DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDIES
MAP MF–825
SHEET 2 OF 2

SMITH AND OTHERS -- GEOLOGY, CHEMICAL AND RADIOMETRIC SAMPLE LOCALITIES, KETCHIKAN, BRADFIELD CANAL, AND PRINCE RUPERT QUADRANGLES, ALASKA

Table 1.--*Rapid-rock chemical analyses, CIPW norms and modes of plutonic and metamorphic rocks from parts of the Ketchikan and Bradfield Canal 1:250,000 quadrangles, southeastern Alaska*

[Except for three samples, the first two characters of a sample number represent the year a sample was collected and the collector. Years and collectors are: 8 = 1968, 9 = 1969, 0 = 1970, 2 = 1972, 3 = 1973; B = H. C. Berg, DN = G. C. Dunn, E = R. L. Elliott, S = J. G. Smith. The three exceptions are MLE18 and 9MILE collected by H. C. Berg in 1972 and SC22 collected by J. Leutcher in 1968. Chemical analyses by L. Artis, S. D. Botts, G. Chloe, P. L. Elmore, J. L. Glenn, J. Kelsey, and H. Smith. Modal analyses of stained slabs were made by J. F. Childs, R. L. Elliott, Phillip A. Frame, E. A. Rodriguez, Michael J. Rymer, R. J. Weir, J. G. Smith, and B. D. Wiggins.]

	Hazelton Group				High-grade metapelites										Amphibolite					Low grade metamorphic rocks			Texas Creek Granodiorite	
	MLE18	8S135	8S155	8S166C	9S206A	9S263A	2B109	2B113A	2E020A	3B004A	3B004B	3B005A	3B024A	3S020	9S210A	9S271A	9S271B	2S015B	3S005	9S301A	9S325B	9S325C	9MILE	8DN28
Rapid-rock chemical analyses (weight percent)																								
SiO_2	51.2	59.6	54.2	56.2	62.8	53.8	50.3	60.3	51.1	51.4	61.8	47.8	76.1	58.8	57.8	48.7	49.6	57.1	49.3	62.2	72.6	72.2	62.9	61.5
Al_2O_3	12.0	15.9	15.9	13.1	15.4	19.2	12.0	18.1	21.1	17.9	15.0	17.6	13.0	18.2	16.1	13.8	18.7	17.9	15.0	16.2	10.9	9.0	16.0	15.1
Fe_2O_3	0.64	0.49	4.4	1.6	3.7	1.3	5.8	0.76	0.69	1.1	1.3	1.7	0.59	3.7	2.4	4.1	1.2	1.7	2.6	1.3	0.63	1.0	2.1	2.0
FeO	8.6	6.1	3.1	10.5	5.1	8.0	4.7	11.2	4.1	7.8	5.6	8.8	0.64	3.7	5.2	13.0	8.0	7.0	9.2	6.9	2.7	2.0	3.0	2.9
MgO	8.7	3.3	2.7	2.3	3.2	2.5	11.8	3.0	5.3	5.1	3.5	7.1	0.10	1.7	4.4	4.3	6.4	3.9	8.8	2.4	2.8	2.8	2.0	2.7
CaO	7.2	5.9	6.0	4.4	2.0	4.5	10.0	0.27	9.0	9.3	4.1	10.5	0.50	3.4	7.2	8.8	8.4	3.8	10.4	0.34	3.5	7.2	3.7	4.9
Na_2O	0.64	3.2	2.8	2.9	2.0	3.7	1.3	0.24	3.7	3.4	3.8	2.6	4.3	4.4	3.9	2.4	3.7	2.3	2.6	0.64	1.0	1.5	3.6	3.8
K_2O	4.6	2.7	3.0	2.0	2.3	2.6	0.19	2.9	2.4	1.3	1.90	1.6	4.2	3.7	0.59	0.49	1.2	2.9	0.35	4.8	2.9	1.5	3.1	2.1
H_2O	2.6	0.87	2.4	2.5	1.8	2.2	0.56	1.4	1.0	0.72	0.93	0.86	0.21	0.29	0.90	0.95	1.0	1.4	0.55	2.2	1.1	0.55	1.4	0.13
TiO_2	0.54	0.76	0.62	2.0	0.75	1.6	1.9	1.1	0.48	0.87	0.69	0.97	0.12	0.84	0.71	1.80	1.1	0.83	0.49	1.4	0.72	0.63	0.51	0.71
P_2O_5	0.42	0.42	0.66	0.95	0.25	0.19	0.60	0.08	0.13	0.31	0.16	0.16	0.03	0.37	0.17	0.40	0.18	0.28	0.06	0.06	0.11	0.09	0.21	0.24
MnO	0.26	0.18	0.14	0.26	0.20	0.15	0.27	0.25	0.13	0.15	0.08	0.16	0.03	0.14	0.12	0.35	0.15	0.32	0.20	0.20	0.04	0.07	0.13	0.12
CO_2	1.0	<0.05	3.1	0.62	<0.05	<0.05	0.02	0.04	0.32	0.10	0.09	0.12	0.09	0.08	0.12	0.15	<0.05	0.02	0.09	<0.05	0.45	1.3	0.39	1.1
Total	98.40	99.47	99.02	99.33	99.55	99.79	99.44	99.66	99.45	99.45	98.95	99.97	99.91	99.32	99.61	99.24	99.68	99.45	99.64	98.69	99.45	99.84	99.04	97.30
Oxides normalized to 100 percent																								
SiO_2	52.03	59.92	54.74	56.58	63.08	53.91	50.58	60.51	51.38	51.68	62.46	47.81	76.17	59.20	58.03	49.07	49.76	57.42	49.48	63.03	73.00	72.32	63.51	61.95
Al_2O_3	12.20	15.98	16.06	13.19	15.47	19.24	12.07	18.16	21.22	18.00	15.16	17.61	13.01	18.32	16.16	13.91	18.76	18.00	15.05	16.42	10.96	9.01	16.16	15.21
Fe_2O_3	0.65	0.49	4.44	1.61	3.72	1.30	5.83	0.78	0.69	1.11	1.31	1.70	0.59	3.73	2.41	4.13	1.20	1.71	2.61	1.32	0.63	1.00	2.12	2.01
FeO	8.74	6.13	3.13	10.57	5.12	8.02	4.73	11.24	4.12	7.84	5.66	8.80	0.64	3.73	5.22	13.10	8.03	7.04	9.23	6.99	2.71	2.00	3.03	2.92
MgO	8.84	3.32	2.73	2.32	3.21	2.51	11.87	3.01	5.33	5.13	3.54	7.10	0.10	1.71	4.42	4.33	6.42	3.92	8.83	2.43	2.82	2.80	2.02	2.72
CaO	7.32	5.93	6.06	4.43	2.01	4.51	10.06	0.27	9.05	9.35	4.14	10.50	0.50	3.42	7.23	8.87	8.43	3.82	10.44	0.34	3.52	7.21	3.74	4.94
Na_2O	0.65	3.22	2.83	2.92	2.01	3.71	1.31	0.24	3.72	3.42	3.84	2.60	4.30	4.43	3.92	2.42	3.71	2.31	2.61	0.65	1.01	1.50	3.63	3.83
K_2O	4.67	2.71	3.03	2.01	2.31	2.61	0.19	2.91	2.41	1.31	1.92	1.60	4.20	3.73	0.59	0.49	1.20	2.92	0.35	4.86	2.92	1.50	3.13	2.12
H_2O	2.64	0.87	2.42	2.52	1.81	2.20	0.56	1.40	1.01	0.72	0.94	0.86	0.21	0.29	0.90	0.96	1.00	1.41	0.55	2.23	1.11	0.55	1.41	2.12
TiO_2	0.55	0.76	0.63	2.01	0.75	1.60	1.91	1.10	0.48	0.87	0.70	0.97	0.12	0.85	0.71	1.81	1.10	0.83	0.49	1.42	0.72	0.63	0.51	0.72
P_2O_5	0.43	0.42	0.67	0.96	0.25	0.19	0.60	0.08	0.13	0.31	0.16	0.16	0.03	0.37	0.17	0.40	0.18	0.28	0.06	0.06	0.11	0.09	0.21	0.24
MnO	0.26	0.18	0.14	0.26	0.20	0.15	0.27	0.25	0.13	0.15	0.08	0.16	0.03	0.14	0.12	0.35	0.15	0.32	0.20	0.20	0.04	0.07	0.13	0.12
CO_2	1.02	0.05	3.13	0.62	0.05	0.05	0.02	0.04	0.32	0.10	0.09	0.12	0.09	0.08	0.12	0.15	0.05	0.02	0.09	0.05	0.45	1.30	0.39	1.11
CIPW norm (weight percent)																								
q	0.8	11.0	19.4	16.4	31.8	4.5	8.3	34.7			15.6		33.9	9.3	10.6	4.0		14.7		32.1	44.2	44.0	19.5	19.4
c			5.9	1.8	6.7	2.6		14.4					0.7	1.8				4.8		9.7	1.0		1.4	0.7
or	27.6	16.0	17.9	11.8	13.6	15.3	1.1	17.1	14.2	7.7	11.3	9.4	24.8	22.0	3.5	2.9	7.1	17.2	2.0	28.7	17.2	8.8	18.4	12.5
ab	5.5	27.2	23.9	24.7	17.0	31.3	11.0	2.0	26.6	28.9	32.4	18.7	36.4	37.4	33.1	20.4	30.5	19.5	22.0	5.4	8.5	12.7	30.7	32.3
an	16.5	21.1	5.9	11.7	8.0	20.8	26.4	0.5	34.0	29.9	18.4	31.6	1.7	14.0	24.7	25.6	30.9	16.9	28.3	0.9	13.8	13.4	14.6	15.9
ne									2.6			1.7					0.4							
wo	4.4	2.1					8.0		3.3	5.7	0.1	7.7			3.8	6.1	3.8		9.3			5.6		
en	22.0	8.2	6.7	5.7	8.0	6.2	29.5	7.4	2.0	8.2	8.8	4.2	0.2	4.2	11.0	10.7	2.1	9.7	13.4	6.0	7.0	6.9	5.0	6.7
fs	15.0	9.9	1.3	15.2	5.4	11.2	1.2	18.6	1.0	7.9	8.3	3.2	0.5	2.6	6.6	18.3	1.6	10.7	8.7	9.7	3.3	1.9	3.2	2.7
fo									7.8	3.1		9.4					9.7		6.0					
fa									4.1	3.3		7.8					8.1		4.3					
mt	0.9	0.7	6.4	2.3	5.3	1.8	8.4	1.1	1.0	1.6	1.9	2.4	0.8	5.4	3.4	5.9	1.7	2.4	3.7	1.9	0.9	1.4	3.0	2.9
il	1.0	1.4	1.1	3.8	1.4	3.0	3.6	2.0	0.9	1.6	1.3	1.8	0.2	1.6	1.3	3.4	2.0	1.5	0.9	2.6	1.3	1.1	0.9	1.3
ap	1.0	1.0	1.5	2.2	0.5	0.4	1.4	0.1	0.3	0.7	0.3	0.3	0.1	0.8	0.4	0.9	0.4	0.6	0.1	0.1	0.2	0.2	0.5	0.5
cc	2.3	0.1	7.1	1.4	0.1	0.1	0.1	0.1	0.7	0.2	0.2	0.2	0.2	0.1	0.2	0.3	0.1	0.0	0.2	0.1	1.0	2.9	0.8	2.5
Total	97.0	98.7	97.1	96.0	97.8	97.2	99.0	98.0	98.5	98.8	98.6	98.4	99.5	99.2	98.6	98.5	98.4	98.1	98.9	97.2	98.4	98.9	98.0	97.4
Salic	50.4	75.3	73.0	65.4	77.1	74.5	46.8	68.7	77.4	66.5	77.7	61.4	97.5	84.5	71.9	52.9	68.9	73.1	52.3	76.8	84.7	78.9	84.6	80.8
Femic	46.6	23.4	24.1	30.6	20.7	22.7	52.2	29.3	21.1	32.3	20.9	37.0	2.0	14.7	26.7	45.6	29.5	25.0	46.6	20.4	13.7	20.0	13.4	16.6
Mode (volume percent)																								
K-feldspar						24.9																		
Plagioclase						26.8																		
Quartz						43.8																		
Mafic minerals																								
Hornblende						4.5																		
Biotite																								
Sphene																								
Others																								
Total						100.0																		

