metalythite, locally grading to sericite-quartz schist and fragmental schist

Southern division
PTKs3 Epidote-actinolite-chlorite-plagioclase schist derived from mafic volcanic rocks; locally includes metadiorite, plagioclase-phyrlic metalythite, and sericite-plagioclase-quartz schist (felsic volcaniclastic)
PTKs2 Chlorite-sericite-quartz schist with quartz, feldspar and felsic lithic fragments; plagioclase-phyrlic metalythite; epidote-actinolite-chlorite-plagioclase schist (mafic metavolcanic); metasandstone, metasilstone, phyllite
PTKs1 Chlorite-sericite schist with quartz, feldspar and felsic lithic fragments (derived mainly from epistatic rocks); locally includes metasandstone, metasilstone and laminated phyllite

Late Paleozoic - Early Mesozoic
Catche Creek complex
PMCCc Quartz, phyllite, chert, limestone, metabasalt; locally includes serpentinite, gabbro, diabase
PMCCb Metabasalt, grading to actinolite-epidote-chlorite-plagioclase semischist; locally includes serpentinite, chert, limestone, gabbro
PMCCs Serpentinite, talc-magnesite schist and serpentinite melange containing knickers of gabbro, diabase, basalt, pyroxene, harzburgite, chert, limestone
PMCCu Harzburgite, dunite, serpentinite; locally includes listwanite-altered rock and lenses of slaty siltstone and chlorite schist
PMCCul Listwanite-altered ultramafic rock

Geological contact (defined, approximate, inferred)
Unconformity (defined, approximate, inferred)
Fault (defined, approximate, inferred)
Thrust fault, leath on upthrust side (inferred)
Axial trace of fold, inferred (anticline, syncline)
Limit of mapping
Bedding, inclined (top known, overturned, top unknown)
Schistosity or slaty cleavage (inclined, vertical)
Lensation, plunging (bedding/cleavage intersection, crenulation)
Metamorphic fold axis, plunging (symmetamorphic, postmetamorphic)
Field station, 2010 and 2011 mapping programs
Sample dated by U/Pb on detrital zircons, with crystallization age (R. Friedman, UBC)
Sample dated by U/Pb on detrital zircons
Assay sample (Table 1)
Mineral showing (Table 2)
Kutcho Creek deposit, massive sulphide lens (projected vertically to surface)
Topographic contour (20 m, 100 m intervals)
Rough road
Gravel airstrip

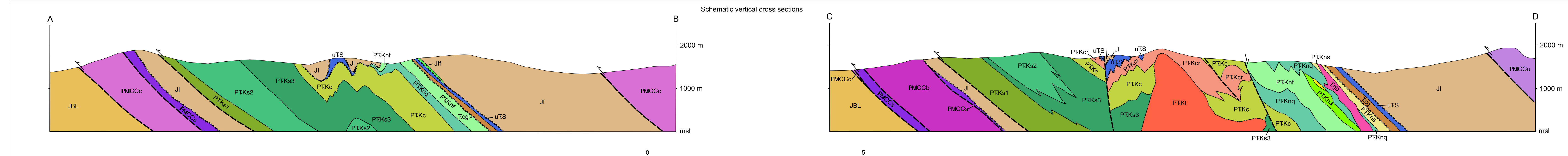


Table 1: Assay data, samples collected during 2010 and 2011 field seasons and analysed at Acme Laboratories, Vancouver, using ICP-MS after aqua regia digestion