	Texas Creek Granodiorite			Foliated granodiorite and quartz monzonite																				
	8S125	8S160	3S008	8SC22	8S196A	0S225	2S012B	2B008	2B036	2B275	2E103	2E199A	2E324A	2E347A	3E007A	3E008A	3E022	3S003	3S009	3S013	3S014	3S021	3S022	3S023
Rapid-rock chemical analyses (weight percent)																								
SiO_2	62.7	62.7	63.8	60.2	65.5	51.6	58.0	61.1	61.3	58.6	59.1	58.6	61.8	58.1	65.9	66.6	63.2	55.9	70.5	60.6	59.3	65.9	67.4	67.4
Al_2O_3	16.2	16.5	16.1	17.8	16.9	18.1	17.9	17.1	17.8	18.5	17.3	18.4	17.5	18.0	18.1	16.6	18.2	18.4	15.2	17.2	17.7	15.4	16.0	17.1
Fe_2O_3	1.6	1.2	1.6	0.90	1.6	1.9	1.7	1.2	2.1	2.1	1.8	1.8	1.2	2.9	1.6	1.3	1.4	1.0	1.1	2.8	3.0	1.8	1.2	1.2
FeO	3.6	4.1	3.6	4.7	2.5	7.2	4.8	4.4	3.4	4.1	4.2	4.5	4.2	3.7	1.9	1.4	2.4	6.2	0.96	3.8	3.8	2.4	1.4	1.3
MgO	2.1	2.0	1.7	2.6	1.7	5.1	3.7	3.0	2.4	2.5	3.1	2.9	2.1	3.2	1.0	0.83	1.4	3.8	0.30	3.3	2.4	1.4	0.96	0.97
CaO	3.4	5.6	5.3	6.3	4.0	7.5	6.5	5.4	5.7	5.7	5.5	6.2	6.6	6.0	4.8	3.7	4.8	7.3	1.9	6.0	6.1	2.9	3.5	3.8
Na_2O	3.0	2.9	2.9	3.7	3.7	3.5	3.2	3.1	3.7	3.7	3.6	3.2	3.9	3.2	4.7	4.4	5.2	3.5	3.8	3.3	4.0	3.7	4.0	4.6
K_2O	4.0	2.5	3.0	1.5	2.2	1.8	1.8	2.6	2.0	1.7	2.2	1.5	1.2	1.7	2.2	2.7	1.8	1.7	4.5	1.8	2.3	3.8	3.1	2.4
H_2O	0.14	0.11	1.1	0.73	0.89	1.5	1.3	0.94	0.86	0.75	0.81	1.0	0.52	1.2	0.38	0.34	0.63	1.3	0.44	1.0	0.54	0.86	0.71	0.56
TiO_2	0.72	0.62	0.52	0.68	0.66	1.1	0.92	0.71	0.74	0.75	0.83	0.88	0.52	0.82	0.37	0.32	0.45	0.97	0.32	0.74	0.66	0.72	0.32	0.35
P_2O_5	0.17	0.24	0.24	0.22	0.24	0.32	0.31	0.21	0.30	0.31	0.31	0.32	0.21	0.29	0.18	0.16	0.22	0.37	0.10	0.31	0.46	0.30	0.21	0.16
MnO	0.10	0.11	0.14	0.05	0.05	0.16	0.10	0.08	0.07	0.09	0.15	0.10	0.15	0.14	0.08	0.07	0.07	0.12	0.04	0.12	0.15	0.05	0.05	0.04
CO_2	<0.05	<0.05	0.09	0.08	<0.05	<0.05	0.11	0.02	0.02	0.01	0.08	0.05	0.01	0.04	0.08	0.12	0.15	0.12	0.06	0.22	0.04	0.08	0.32	0.10
Total	97.78	98.63	100.09	99.46	99.99	99.83	100.34	99.86	100.39	98.81	98.98	99.45	99.91	99.29	101.29	98.54	99.92	100.68	99.22	101.19	100.45	99.31	99.17	99.98
Oxides normalized to 100 percent																								
SiO_2	63.18	63.57	63.74	60.53	65.51	51.69	57.80	61.19	61.06	59.31	59.71	58.92	61.86	58.52	65.06	67.59	63.25	55.52	71.05	59.89	59.03	66.36	67.96	67.41
Al_2O_3	16.32	16.73	16.09	17.90	16.90	18.13	17.84	17.12	17.73	18.72	17.48	18.50	17.52	18.13	17.87	16.85	18.21	18.28	15.32	17.00	17.62	15.51	16.13	17.10
Fe_2O_3	1.61	1.22	1.60	0.90	1.60	1.90	1.69	1.20	2.09	2.13	1.82	1.81	1.20	2.92	1.58	1.32	1.40	0.99	1.11	2.77	2.99	1.81	1.21	1.20
FeO	3.63	4.16	3.70	4.73	2.50	7.21	4.78	4.41	3.39	4.15	4.24	4.52	4.20	3.73	1.88	1.42	2.40	6.16	0.97	3.76	3.78	2.42	1.41	1.30
MgO	2.12	2.03	1.70	2.61	1.70	5.11	3.69	3.00	2.39	2.53	3.13	2.92	2.10	3.22	0.99	0.84	1.40	3.77	0.30	3.26	2.39	1.41	0.97	0.97
CaO	3.43	5.68	5.30	6.33	4.00	7.51	6.48	5.41	5.68	5.77	5.56	6.23	6.61	6.04	4.74	3.75	4.80	7.25	1.91	5.93	6.07	2.92	3.53	3.80
Na_2O	3.02	2.94	2.90	3.72	3.70	3.51	3.19	3.10	3.69	3.74	3.64	3.22	3.90	3.22	4.64	4.47	5.20	3.48	3.83	3.26	3.98	3.73	4.03	4.60
K_2O	4.03	2.53	3.00	1.51	2.20	1.80	1.79	2.60	1.99	1.72	2.22	1.51	1.20	1.71	2.17	2.74	1.80	1.69	4.54	1.78	2.29	3.83	3.13	2.40
H_2O	1.61	0.11	1.10	0.73	0.89	1.50	1.30	0.94	0.86	0.76	0.82	1.01	0.52	1.21	0.38	0.35	0.63	1.29	0.44	0.99	0.54	0.87	0.72	0.56
TiO_2	0.73	0.63	0.52	0.68	0.66	1.10	0.92	0.71	0.74	0.76	0.84	0.88	0.52	0.83	0.37	0.32	0.45	0.96	0.32	0.73	0.66	0.73	0.32	0.35
P_2O_5	0.17	0.24	0.24	0.22	0.24	0.32	0.31	0.21	0.30	0.31	0.31	0.32	0.21	0.29	0.18	0.16	0.22	0.37	0.10	0.31	0.46	0.30	0.21	0.16
MnO	0.10	0.11	0.14	0.05	0.05	0.16	0.10	0.08	0.07	0.09	0.15	0.10	0.15	0.14	0.08	0.07	0.07	0.12	0.04	0.12	0.15	0.05	0.05	0.04
CO_2	0.05	0.05	0.09	0.08	0.05	0.05	0.11	0.02	0.02	0.01	0.08	0.05	0.01	0.04	0.08	0.12	0.15	0.12	0.06	0.22	0.04	0.08	0.32	0.10
CIPW norm (weight percent)																								
q	18.3	20.0	20.7	13.7	24.2		11.5	15.0	15.6	13.5	12.2	15.2	16.0	14.8	18.1	22.1	13.6	5.6	27.1	16.3	11.0	21.9	24.4	22.1
c	1.2				1.8					0.9		1.1		0.7		0.3			1.0	0.1		0.8	0.9	0.6
or	23.8	14.9	17.7	8.9	13.0	10.6	10.6	15.3	11.7	10.1	13.1	8.9	7.0	10.1	12.8	16.1	10.6	9.9	26.8	10.5	13.5	22.6	18.4	14.1
ab	25.5	24.8	24.5	31.4	31.3	29.6	26.9	26.2	31.1	31.6	30.7	27.2	33.0	27.2	39.2	37.7	44.0	29.4	32.4	27.5	33.6	31.5	34.1	38.9
an	15.5	24.9	22.0	27.6	17.9	28.4	29.0	25.1	25.9	26.5	24.8	28.5	26.7	27.8	21.5	16.7	21.0	29.2	8.4	26.0	23.4	12.0	14.0	17.1
ne																								
wo		0.5	0.8	0.7		2.6	0.1	0.1	0.1		0.1		1.9		0.1		0.1	1.4			1.4			
en	5.2	5.0	4.2	6.5	4.2	9.5	9.1	7.4	5.9	6.3	7.8	7.2	5.2	8.0	2.4	2.0	3.4	9.4	0.7	8.1	5.9	3.5	2.4	2.4
fs	4.3	5.7	4.6	6.8	2.2	7.6	6.0	6.0	3.4	4.7	5.1	5.5	6.1	3.3	1.6	1.1	2.6	9.1	0.4	3.6	3.6	1.8	1.1	0.8
fo						2.1																		
fa						1.9																		
mt	2.3	1.7	2.3	1.3	2.3	2.7	2.4	1.7	3.0	3.0	2.6	2.6	1.7	4.2	2.2	1.9	2.0	1.4	1.6	4.0	4.3	2.6	1.7	1.7
il	1.3	1.1	0.9	1.2	1.2	2.0	1.7	1.3	1.4	1.4	1.5	1.6	0.9	1.5	0.6	0.6	0.8	1.8	0.6	1.3	1.2	1.3	0.6	0.6
ap	0.4	0.5	0.5	0.5	0.5	0.7	0.7	0.4	0.7	0.7	0.7	0.7	0.4	0.6	0.4	0.3	0.5	0.8	0.2	0.7	1.0	0.7	0.5	0.3
cc	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.2	0.1	0.4	0.1	0.1	0.7	0.2
Total	97.9	99.2	98.4	98.7	98.7	97.8	98.2	98.6	98.9	98.8	98.7	98.6	99.0	98.3	99.0	99.0	98.9	98.2	99.3	98.5	99.0	98.8	98.8	98.8
Salic	84.3	84.6	84.9	81.6	88.2	68.6	78.0	81.6	84.3	82.6	80.8	80.9	82.7	80.9	91.6	92.9	89.2	74.1	95.7	80.4	81.5	88.8	91.8	92.8
Femic	13.6	14.6	13.5	17.1	10.5	29.2	20.2	17.3	14.6	16.2	17.9	17.7	16.3	17.7	7.4	6.1	9.7	24.1	3.6	18.1	17.5	10.0	7.0	6.0
Mode (volume percent)																								
K-feldspar		10.2	13.5		4.2			10.6	5.6	0.1	5.2			0.1	13.0	13.5	6.3	0.2	31.1	1.5	7.0		18.3	11.8
Plagioclase		49.1	43.7	56.1	55.9	55.0		47.4	54.1	54.7	54.6	53.0	62.6	52.1	61.8	55.5	69.3	54.2	39.9	52.2	52.5		48.8	56.2
Quartz		17.2	23.3	18.3	25.7	2.8		19.7	21.5	13.7	11.8	19.4	18.6	15.1	13.7	24.5	14.0	13.3	20.8	21.0	20.1		22.0	23.5
Mafic minerals		23.5			13.9	42.2			18.8	31.5				32.7										
Hornblende			0.7	12.4				12.1			17.2	13.6	8.5		8.5	4.8	2.3	17.3	6.7	11.8	10.8		7.7	8.2
Biotite			18.8	13.1				10.2			11.2	14.0	10.2		2.2	0.5	7.7	14.8	0.7	12.6	9.1		2.3	0.3
Sphene				0.1	0.3														0.1					
Others													0.1		0.8	1.2	0.4	0.2	0.7	0.9	0.5		0.9	
Total		100.0	100.0	100.0	100.0	100.0		100.0	100.0	100.0	100.0	100.0	100.0	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0		100.0	100.0

	Foliated granodiorite and quartz monzonite											Massive, leucocratic biotite quartz monzonite and granodiorite												Gabbro
	3S025	3S028	3S029	3S030	3S031	3S032	3S033	3S035	3S036	3S038	3S039	8DN47	8DN75	8S52	8S163	3S010	3S011	3S012	3S016	3S017	3S018	3S019	3S027	3S043
Rapid-rock chemical analyses (weight percent)																								
SiO_2	54.9	71.6	65.2	66.9	54.4	57.1	56.9	56.8	62.7	57.3	65.5	70.5	64.7	70.2	68.4	58.8	75.1	74.1	71.6	53.3	72.4	69.7	58.2	47.2
Al_2O_3	18.6	14.6	16.9	17.7	17.7	17.6	18.6	17.6	16.5	18.2	16.0	15.3	16.8	15.5	15.4	17.9	13.7	13.7	16.2	19.5	15.0	15.3	18.8	13.4
Fe_2O_3	2.8	0.87	1.5	0.70	0.90	0.70	0.90	0.70	2.1	2.4	2.1	1.1	1.8	1.0	1.0	2.3	0.70	0.85	0.42	3.2	0.78	1.4	2.9	1.2
FeO	4.6	0.84	2.4	2.3	5.5	5.5	5.0	6.0	2.4	3.8	1.9	1.3	2.3	1.1	2.0	3.6	0.72	0.68	0.52	4.9	0.92	1.2	2.8	8.9
MgO	3.6	0.37	1.2	1.4	3.5	3.6	3.2	4.0	2.1	2.8	1.7	0.82	2.0	0.64	1.1	3.0	0.24	0.26	0.20	3.1	0.38	0.50	1.6	16.0
CaO	6.8	1.8	2.8	4.5	6.4	6.3	6.8	6.7	4.7	5.7	3.9	2.6	4.1	2.3	2.9	6.0	1.1	1.4	1.9	6.8	1.9	2.1	4.1	9.2
Na_2O	3.4	3.7	4.7	4.7	3.5	3.5	3.8	3.6	4.0	4.2	3.4	3.7	3.6	3.9	3.7	3.7	3.5	3.6	5.2	4.6	3.4	4.2	5.2	1.7
K_2O	1.5	4.6	3.3	1.1	1.8	1.8	1.3	1.5	2.3	1.8	3.3	3.4	2.9	3.9	3.8	2.1	4.9	4.2	3.0	1.9	4.5	4.1	3.5	0.31
H_2O	2.1	0.36	0.44	0.65	0.95	1.1	0.76	0.90	0.63	0.86	0.79	0.62	0.74	0.75	0.87	1.0	0.28	0.29	0.77	0.92	0.4	0.40	0.86	0.52
TiO_2	0.93	0.30	0.58	0.42	0.35	0.83	0.85	0.83	0.60	0.85	0.48	0.36	0.62	0.33	0.57	0.74	0.16	0.18	0.14	1.20	0.24	0.29	1.2	0.75
P_2O_5	0.45	0.08	0.31	0.15	0.32	0.33	0.28	0.41	0.23	0.34	0.15	0.13	0.21	0.12	0.18	0.31	0.03	0.06	0.03	0.52	0.08	0.18	0.17	0.11
MnO	0.11	0.02	0.04	0.02	0.08	0.09	0.08	0.09	0.08	0.07	0.05	0.04	0.05	0.03	0.02	0.12	0.03	0.03	0.02	0.11	0.02	0.04	0.07	0.16
CO_2	0.05	0.15	0.09	0.03	0.01	0.02	0.03	0.02	0.06	0.04	0.02	<0.05	<0.05	<0.05	<0.05	0.08	0.06	0.08	0.02	0.02	0.08	0.08	0.09	0.01
Total	99.84	99.29	99.46	100.57	95.41	98.47	98.50	99.15	98.40	98.36	99.29	99.92	99.87	99.82	99.99	99.65	100.52	99.43	100.02	100.07	100.10	99.49	99.49	99.46
Oxides normalized to 100 percent																								
SiO_2	54.99	72.11	65.55	66.52	57.02	57.99	57.77	57.29	63.72	58.37	65.97	70.56	64.78	70.33	68.41	59.01	74.71	74.52	71.59	53.26	72.33	70.06	58.50	47.46
Al_2O_3	18.63	14.70	16.99	17.60	18.55	17.87	18.88	17.75	16.77	18.54	16.11	15.31	16.82	15.53	15.40	17.96	13.63	13.78	16.20	19.49	14.99	15.38	18.90	13.47
Fe_2O_3	2.80	0.88	1.51	0.70	0.94	0.71	0.91	0.71	2.13	2.44	2.12	1.10	1.80	1.00	1.00	2.31	0.70	0.85	0.42	3.20	0.78	1.41	2.91	1.21
FeO	4.61	0.85	2.41	2.29	5.76	5.59	5.08	6.05	2.44	3.87	1.91	1.30	2.30	1.10	2.00	3.61	0.72	0.68	0.52	4.90	0.92	1.21	2.81	8.95
MgO	3.61	0.37	1.21	1.39	3.67	3.66	3.25	4.03	2.13	2.85	1.71	0.82	2.00	0.64	1.10	3.01	0.24	0.26	0.20	3.10	0.38	0.50	1.61	16.09
CaO	6.81	1.81	2.82	4.47	6.71	6.40	6.90	6.76	4.78	5.81	3.93	2.60	4.11	2.30	2.90	6.02	1.09	1.41	1.90	6.80	1.90	2.11	4.12	9.25
Na_2O	3.41	3.73	4.73	4.67	3.67	3.55	3.86	3.63	4.07	4.28	3.42	3.70	3.60	3.91	3.70	3.71	3.48	3.62	5.20	4.60	3.40	4.22	5.23	1.71
K_2O	1.50	4.63	3.32	1.09	1.89	1.83	1.32	1.51	2.34	1.83	3.32	3.40	2.90	3.91	3.80	2.11	4.87	4.22	3.00	1.90	4.50	4.12	3.52	0.31
H_2O	2.10	0.36	0.44	0.65	1.00	1.12	0.77	0.91	0.64	0.88	0.80	0.62	0.74	0.75	0.87	1.00	0.28	0.29	0.77	0.92	0.40	0.40	0.86	0.52
TiO_2	0.93	0.30	0.58	0.42	0.37	0.84	0.86	0.84	0.61	0.66	0.48	0.36	0.62	0.33	0.57	0.74	0.16	0.18	0.14	1.20	0.24	0.29	1.21	0.75
P_2O_5	0.45	0.08	0.31	0.15	0.34	0.34	0.28	0.41	0.23	0.35	0.15	0.13	0.21	0.12	0.18	0.31	0.03	0.06	0.03	0.52	0.08	0.18	0.17	0.11
MnO	0.11	0.02	0.04	0.02	0.08	0.09	0.08	0.09	0.08	0.07	0.05	0.04	0.05	0.03	0.02	0.12	0.03	0.03	0.02	0.11	0.02	0.04	0.07	0.16
CO_2	0.05	0.15	0.09	0.03	0.01	0.02	0.03	0.02	0.06	0.04	0.02	0.05	0.05	0.05	0.05	0.08	0.06	0.08	0.02	0.02	0.08	0.08	0.09	0.01
CIPW norm (weight percent)																								
q	8.6	28.7	17.6	22.6	5.8	8.7	8.6	7.5	17.9	9.0	22.3	29.2	20.8	26.9	24.2	11.6	33.1	34.1	25.4	0.2	30.8	24.8	3.9	
c	0.2	0.8	1.4	1.0							0.1	1.2	0.9	1.0	0.4		0.8	1.0	1.0		1.4	0.7		
or	8.8	27.3	19.6	6.4	11.1	10.8	7.7	8.9	13.8	10.8	19.6	20.1	17.1	23.0	22.4	12.4	28.8	24.9	17.7	11.2	26.5	24.3	20.7	1.8
ab	28.8	31.5	39.9	39.5	31.0	30.0	32.6	30.7	34.3	36.2	28.9	31.3	30.5	33.0	31.3	31.4	29.4	30.6	43.9	38.8	28.7	35.7	44.1	14.4
an	30.5	7.5	11.3	21.0	28.5	27.4	30.3	27.6	20.6	25.9	18.3	11.7	18.6	10.3	12.8	26.1	4.8	6.0	9.1	26.9	8.3	8.7	17.7	28.1
ne																								
wo					1.0	0.8	0.7	1.2	0.4	0.1						0.5				1.3			0.4	7.0
en	8.9	0.9	3.0	3.4	9.1	9.1	8.0	10.0	5.3	7.1	4.2	2.0	4.9	1.5	2.7	7.4	0.5	0.6	0.4	7.7	0.9	1.2	4.0	13.6
fs	4.8	0.3	2.2	2.9	9.3	8.4	7.2	9.3	1.8	4.1	1.0	0.9	1.8	0.7	1.9	3.7	0.5	0.3	0.4	4.5	0.6	0.6	0.8	4.9
fo																								18.5
fa																								7.3
mt	4.0	1.2	2.1	1.0	1.3	1.0	1.3	1.0	3.0	3.5	3.0	1.5	2.6	1.4	1.4	3.3	1.0	1.2	0.6	4.6	1.1	2.0	4.2	1.7
il	1.7	0.5	1.1	0.7	0.6	1.6	1.6	1.5	1.1	1.2	0.9	0.6	1.1	0.6	1.0	1.4	0.3	0.3	0.2	2.2	0.4	0.5	2.2	1.4
ap	1.0	0.1	0.7	0.3	0.7	0.7	0.6	0.9	0.5	0.8	0.3	0.3	0.4	0.2	0.4	0.7	0.1	0.1	0.1	1.2	0.1	0.4	0.4	0.2
cc	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
Total	97.4	99.1	99.1	98.9	98.5	98.6	98.7	98.7	98.8	98.8	98.7	98.9	98.8	98.7	98.6	98.6	99.4	99.2	98.9	98.7	98.9	99.0	98.7	99.0
Salic	76.9	95.8	89.8	90.5	76.4	76.9	79.2	74.7	86.6	81.9	89.2	93.5	87.9	94.2	91.1	81.5	96.9	96.6	97.1	77.1	95.7	94.2	86.5	44.3
Femic	20.5	3.3	9.3	8.4	22.1	21.7	19.5	24.0	12.2	16.9	9.5	5.4	10.9	4.5	7.5	17.1	2.5	2.6	1.8	21.6	3.2	4.8	12.2	54.7
Mode (volume percent)																								
K-feldspar		31.3	19.8		1.8	1.2			9.1	1.6	16.6	21.5	18.1	23.8	27.0	7.7	42.0		21.0		29.1	25.3	17.3	
Plagioclase	52.8	37.5	51.5	56.1	50.6	49.0	60.2	57.0	52.7	60.4	45.8	43.3	50.0	46.0	38.8	53.3	28.8		55.5	56.3	31.8	45.0	61.2	41.7
Quartz	12.2	27.7	19.2	17.8	18.7	15.0	13.3	11.0	21.0	14.2	24.0	25.7	18.1	23.7	23.2	13.6	26.0		21.0	13.0	35.9	23.6	6.3	14.9
Mafic minerals										23.7		9.5	13.8	6.5	11.0									43.4
Hornblende	18.0	3.2	6.8	15.3	14.5	18.6	16.8	14.3	12.7		7.7					17.0	1.8		2.3	16.6	1.2	5.2	11.5	
Biotite	16.9	0.3	2.3	10.7	14.0	15.5	9.3	17.7	3.5		5.2					7.8	0.4			12.8	1.3	0.5	1.8	
Sphene			0.2						0.7	0.1						0.1				0.9		0.2	0.6	
Others	0.1		0.2	0.1	0.4	0.7	0.4		0.3		0.7					0.5	1.0		0.2	0.4	0.7	0.2	1.3	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0		100.0	100.0	100.0	100.0	100.0	100.00