Sample	Eastings	Northings	Rock type	Mo	Cu	Pb	Zn	Ag	Ni	Co	Mn	Fe	As	Au	Sb	Bi	C	Se	Te	W	Hg
10PSC-99	533140	645448	pyritic, silicified sericite-chlorite schist	0.3	94.5	2.7	1091	<0.1	56.6	18.6	2487	5.85	3.3	<0.5	<0.1	<0.1	174	21	<1	<0.1	0.03
10PSC-115	535675	645087	pyritic quartz-chlorite-sericite schist	17.2	93.8	9.1	199	0.4	36.8	10	529	11.79	10.2	<0.5	0.3	<0.1	100	27	<1	<0.1	<0.01
10PSC-158	532055	645076	pyritic sericite-quartz-altered lens	<0.1	5.9	4.6	6	<0.1	572.7	49.2	704	2.21	1.3	1.3	0.3	<0.1	218	3	<1	<0.1	<0.01
10PSC-274	541344	645167	listwanite	0.1	5.7	2	6	<0.1	2134.8	67.2	393	3.06	16.7	1.8	1	<0.1	195	46	2	<0.1	0.11
10PSC-310	542526	644974	pyritic siliceous lens in metalythite	3.5	9	3.2	19	0.1	4.1	1.2	105	3.95	5.8	1.8	0.2	0.2	<1	8	<1	<0.1	<0.01
10PSC-175	534485	644748	pyritic, silicified metalythite	0.5	2.9	7.1	19	<0.1	3.4	0.8	50	1.99	1.6	2.3	0.4	<0.1	3	17	<1	<0.1	<0.01
10PSC-136	534203	644769	pyritic sericite-quartz schist	1.3	16.1	1.7	87	<0.1	1.3	0.5	838	4.7	0.9	2.1	0.1	0.1	3	3	<1	<0.1	<0.01
10PSC-177	534313	644738	pyritic sericite-quartz schist	0.2	19.3	1.3	57	<0.1	1.5	3.7	212	1.99	0.6	2	<0.1	<0.1	4	21	<1	<0.1	<0.01
10PSC-283	541484	644504	listwanite	<0.1	6.1	1.7	6	<0.1	1560.7	60.3	700	3.69	1.3	<0.5	0.3	<0.1	390	5	<1	<0.1	<0.01
10PSC-297	542383	644972	epidote-chlorite schist with pyrrhotite-pyrite	6.4	84.3	1.4	159	0.4	42.2	26.9	1778	15.71	6.1	3.7	<0.1	1.4	87	48	<1	<0.1	<0.01
10PSC-46	524864	644620	pyritic sericite-quartz schist	6.8	20.8	2.3	21	<0.1	48.7	19.5	131	2.96	19.7	1.5	0.2	<0.1	53	21	<1	<0.1	0.02
10PSC-53	525669	644669	pyritic hornblende-biotite porphyry	2.6	93.6	4.2	131	0.1	29	21.3	244	3.5	1.5	2.1	0.2	0.3	60	91	<1	5.4	<0.01
10PSC-56	525504	644638	pyritic hornblende porphyry	3.2	71.8	7	49	0.2	25.1	12	362	3.11	4	3.5	0.2	0.3	41	73	<1	0.4	<0.01
10PSC-64	534771	645178	pyritic chert (exhalite?)	13	13.9	5.8	11	0.1	2.2	1.6	37	0.84	3.8	3.2	0.5	0.3	18	1	<1	<0.1	0.01
10PSC-79	524663	644755	pyritic sericite-quartz schist	0.2	38.4	1.4	39	<0.1	109.2	49.2	32	3.64	6.7	1.6	<0.1	<0.1	174	5	<1	<0.1	<0.01