HAZELTON(?) GROUP

Sample number	Universal transverse mercator coordinate	Quadrangle	Geographic location	Sample description
MLE18	434650E, 6210225N	Bradfield Canal A-1	Approximately 1.3 km southwest of Boundary Roadhouse (ruins) on east shore of Salmon River near mouth of Daly Creek	Gray hornblende meta-andesite. Hornblende phenocrysts considerably altered to chlorite. Euhedral epidote crystals. Fairly common relict amygdules of microgranular quartz and subordinate calcite
8S135	421700E, 6217200N	Bradfield Canal A-1	Southwest spur Mt. Jefferson-Coolidge at 5,500 ft elevation	Hornfelsed metavolcanic graywacke. Bedding well preserved, 3 mm - 2 cm thick. Grading, slump structures, and original crystal outlines well preserved. Relict features include volcanic hornblende crystals and plagioclase crystal outlines. Plagioclase composition is now calcic oligoclase. Other metamorphic minerals are red biotite, actinolite, and quartz
8S155	436950E, 6203925N	Ketchikan D-1	Approximately 850 m north-north-west of the summit of Mt. Dolly	Semischistose metavolcanic graywacke interbedded with volcanic conglomerate. Vague outlines of individual clasts and plagioclase grains still visible. Metamorphic minerals are albite-oligoclase, calcite, chlorite, very fine grained white mica, epidote, and opaque minerals
8S166C	420900E, 6209025N	Bradfield Canal A-1	On ridge between Hummel and Greenpoint glaciers at 5,300 ft elevation	Massive dull blue-gray metavolcanic flow. Prominent and weakly alined plagioclase laths to 1/2 mm long. Recrystallized groundmass. Metamorphic minerals include andesine, red biotite, clinozoisite, calcite, chlorite, and opaque minerals

HIGH-GRADE METAPELITES

Sample number	Universal transverse mercator coordinate	Quadrangle	Geographic location	Sample description
9S206A	389750E, 7005800N	Ketchikan A-3	South end Cygnet Island, mouth of Mink Bay	Dark-gray sillimanite-garnet-biotite-plagioclase-quartz gneiss. Alternating leucocratic and biotite-rich layers. Abundant small-scale isoclinal folds in outcrop
9S263A	388525E, 6107025N	Ketchikan A-3	North shore Boca de Quadra, opposite mouth of Mink Bay	Dark-gray fine-grained garnet-biotite-plagioclase-quartz gneiss
0S341A	341490E, 6186750N	Ketchikan D-5	North shore Neets Bay, about 1.6 km northeast of triangulation station Easy and 3.2 km west of the head of Neets Bay	Fine-grained pyritiferous garnet-muscovite-biotite-quartz-plagioclase schist. Dark-bluish-gray where fresh. Weathered surfaces are yellowish to rust colored. Diffuse layers alternately rich in dark and light minerals. Pyrite, biotite, muscovite, quartz, and plagioclase visible in hand specimen. Garnet is smaller than 0.5 mm and visible only in thin section. Biotite is pale reddish brown, and most grains contain tiny opaque inclusions that are probably graphite
0S341B	341490E, 6186750N	Ketchikan D-5	North shore Neets Bay about 1.6 km northeast of triangulation station Easy and 3.2 km west of the head of Neets Bay	Massive medium-grained amphibolite. Sample is from a layer thicker than 10 m in metapelite. Strong orientation of hornblende but only vague compositional layering. Sample is about 65 percent hornblende and 25 percent plagioclase. Remainder of sample consists of biotite, opaque minerals, sphene, and calcite
0S366A	337380E, 6190790N	Ketchikan D-5	South shore Gedney Pass at triangulation station Con	Fine-grained kyanite-biotite-muscovite-quartz-plagioclase schist. Dark blue-gray where fresh. Weak compositional layering. Muscovite more common than biotite; both minerals are about 1 mm in size. Kyanite is not common; it forms subidiomorphic crystals whose long dimensions lie in the foliation plane. Biotite is red brown; crystals commonly have cores jammed with tiny opaque inclusions and rims free of inclusions. Muscovite forms equant transparent crystals free of inclusions
0S366C	337380E, 6190790N	Ketchikan D-5	South shore Gedney Pass at triangulation station Con	Massive medium-grained garnet amphibolite. Sample is from amphibolite interlayer in pelitic schist. Strong orientation of hornblende, but only vague compositional layering. Sample is about 60 percent green hornblende and 30 percent plagioclase. The remainder of the sample consists of (in order of decreasing abundance) pink garnet, opaque minerals, and reddish-brown biotite
2B109	383600E, 6184350N	Ketchikan D-3	On ridge crest approximately 700 m northeast of Hill 3836	Dark green-gray fine-grained quartz-bearing hornblende schist
2B113A	384250E, 6184675N	Ketchikan D-3	On summit of Hill 2965	Porphyroblastic strongly foliated garnet-sillimanite-muscovite-biotite-potassium feldspar-quartz-plagioclase gneiss. Porphyroblasts of garnet up to 10 mm in diameter. Very felsic bands with fairly abundant quartz veins and lenses
2E020A	380450E, 6175900N	Ketchikan C-3	On east shore of Behm Canal at Walker Cove, approximately 600 m north of triangulation station Hut	Dark-gray biotite-hornblende amphibolite. Compositionally banded with quartz-rich layers 1-10 mm thick. Minor calcite and accessory sphene
3B004A	367000E, 6198825N	Ketchikan D-4	On east shore of Behm Canal approximately 1.5 km south of Saks Cove	Gray medium-grained quartz-hornblende-clinopyroxene-biotite-plagioclase gneiss
3B004B	367000E, 6198825N	Ketchikan D-4	On east shore of Behm Canal approximately 1.5 km south of Saks Cove	Gray quartzofeldspathic gneiss
3B005A	366450E, 6199400N	Ketchikan D-4	On east shore of Behm Canal approximately 700 m south of Saks Cove	Medium-grained hornblende-clinopyroxene-biotite-plagioclase-quartz hornfels. Gradational compositional banding; hornfels grades into gray gneiss that in turn grades into pelitic gneiss
3B024A	363400E, 6203350N	Ketchikan D-4	At Dew Point on south shore of entrance to Fitzgibbon Cove. Station is approximately 300 m south of triangulation station Fitz	Medium-grained massive leucocratic biotite quartz monzonite. Biotite largely altered to chlorite and opaque minerals. Minor hornblende. Part of rock consists of coarse quartz monzonite fragments with interstitial microgranular quartz and feldspar; either protoclastic or recrystallized cataclastic texture
3S015	387400E, 6202000N	Ketchikan D-3	300 ft elevation at small tributary to the Leduc River, about 200 m west of Leduc River and 1.8 km southeast of Hill 3952	Sample is from a 20-cm-thick amphibolite layer in metapelitic schist and gneiss unit and consists of about 60 percent hornblende, 30 percent plagioclase, 5 percent biotite, and minor opaque minerals, apatite, and chlorite.
3S020	398400E, 6215100N	Bradfield Canal A-2	Located 3,350 ft elevation on ridge above Indian Creek between the Leduc and Chickamin Rivers	Fine-grained biotite-plagioclase-quartz-potassium feldspar gneiss. Bands, 3 mm - 1 cm thick, composed alternately of leucocratic layers rich in quartz and potassium feldspar and dark layers rich in biotite and plagioclase
3S037	398050E, 6172025N	Ketchikan C-2	2,200 ft elevation about 3.5 km northeast of the head of Rudyerd Bay and 1.9 km south-southwest of Hill 3616	Medium-grained hornblende-biotite-quartz-plagioclase gneiss. Outcrop consists of layers, about 3 cm thick, alternately rich in dark and light minerals. Samples are gray with pepper and salt look. Minerals are all allotriomorphic. Rock consists of about 10 percent deep apple-green hornblende, 10 percent deep red-brown biotite, 35 percent plagioclase, 35 percent quartz, as well as minor opaque minerals and apatite

AMPHIBOLITE

Sample number	Universal transverse mercator coordinate	Quadrangle	Geographic location	Sample description
9S210A	386600E, 6104350N	Ketchikan A-3	South shore Boca de Quadra, approximately 1 km east of the entrance to Vixen Bay	Nematoblastic amphibolite (hornblende-biotite-quartz schist with minor pyrite and chlorite). Bands distinguished by varying proportions of dark and light minerals and grain size. Size range is from 0.25 to 3 mm
9S271A	384350E, 6112250N	Ketchikan A-3	East shore mouth of Badger Bay, Boca de Quadra	Garnet amphibolite (fine-grained nematoblastic dark-gray to black hornblende-garnet-plagioclase schist with minor opaque minerals and chlorite). Garnet occurs as distinct pink porphyroblasts surrounded by thin rims of plagioclase. Strong hornblende lineation
9S271B	384350E, 6112250N	Ketchikan A-3	East shore mouth of Badger Bay, Boca de Quadra	Biotite amphibolite. Fine-grained nematoblastic dark-gray to black hornblende-biotite-plagioclase schist with minor garnet and opaque minerals. Garnet constitutes less than 0.5 percent of the sample. 9S271A and B are interlayered on a scale of a few tens of centimeters
2S015B	380375E, 6172725N	Ketchikan C-3	Approximately 900 m north triangulation station Bed, east shore, Behm Canal, approximately 2 km south of Walker Cove	Rust-colored medium-grained garnet-biotite-sillimanite-plagioclase gneiss layer in amphibolite unit. Minor opaque minerals. Garnet is subhedral and generally larger than other minerals, as large as 0.6 mm in diameter
3E001A	380400E, 6129400N	Ketchikan B-3	Entrance to Smeaton Bay southwest shore Carp Island	Strongly foliated fine-grained biotite amphibolite. Strong hornblende lineation. Main accessory minerals are sphene and opaque minerals
3S004	376550E, 6129025N	Ketchikan B-3	South entrance to Smeaton Bay, 1.6 km south of Pt. Nelson and 500 m northeast of VABM Son	Porphyroblastic epidote-biotite-quartz-plagioclase-hornblende schist. Interlayered with biotite-bearing amphibolite in outcrop. Hornblende is commonly feathery or poikiloblastic. Individual crystals as large as 1 cm. Pleochroic scheme is X = pale straw yellow; Y = apple green; Z = deep blue green. Plagioclase and quartz are xenomorphic and generally smaller than 1 mm. Biotite forms olive-green idiomorphic flakes 1-2 mm across
3S005	384500E, 6128475N	Ketchikan B-3	Approximately 1.1 km east of triangulation station Lop, south shore Smeaton Bay	Medium-grained strongly foliated biotite amphibolite. Minor variations in composition define compositional layers a few millimeters to a few centimeters thick

LOW-GRADE METAMORPHIC ROCKS

Sample number	Universal transverse mercator coordinate	Quadrangle	Geographic location	Sample description
9S300A	375670E, 6106520N	Ketchikan A-3	North shore Boca de Quadra, 2.3 km east of Quadra Point and 1.6 km west of triangulation station Tuffy	Coarsely crystalline dark greenish-gray hornblende-zoisite schist. Dark-green crystals of hornblende, milky zoisite, rounded garnet, and pyrite are all visible in hand specimen. Quartz, albite, opaque minerals, sphene, and a few flakes of muscovite and biotite are visible only in thin section. In thin section hornblende is not strongly pleochroic. X = pale straw <Y = pale yellow-green <Z = pale green. The elongate prisms are slightly poikiloblastic. Zoisite forms elongate prisms intergrown with hornblende, maximum birefringence = 0.008 with anomalous blue colors and strong dispersion; zoned; 2V ranges from (+)25 to 60
9S300B	375670E, 6106520N	Ketchikan A-3	North shore Boca de Quadra, 2.3 km east of Quadra Point and 1.6 km west of triangulation station Tuffy	Medium-grained quartz-albite-biotite-zoisite schist. Bands alternately rich in light and dark minerals a few millimeters to a few centimeters thick. Opaque minerals common but so fine grained they are visible only in thin section. Biotite is reddish brown, crowded with tiny inclusions of opaque minerals, and unaltered
9S301A	375250E, 6106400N	Ketchikan A-3	North shore Boca de Quadra, approximately 1.8 km east of Quadra Point	Porphyroblastic medium-grained garnet-biotite-muscovite-quartz gneiss with minor opaque minerals, chlorite, plagioclase and epidote. Hand specimen has well-developed, small, isoclinal folds with amplitudes of 1/2 - 2 cm. The garnet porphyroblasts are well formed, some contain helicitic trains of opaque minerals, whereas others are sievelike; some garnets are slightly retrograded with partial chlorite rims
9S325B	373950E, 6104300N	Ketchikan A-3	South shore Boca de Quadra, opposite Quadra Point, approximately 250 m east of triangulation station Dome	Fine-grained biotite-muscovite-chlorite-albite-quartz schist with minor actinolite, calcite, zoisite, and sphene. Specimen has been partly retrograded from a higher grade schist. Micas concentrated along foliation planes
0S259A	371800E, 6035680N	Ketchikan B-4	West shore Princess Bay, on Sharp Point peninsula, approximately 800 m north of triangulation station Sharp	Porphyroblastic muscovite-quartz-actinolite-garnet schist. Diffuse layers alternately rich in garnet-actinolite and muscovite-quartz. Actinolite commonly feathery or poikiloblastic. Individual crystals as large as 4 cm. Pleochroic scheme is X = pale straw yellow; Y = apple green; Z = deep blue green. Garnet as large as 1 cm but not common; most crystals are about 4 mm. Muscovite is xenomorphic flakes about 0.5 mm. Minerals present in small amounts are chlorite, biotite, and sphene
9S325C	373700E, 6104250N	Ketchikan A-3	South shore Boca de Quadra, opposite Quadra Point, approximately 250 m east of triangulation station Dome	Fine-grained biotite-muscovite-chlorite-albite quartz schist with minor actinolite, calcite, zoisite, sphene, and opaque minerals. Specimen has been partly retrograded from higher grade schist. 9S325C is finer grained, has smaller content of mica flakes, and is less schistose than 325B. 325C also contains crosscutting idioblastic needles of actinolite as long as 5 mm and randomly oriented flakes of biotite as large as 3 mm
75ASJ 473B	371850E, 6101440N	Ketchikan A-4	Small island at entrance to Kah Shakes Cove, 300 m southeast of triangulation station Shak	Rusty-weathering fine-grained biotite-epidote-plagioclase-quartz schist. Sample comes from a 20-cm-thick layer in a dominantly marble and calcareous schist unit. Minor minerals in the sample are sphene, opaque minerals, muscovite, actinolite, apatite, and chlorite
75ASJ 473C	371850E, 6101440N	Ketchikan A-4	Small island at entrance to Kah Shakes Cove, 300 m southeast of triangulation station Shak	Sheared and recrystallized mafic dike. Dike is a few meters thick. The interior of the dike resisted development of the regional foliation, although the outer part of the dike is now schistose. The dike has been folded and cut into segments by the regional deformation. Sample is a fine-grained actinolite-epidote semischist with minor amounts of biotite, muscovite, plagioclase, opaque minerals, graphite, calcite, sphene, and chlorite