10PSC-81	524594	644805	quartz-quartz alteration	0.2	4.9	1.2	35	<0.1	0.5	0.5	358	2.73	<0.5	3.6	<0.1	<0.1	2	2	<1	<0.1	<0.01
10PSC-140	524657	644389	quartz vein with pyrite, chalcocite, galena, malachite, azurite	1.1	>10000	762.8	1239	>10000	3.5	1.2	56	0.44	628.4	16.3	>20000	2.8	7	11	<1	<0.1	1.35
10PSC-161	524655	645107	folded sandstone with disseminated pyrite	0.4	17.4	4.6	97	0.5	11.6	10.2	294	4.36	2.2	0.6	1.9	<0.1	23	36	1	0.1	<0.01
10PSC-240	522260	644579	quartz-epidote alteration with disseminated pyrite	1.5	74.5	27	76	2.2	4	7	627	4.71	2.7	0.7	13.1	<0.1	19	8	<1	<0.1	0.01
10PSC-265	522719	644769	quartz-sericite-pyrite alteration	0.5	26.1	1.6	41	<0.1	4.8	25.7	181	10.55	17.1	<0.5	0.3	<0.1	3	11	2	<0.1	0.01
10PSC-314	515514	644828	listwanite	<0.1	10.4	1.7	12	0.2	883.4	63.8	1721	4.23	1.5	0.7	1.7	<0.1	937	5	3	<0.1	0.01
10PSC-386	531923	644838	quartz-sericite schist with pyrite, chalcopyrite, malachite	0.1	380.3	3	80	<0.1	32.9	45	676	7.24	38.6	1.4	0.8	0.3	29	12	3	<0.1	0.02
10PSC-410	531721	645412	jointed siliceous phyllite with malachite	33.3	4468.9	29.1	71	1.3	201.6	42.4	2922	2.69	0.5	1.4	1.7	0.2	84	2335	2	<0.1	0.08
10PSC-431	529289	644915	pyritic iron chert (exhalite)	2.6	14.3	1.9	5	0.3	1.9	0.5	34	3.99	1.8	15.6	0.3	0.5	8	36	<1	0.2	0.21
10PSC-438	530344	644924	pyritic iron chert (exhalite)	3.7	652.3	33.3	669	1.2	2.1	3.8	1081	2.91	5.3	1.2	0.9	<0.1	10	67	<1	<0.1	0.46
10PSC-440	529397	644937	pyritic siliceous schist	6	25	3.7	19	0.1	4.2	5.9	239	3.37	0.7	2.2	0.2	0.9	8	41	<1	<0.1	<0.01
10PSC-450	526646	644718	quartz-sericite-pyrite alteration	0.2	41.1	1.9	100	0.1	80.1	28.8	892	7.02	7.5	0.8	0.4	<0.1	204	26	<1	<0.1	0.01
10PSC-467	522331	645017	quartz vein with pyrite, chalcocite, galena, malachite, azurite	0.4	6222.8	>10000	806	>10000	4.9	0.6	39	1.16	63.2	138.7	>20000	7.4	8	23	<1	<0.1	0.96
10PSC-480	527964	645109	massive to heavily disseminated pyrite, chalcopyrite	1.8	>10000	103.1	253	4.5	2.3	3	411	8.13	3	4494.2	13.6	5.2	5	47	<1	0.2	0.46
10PSC-481	527925	645109	massive to heavily disseminated pyrite, chalcopyrite	0.4	>10000	78.8	159	11.4	4.5	5.7	501	4.35	5.6	8228.2	10.9	0.9	14	14	<1	0.2	0.34