TEXAS CREEK GRANODIORITE

Sample number	Universal transverse mercator coordinate	Quadrangle	Geographic location	Sample description
9MILE	433275E, 6209175N	Bradfield Canal A-1	Approximately 0.4 km north of Ninemile (ruins) on east bank of Salmon River	Leucocratic, massive, porphyritic hornblende andesite metatuff. Subhedral to euhedral plagioclase phenocrysts up to 5 mm long are partly sericitized. Potassium feldspar is generally aphanitic. At least one relict clast of recrystallized andesitic volcanic rock. Some resorbed quartz. Mafic minerals largely altered to chlorite and opaque minerals. Accessory sphene
8DN28	430700E, 6214850N	Bradfield Canal A-1	Hill 3,850 ft on ridge between Texas Glacier and west fork Texas Creek, approximately 2.6 km west of the summit of Cantu Mountain	Slightly altered porphyritic quartz monzonite dike that cuts the Texas Creek Granodiorite. Abundant euhedral phenocrysts of plagioclase and biotite 2-5 mm; less common subhedral quartz phenocrysts 2-4 mm; rare potassium feldspar phenocrysts to 3 mm. Groundmass is dark gray with abundant needles of hornblende to 1 mm
8S125	431600E, 6204250N	Ketchikan D-1	Elevation 2,900 ft, approximately 1.5 km west of Salmon River and 1.2 km northeast of peak 5281	Coarse-grained biotite-hornblende granodiorite
8S160	424100E, 6209640N	Bradfield Canal A-1	3,700 ft elevation at east edge Ferguson Glacier	Coarse-grained hornblende granodiorite. Numerous chlorite-coated joints. Rock is slightly metamorphosed by younger intrusions and has an overall slightly greasy look. Biotite is largely converted to chlorite and plagioclase crystals are now clots of epidote, albite, and white mica
0S008	423250E, 6212900N	Bradfield Canal A-1	At ruins site approximately 1.0 km north of toe of Ferguson Glacier at junction of creeks	Coarse-grained hornblende-biotite granodiorite, slightly metamorphosed by intrusion of younger plutons. Hornblende fresh, euhedral prisms as long as 1 cm, larger than any other mineral. Biotite euhedral books 1-4 mm across, partly altered to chlorite. Plagioclase chalky white due to partial conversion to epidote and white mica. Potassium feldspar is interstitial

FOLIATED QUARTZ DIORITE GRANODIORITE AND QUARTZ MONZONITE

Sample number	Universal transverse mercator coordinate	Quadrangle	Geographic location	Sample description
8SC22	342950E, 6199650N	Ketchikan D-5	Triangulation station Snip- approximately 0.4 km north-northeast of Snipe Point, Bell Island	Medium-grained foliated biotite-hornblende-quartz diorite. Biotite and hornblende are subhedral. Orthopyroxene (hypersthene or enstatite) is a rare constituent
8S196A	426190E, 6179700N	Ketchikan D-1	Along north bank of Davis River at river outlet into Portland Canal. At cabin site	Coarse-grained weakly foliated porphyritic hornblende-biotite granodiorite. Subhedral to euhedral potassium feldspar phenocrysts up to 5 cm long which tend to concentrate in zones. Plagioclase grains commonly zoned. Accessory sphene. Only groundmass included in the mode; phenocrysts make up 5-10 percent of the rock
0S225	386560E, 6116950N	Ketchikan A-3	2,500 ft elevation, approximately 2.1 km east of Badger Bay and 3 km southwest of the outlet of Badger Lake	Coarse-grained foliated biotite-hornblende-quartz diorite. Euhedral biotite to 5 mm; euhedral to subhedral hornblende, a few crystals as large as 1 cm, most 2-5 mm
0S431	340010E, 6195700N	Ketchikan D-5	Northeast shore Hassler Pass, at head of small cove between Behm Canal and Gedney Pass	Foliated heterogeneous coarse-grained hornblende-biotite quartz diorite. Hornblende and biotite fresh. Minor deuteric (?) epidote and chlorite present. Accessory minerals include sphene, opaque minerals, allanite, and apatite
2S012B	381725E, 6174900N	Ketchikan C-3	On south shore of Walker Cove, approximately 600 m east of triangulation station Ledge Pt.	Coarse-grained foliated hornblende-biotite quartz diorite. Schlieren, feldspathic streaks, and elongate inclusions present in outcrop. Accessory sphene and opaque minerals
2B008	386575E, 6176200N	Ketchikan C-3	On north shore of Walker Cove approximately 1.0 km north of triangulation station Dix and 1.4 km west of triangulation station Cult	Coarse-grained leucocratic biotite-hornblende granodiorite with weakly lineated mafics. Biotite partly altered to chlorite. Plagioclase grains commonly are as much as 10 mm long, and potassium feldspar grains generally are less than 5 mm long. Minor epidote. Accessory sphene
2B036	403100E, 6186375N	Ketchikan D-2	Along east bank of tributary that enters Barrier Creek from the north. Approximately 2.7 km northeast of Hill 4645	Coarse-grained homogeneous massive hornblende-biotite quartz diorite. Biotite partly altered to chlorite. Some hornblende altered to epidote. Plagioclase grains commonly are as much as 5 mm long; potassium feldspar grains generally are less than 3 mm long. Accessory sphene and opaque minerals
2B275	388300E, 6160325N	Ketchikan C-3	On north shore of Rudyerd Bay, approximately 1.3 km southwest of triangulation station Lean	Medium-grained hornblende-biotite quartz diorite. Accessory opaque minerals
2E103	404475E, 6197300N	Ketchikan D-2	On Chickamin River, approximately 1.8 km southeast of Hill 4765	Medium-grained homogeneous foliated hornblende-biotite quartz diorite. Some myrmekite intergrowths. Feldspars slightly sericitized. Minor epidote. Accessory sphene and opaque minerals
2E199A	382200E, 6167400N	Ketchikan C-3	On ridge at elevation 1,800 ft on east shore of Behm Canal. Approximately 1.8 km southeast of triangulation station Den 2	Coarse-grained weakly foliated homogeneous biotite-hornblende quartz diorite. Minor epidote. Biotite slightly altered. Accessory sphene
2E324A	372800E, 6192850N	Ketchikan D-4	At elevation 2,000 ft on ridge top along east shore of Behm Canal. Approximately 2.0 km east of triangulation station Hat	Medium-grained foliated hornblende-biotite quartz diorite. Biotite and feldspar fresh. Myrmekite intergrowths common. Accessory sphene
2E347A	385925E, 6198350N	Ketchikan D-3	At elevation 2,700 ft on ridge north of Chickamin River. Approximately 2.1 km east of Hill 4137	Coarse-grained massive homogeneous biotite-hornblende quartz diorite. Some plagioclase grains up to 1 cm long, average grain size 0.5 cm. Biotite largely altered to chlorite. Hornblende slightly altered to chlorite. Feldspar slightly sericitized. Accessory sphene
3E007A	364150E, 6211200N	Bradfield Canal A-4	On north shore of Burroughs Bay at triangulation station Bight 2	Medium-grained weakly foliated hornblende-biotite granodiorite. Biotite largely altered to chlorite and opaque minerals. Minor epidote. Accessory sphene. Myrmekite intergrowths common
3E008A	364300E, 6211550N	Bradfield Canal A-4	On north shore of Burroughs Bay, approximately 500 m east of triangulation station Bight 2	Medium-grained homogeneous massive biotite-hornblende granodiorite. Potassium feldspar is microcline. Minor muscovite and epidote. Quartz anhedral and often intergrown with feldspars. Accessory sphene and opaque minerals
3E022	364100E, 6208600N	Bradfield Canal A-4	On south shore of Burroughs Bay at triangulation station Feat	Medium-grained very weakly foliated homogeneous hornblende-biotite quartz diorite. Some myrmekite intergrowths. Biotite partly altered to chlorite and opaque minerals. Accessory sphene and opaque minerals
3S003	388850E, 6129575N	Ketchikan B-3	Approximately 30 m east of triangulation station Team 2, south shore Smeaton Bay	Coarse-grained strongly foliated biotite-hornblende quartz diorite. Minor epidote; biotite largely altered to chlorite and opaque minerals; feldspar largely sericitized
3S009	404900E, 6210975N	Bradfield Canal A-2	Base of cliffs, south side of Chickamin River Canyon, 9.1 km east-northeast of Banded Mountain	Medium-grained leucocratic massive biotite quartz monzonite. Biotite is generally less than 2 mm long, largely interstitial and partly altered to chlorite. Feldspars are fresh; potassium feldspar is microcline perthite. Sphene and allanite are prominent accessory minerals
3S013	381850E, 6185100N	Ketchikan D-3	Near head of canyon on south shore of Chickamin River approximately 7.5 km upstream from outlet of Chickamin River into Behm Canal	Coarse-grained weakly foliated biotite-hornblende quartz diorite. Minor epidote. Biotite partly altered to chlorite and opaque minerals. Hornblende crystals as long as 2 cm. Feldspars partly altered to sericite. Accessory sphene
3S014	382175E, 6195000N	Ketchikan D-3	On south shore of east fork of Humpy Creek, a tributary of Chickamin River. Approximately 0.9 km north of Hill 2612	Medium-grained very weakly foliated biotite-hornblende granodiorite. Minor epidote. Biotite partly altered to chlorite. Feldspar slightly sericitized. Accessory minerals include sphene and opaque minerals
3S021	391750E, 6206950N	Ketchikan D-3	North shore of Leduc River, approximately 12 km upstream from the junction of Leduc and Chickamin Rivers	Fine- to coarse-grained strongly foliated compositionally banded hornblende-biotite granodiorite. Potassium feldspar is rare. Fine-grained layers alternate with pegmatitic layers rich in potassium feldspar. Minor epidote. Biotite partly altered to chlorite. Some myrmekitic intergrowths. Feldspars slightly sericitized. Accessory sphene and opaque minerals
3S022	388625E, 6184975N	Ketchikan D-3	West shore King Creek, approximately 6.8 km upstream of King Creek-Chickamin River junction	Coarse-grained massive hornblende-biotite granodiorite. Minor muscovite. Biotite partly to extensively altered to chlorite and opaque minerals. Feldspar partly sericitized. Minor calcite. Accessory opaque minerals and sphene
3S023	372500E, 6202150N	Ketchikan D-4	Top of Hill 3191. Approximately 1.7 km southwest of the outlet of Saks Lake	Fine- to medium-grained leucocratic weakly foliated hornblende-biotite granodiorite. minor muscovite. Biotite, mostly fresh, locally partly altered to chlorite. Feldspar partly sericitized. Rare myrmekitic intergrowths. Accessory sphene and opaque minerals
3S025	387150E, 6196750N	Ketchikan D-3	On south bank of Chickamin River, approximately 1.5 km west of the junction of Leduc River and Chickamin River. 1.9 km north of Hill 3365	Coarse-grained protoclastic biotite-hornblende quartz diorite. Some pegmatitic biotite 2 cm long. Plagioclase commonly subhedral to euhedral, locally sericitized. Biotite often partly altered to chlorite. Hornblende sometimes slightly altered to chlorite. Accessory opaque minerals
3S026	395450E, 6203025N	Ketchikan D-3	East bank Chickamin River, approximately 200 ft elevation, 550 m west of east border of quadrangle and 4.1 km south of north edge of quadrangle	Heterogeneous coarse-grained schlieric to irregularly banded sphene-bearing hornblende-biotite leuco quartz diorite. Elongate mafic xenoliths of schist and gneiss make up about 25 percent of the outcrop. Sample shows weak layering caused by slight variations in content of mafic minerals. Texture is allotriomorphic granular. Plagioclase is anhedral, although all crystal boundaries are straight; it is unzoned. Hornblende is more abundant than biotite, but together they make up only about 7 percent of sample. Both are fresh. Accessory minerals are sphene, apatite, and opaque minerals
3S028	407575E, 6197700N	Ketchikan D-2	South shore of Chickamin River near southwestern extremity of Through Glacier. Approximately 1.5 km southwest of Hill 3730	Fine-grained massive hornblende-biotite quartz monzonite. Minor muscovite. Biotite partly to extensively altered to chlorite. Feldspar slightly sericitized. Rare myrmekitic intergrowths. Some zoned plagioclase. Accessory sphene and opaque minerals
3S029	404050E, 6189925N	Ketchikan D-2	Approximately 1.2 km northeast of Hill 5290 on the north shore of a tributary that enters Barrier Creek from the north	Medium- to coarse-grained compositionally banded hornblende biotite granodiorite. Rounded nebulitic inclusions common. Potassium feldspar generally coarse grained. Feldspar slightly sericitized. Biotite partly altered to chlorite. Accessory sphene and opaque minerals
3S030	348000E, 6201275N	Ketchikan D-5	At triangulation station Tip 2, south shore Behm Narrows-Behm Canal	Coarse-grained biotite-hornblende quartz diorite. Some hornblende as long as 1 cm. Minor garnet. Biotite generally fresh; some slightly altered to chlorite. Feldspar generally fresh, some slightly sericitized. No potassium feldspar. Accessory sphene and orthopyroxene
3S031	353025E, 6203500N	Ketchikan D-5	At triangulation station Gad 2 on east side of Claude Point, Behm Canal	Coarse-grained weakly foliated leucocratic biotite-hornblende quartz diorite. Minor garnet. Some myrmekitic intergrowths. Accessory sphene and opaque minerals
3S032	357075E, 6204750N	Ketchikan D-4	800 m east of triangulation station Fag 2, southwest of entrance to Burroughs Bay, Behm Canal	Coarse-grained weakly foliated leucocratic biotite-hornblende quartz diorite. Minor garnet very slightly altered to chlorite. Biotite partly altered to chlorite. Feldspar slightly sericitized. Accessory sphene
3S033	361850E, 6200725N	Ketchikan D-4	At triangulation station Bag 2, southwest of Fitzgibbon Cove, Behm Canal	Coarse-grained very weakly foliated hornblende-biotite quartz diorite. Minor garnet. Biotite and hornblende slightly altered to chlorite. Accessory sphene
3S035	376725E, 6183700N	Ketchikan D-3	At Trap Point on south shore of outlet of Chickamin River	Medium-grained weakly foliated biotite-hornblende quartz diorite. Weak gneissose structure or irregular banding. Minor garnet and accessory sphene
3S036	409075E, 6185750N	Ketchikan D-2	On ridge top, approximately 1.5 km east of Hill 5075, north of and near headwaters of Barrier Creek	Coarse-grained weakly foliated hornblende-biotite granodiorite. Some hornblende grains as long as 1 cm. Scarce equidimensional subhedral potassium feldspar grains as long as 1 cm. Biotite partly altered to chlorite. Calcium-rich cores of some plagioclase grains sericitized. Most plagioclase is unzoned. Accessory sphene visible in hand specimen. Other accessory minerals include zircon, apatite, and opaque minerals
3S038	419300E, 6173125N	Ketchikan C-1	At elevation 1,100 ft. Approximately 1.5 km northwest of Hill 3685 and 1.4 km northeast of Hill 4885	Medium-grained slightly porphyritic biotite-hornblende quartz diorite. Plagioclase grains are euhedral and as long as 1 cm. Other minerals are subhedral and anhedral and fit in around plagioclase grains. Biotite partly altered to chlorite. Accessory sphene visible in hand specimen. Other accessory minerals are opaque minerals and apatite
3S039	401000E, 6159000N	Ketchikan C-2	On south ridge of Hill 4080, approximately 500 m from summit. Approximately 4.5 km north of Goat Lake	Medium-grained weakly foliated homogeneous hornblende biotite granodiorite. Biotite partly altered to chlorite. Plagioclase euhedral and unzoned, locally sericitized. Hornblende locally altered to chlorite and actinolite. Accessory sphene and epidote visible in hand specimen. Other accessory minerals include opaque minerals and apatite
75ASJ 412	315675E, 6207075N	Ketchikan D-6	3,300 ft on southeast shoulder of Twin Rift Mountain, 400 m south-east of Peak 3502	Coarse-grained foliated homogeneous biotite quartz diorite. Rare elongate mafic inclusions are present in outcrop. Biotite and hornblende crystals are as large as 0.5 cm. Accessory minerals are epidote, rare anhedral sphene, apatite, and opaque minerals
75ASJ 413	329190E, 6202275N	Ketchikan D-6	Summit of Peak 3250, 2.2 km northeast of triangulation station Goat and 4.3 km west of east border of the quadrangle	Coarse-grained foliated homogeneous biotite-hornblende quartz diorite. Subhedral biotite and hornblende are as large as 0.5 cm. Many biotite and plagioclase grains are bent. Accessory minerals include epidote, opaque minerals, apatite, and zircon.
75ASJ 414	332630E, 6196460N	Ketchikan D-6	Northwest shore Blind Pass between Black and Hassler Islands. Approximately 1.1 km northeast of triangulation station Blind and 0.6 km west of east margin of quadrangle	Coarse-grained strongly foliated homogeneous biotite-hornblende quartz diorite. Biotite and hornblende subhedral, as large as 0.5 cm, and tend to occur together in clumps. Biotite is reddish brown. Accessory minerals include epidote, opaque minerals, apatite, zircon, and subhedral sphene