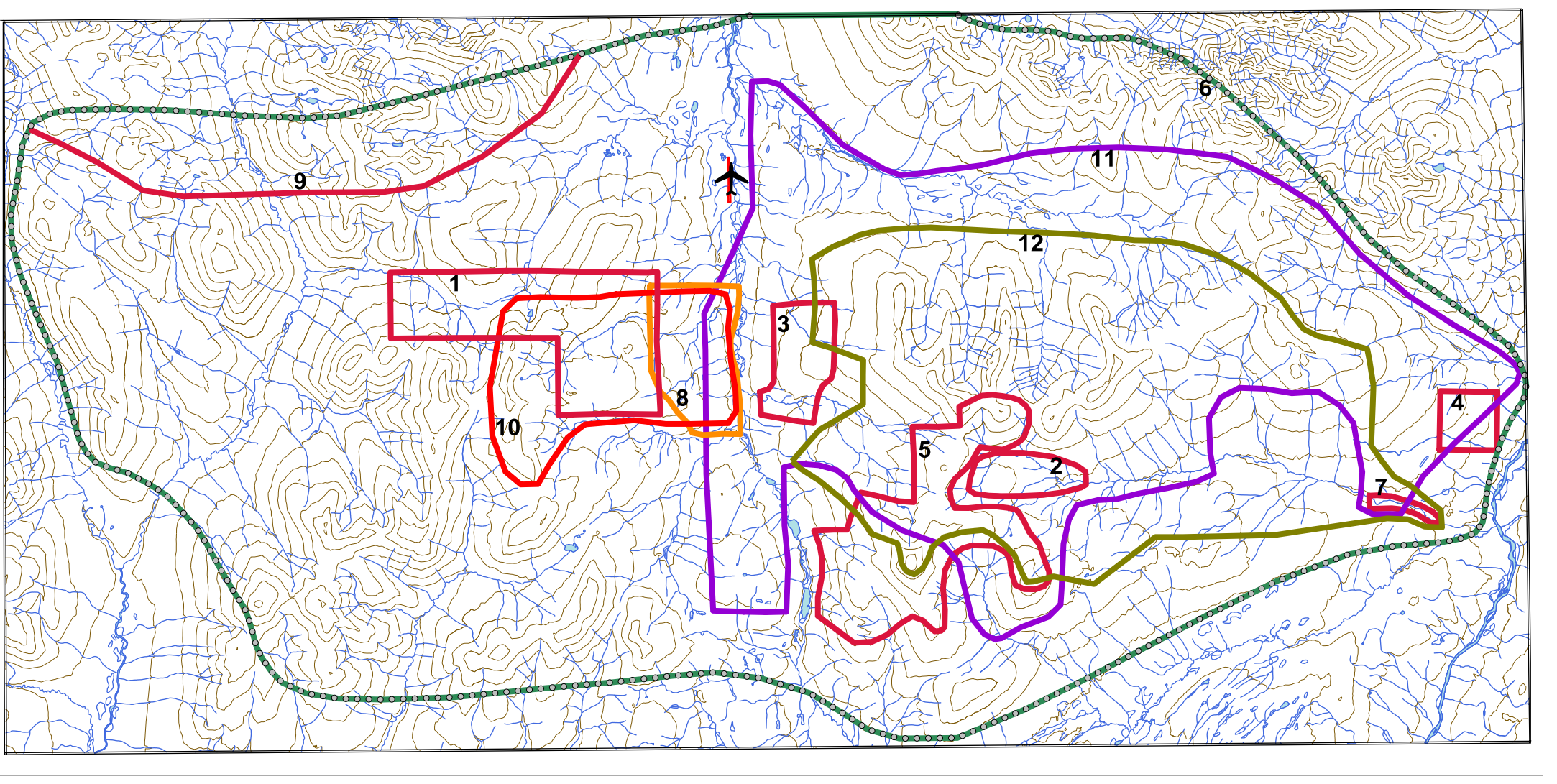
Table 2: Mineral occurrences

Name	MINFILE No.	Eastings	Northings	Description	Reference
Blueridge	522323	5450317	6450317	quartz veins with pyrite, chalcocite, galena, malachite, azurite	Sn 10PSC-467
Bow	1041 071	525236	6448164	quartz vein with minor amounts of bornite and chalcopyrite; intersected in drill hole	Assessment Report 5911
CK	1041 095	533672	6445415	pyrite, with traces of chalcopyrite and sphalerite, in sericite-quartz schist	Assessment Reports 6630, 20636
Jenn	1041 066	543041	6449581	pyritic quartz-sericite schist with traces of chalcopyrite and sphalerite; intersected in drill hole	Assessment Reports 5138, 5641, 11323
JW	1041 066	513904	6454875	neprite	Assessment Reports 5109, 6048
Kass	1041 095	533672	6445392	lenses of laminated to brecciated pyrrhotite, with traces of chalcopyrite and sphalerite	Assessment Report 13314
Kris	1041 066	531923	6448398	pyritic quartz-sericite schist with minor chalcopyrite and malachite	Assessment Reports 20636, 31020; Sn 10PSC-386
Kutcho 1	1041 072	529289	6449332	pyritic chert with lenses of disseminated to massive sulphides (pyrite, chalcopyrite)	Sn 11PSC-438; Assessment Reports 24866, 6448
Kutcho 2	1041 072	527925	6451029	lenses of massive to semimassive sulphides (pyrrhotite, pyrite, chalcopyrite)	Sn 10PSC-481; Assessment Reports 24866, 9170
Kutcho Creek	1041 060	527994	6451842	massive sulphide lenses, pyrite, sphalerite, chalcopyrite, bornite	Bridge et al. (1986); Barrett et al. (1996)
Matt	1041 071	521721	6454510	pyritic phyllite with malachite	Sn 10PSC-410
Ridgecrest	1041 052	524657	6450389	quartz veins with pyrite, chalcocite, galena, malachite, azurite	Sn 10PSC-140
Rubysht	1041 061	524495	6449190	quartz-sericite veins containing tetrahedrite and galena	MINFILE

Geological interpretation based mainly on fieldwork conducted in 2010 and 2011. Additional sources of information shown below.

- Aldrick, D. and McLennan, V.G. (2010). Geological assessment report on the Kutcho property, north central British Columbia. BC Ministry of Energy and Mines, Assessment Report 31 282, 45 pages.