MASSIVE, LEUCOCRATIC BIOTITE QUARTZ MONZONITE AND GRANODIORITE

Sample number	Universal transverse mercator coordinate	Quadrangle	Geographic location	Sample description
8DN47	422475E, 6191100N	Ketchikan D-1	Along east side of Soule Glacier at elevation 1,400 ft, approximately 2.3 km southwest of Hill 3944	Hyder Quartz Monzonite. Medium-grained weakly foliated hornblende biotite granodiorite. Potassium feldspar is anhedral, interstitial microcline. Plagioclase is subhedral, strongly twinned, and zoned. Many calcic cores altered. Biotite ragged and slightly chloritized. Hornblende is subhedral and not common. Accessory minerals are abundant sphene (visible in hand specimen), opaque minerals and apatite
8DN75	432260E, 6217710N	Bradfield Canal A-1	Along east side of unnamed glacier south of Boundary Glacier. At elevation 4,750 ft, approximately 600 m northwest of Mon 14 along international boundary	Boundary Granodiorite. Medium-grained massive hornblende-biotite granodiorite. Potassium feldspar is anhedral interstitial microcline. Plagioclase euhedral and strongly zoned. Many grains partly sericitized. Biotite largely altered to chlorite, opaque minerals, and sphene. Hornblende partly altered to chlorite. Minor secondary epidote. Common accessory minerals are euhedral sphene and opaque minerals
8S52	436580E, 6196600N	Ketchikan D-1	At Hyder quarry at sea level	Hyder Quartz Monzonite. Fine- to medium-grained massive sphene-bearing biotite granodiorite. Potassium feldspar is microcline, largely anhedral and interstitial; rare subpoikilitic crystals as long as 2 cm. Plagioclase mostly euhedral, strongly zoned crystals with multiple twins. No hornblende. Biotite partly altered to chlorite
8S163	421240E, 6218500N	Bradfield Canal A-1	Small nunatak in Chickamin Glacier. Approximately 400 m north of British Columbia-Alaska boundary. 1.85 km northwest of Mt. Jefferson-Coolidge	Coast Range intrusive. Medium- to coarse-grained massive sphene-bearing hornblende-biotite quartz monzonite. Xenoliths common in outcrop. Potassium feldspar is subhedral interstitial microcline. Plagioclase is subhedral and strongly zoned. Biotite slightly altered to chlorite. Accessory minerals are euhedral sphene, opaque minerals, and apatite
2S129	425850E, 6188000N	Ketchikan D-1	Small hill, 200 m southwest of confluence of stream draining Soule Glacier and Lake 601. Site is approximately 3.5 km northwest of Portland Canal	Hyder Quartz Monzonite. Massive coarse-grained very weakly foliated hypidiomorphic sphene-bearing biotite-hornblende granodiorite. Outcrop has a few angular mafic xenoliths. Sample contains rare subpoikilitic microcline crystals 2 to 3 cm across. Otherwise microcline is anhedral and interstitial. Plagioclase is euhedral and strongly zoned. A few crystals are bent and broken. Hornblende forms green euhedral prisms, a few of which are bent and broken and a few partly altered to chlorite. Biotite is subhedral; books commonly have ragged edges. Biotite books commonly are slightly bent and altered to chlorite. Accessory minerals are sphene, apatite, and opaque minerals
3S010	407300E, 6219650N	Bradfield Canal A-2	At elevation 4,000 ft on west facing ridge along edge of glacier east of Leduc River. Approximately 5.0 km southwest of Mt. John Jay	Medium-grained strongly foliated hornblende granodiorite. Minor alteration of biotite to chlorite. Feldspar slightly sericitized. Plagioclase subhedral, twinned, and zoned. Rare myrmekitic intergrowths. Accessory sphene visible in hand specimen. Other accessories include opaque minerals, apatite, and allanite
3S011	405550E, 6226050N	Bradfield Canal A-2	Approximate elevation 1,600 ft on east wall of Leduc River canyon. Approximately 2.6 km west of Hill 5554	Coarse-grained massive homogeneous leucocratic quartz monzonite. Biotite partly altered to chlorite and opaque minerals. Feldspar generally fresh; potassium feldspar is microcline perthite
3S012	401050E, 6218375N	Bradfield Canal A-2	At elevation 300 ft on west shore of Leduc River, approximately 3.4 km south of Hill 4754	Leucocratic porphyritic biotite granodiorite(?). Blue-gray felsophyric groundmass. Phenocrystic minerals are quartz, plagioclase, potassium feldspar, and biotite. Quartz is equant, plagioclase is subhedral; both are fractured and as long as 1 cm. Plagioclase is strongly zoned. Perthitic potassium feldspar phenocrysts range in size from 0.5 to 5 cm; most are 0.5-2 cm. The larger potassium feldspar phenocrysts are euhedral although fractured; the smaller are subhedral. Biotite is generally less than 1 mm long; partly to largely altered to chlorite and opaque minerals. Accessory allanite, sphene, and opaque minerals. Possibly a reheated mylonite
3S017	390500E, 6214300N	Bradfield Canal A-3	Along minor tributary to Leduc River; west of Leduc River. Elevation 2,100 ft. Approximately 1.7 km north of Hill 4285	Medium-grained foliated biotite-hornblende quartz diorite. Minor sphene. Biotite slightly altered to chlorite. Accessory opaque minerals and apatite
3S018	395200E, 6214425N	Bradfield Canal A-3	On east bank of Leduc River at elevation 600 ft. Approximately 5.8 km north of Hill 4720	Fine- to coarse-grained biotite quartz monzonite. Weak foliation and vague compositional banding shown by streaked-out mafic clots and grains. Mafic minerals are fine grained, and felsic minerals are medium to coarse grained. Biotite partly altered to chlorite and opaque minerals
3S019	393200E, 6222950N	Bradfield Canal A-3	At edge of glacier near headwaters of a small tributary of Leduc River. At elevation 1,900 ft, approximately 3.1 km south of Hill 4143	Fine- to coarse-grained biotite quartz monzonite with weak schlieric streaking and vague compositional banding. Slightly porphyritic; all mafic minerals are fine grained and felsic minerals are generally coarse grained with some grains as large as 3 cm. Minor epidote. Biotite partly altered to chlorite and opaque minerals. Feldspar slightly sericitized. Accessory sphene, allanite, and opaque minerals
3S027	408200E, 6205250N	Ketchikan D-2	On shore of north-south-trending tributary that enters Chickamin River from the north. At elevation 2,800 ft, approximately 1.9 km west of Hill 5784	Porphyritic slightly schlieric hornblende biotite syenodiorite. Mafic minerals are fine grained, and felsic minerals are generally medium grained. Potassium feldspar phenocrysts are as long as 2 cm; locally augen shaped. Biotite largely altered to chlorite and opaque minerals. Feldspars intensely sericitized. Minor allanite. Accessory sphene, opaque minerals, and apatite
3S043	390800E, 6145425N	Ketchikan B-3	On a ridge crest to the southeast of upper Checats Lake. At elevation 3,200 ft; approximately 1.7 km northeast of Hill 3650	Massive medium-grained hypidiomorphic-granular biotite-bearing gabbro. Biotite is anhedral and interstitial

SYKES LAKE PLUTON

Sample number	Universal transverse mercator coordinate	Quadrangle	Geographic location	Sample description
75ASJ 509	372380E, 6117380N	Ketchikan A-4	Small lake, 1,190 ft elevation, 1.6 km north of Backbone Mountain and 0.2 km west of east edge of quadrangle	Sykes Lake pluton. Weakly foliated medium-grained hypidiomorphic hornblende-biotite granodiorite. Sample is deuterically altered as is all of the pluton with the formation of muscovite in plagioclase crystals and abundant epidote and minor chlorite in groundmass. Hornblende has a blue-green tint. Accessory minerals include opaque minerals and apatite

PORPHYRITIC GARNET-BEARING GRANODIORITE

Sample number	Universal transverse mercator coordinate	Quadrangle	Geographic location	Sample description
0S379	329600E, 6181360N	Ketchikan C-6	East shore Behm Canal, 2.2 km northeast of Bushy Point and 100 m south of north border of quadrangle	Porphyritic homogeneous garnet-bearing granodiorite. No foliation or inclusions of country rock are present in outcrop. Euhedral milky white plagioclase phenocrysts as long as 1 cm, many of which have euhedral red garnet crystals in their centers, are the most conspicuous feature of the sample. The garnet is probably primary. All other minerals are anhedral and smaller than 2 mm. In thin section plagioclase crystals are partly altered to epidote and muscovite. In most grains these new minerals are as large as 0.2 mm, distinct and well formed. Many crystals are oriented along crystallographic directions in the plagioclase. Hornblende and biotite are present in about equal amounts. Grains are subhedral and slightly altered to chlorite. Accessory minerals are sphene, allanite, opaque minerals, and apatite

TRONDHJEMITE

Sample number	Universal transverse mercator coordinate	Quadrangle	Geographic location	Sample description
3S007	381075E, 6135900N	Ketchikan B-3	Small cove, east shore Behm Canal, between Smeaton Bay and Winstanley Island, approximately 350 m northeast of VABM Pan	Coarse-grained leucocratic trondhjemite. Outcrops at the sample site are interlayered amphibolite (40 percent) and trondhjemite (60 percent). Layers range in thickness from a few centimeters to several meters and commonly pinch and swell. The sample collected is coarse-grained, weakly foliated, and indistinctly layered trondhjemite. Zoned oligoclase. Many twin lamellae are slightly bent. Biotite is the only mafic mineral and is anhedral. Some layers are richer and others poorer in biotite, but overall biotite makes up only 2 percent of the sample. Some grains are slightly altered to chlorite and small opaque grains. An occasional small anhedral sphene grain is the only accessory mineral present

OTHER

Sample number	Universal transverse mercator coordinate	Quadrangle	Geographic location	Sample description
75ASJ 417	333750E, 6144720N	Ketchikan B-5	2,250 ft elevation, approximately 500 m south-southeast of summit of Brown Mountain	Deer Mountain pluton. Homogeneous medium-grained hypidiomorphic granular biotite-hornblende granodiorite. Plagioclase is strongly zoned. Hornblende is fresh, deep green, and subhedral. Many crystals have cores of pyroxene. Accessory minerals are chiefly apatite and opaque minerals

MAP SHOWING GENERAL GEOLOGY AND LOCATION OF CHEMICALLY AND RADIOMETRICALLY ANALYZED SAMPLES IN PARTS OF THE KETCHIKAN, BRADFIELD CANAL, AND PRINCE RUPERT QUADRANGLES, SOUTHEASTERN ALASKA

By

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