- Beik, G. (1978). Geophysical report on the CK mineral claims; BC Ministry of Energy and Mines, Assessment Report 6630, 21 pages.
- Beik, G.D. (1996). Geological, geochemical and geophysical report on the Kutcho property (Kutcho 1-39 mineral claims), 1041/W, 2E; BC Ministry of Energy and Mines, Assessment Report 24 866, 112 pages.
- Bridge, D.E. (1977). Geochemical and geological report, Tuo 1-8 claims, 1041/E; BC Ministry of Energy and Mines, Assessment Report 6450, 13 pages.
- Fleming, D.B. and Roth, J. (1983). 1983 geological, geochemical and geophysical assessment report, Kutcho property, Kains 1-8 claims; BC Ministry of Energy and Mines, Assessment Report 11 314, 76 pages.
- Gabriele, H. (1988). Geology of Croy Lake and Dease Lake map areas, north-central British Columbia; Geological Survey of Canada, Bulletin 504, 147 pages.
- Holbek, P.M. (1986). Geological, geochemical, geophysical report on the Kutcho Creek project; BC Ministry of Energy and Mines, Assessment Report 15 592, 55 pages.
- Holbek, P., Beik, G. and Wilson, R. (1988). Diamond drilling report on the Kutcho Creek project; BC Ministry of Energy and Mines, Assessment Report 5100, 21 pages.
- Price, B.J. (1974). Geological report on jade occurrences in the Provencher Lake area, Lland Mining District, British Columbia; BC Ministry of Energy and Mines, Assessment Report 5100, 21 pages.
- Troop, D.G. (1981). Report on petrography and geology of the volcanic sequence, Kutcho 1-8 mineral claims, Kutcho property, Lland Mining Division; BC Ministry of Energy and Mines, Assessment Report 9170, 18 pages.
- Unpublished geology map (1984). Esso Minerals Canada Ltd.
- Unpublished geology map (1989). Homestake Canada Ltd.

For a more detailed description of the geology see:
 Schiarizza, P. (2012). Geology of the Kutcho Assemblage between the Kehlebas and Tuto rivers, northern British Columbia (NTS 104/I/01, 02); in *Geological Fieldwork 2011*, British Columbia Ministry of Energy and Mines, Paper 2012-1, pages 75-98.



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