UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Major oxide analyses, CIPW norms, modes, and bulk specific gravities of plutonic rocks from the Mariposa 1° x 2° sheet, central Sierra Nevada, California

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This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards and stratigraphic nomenclature. The following names of lithodemes have not yet been formalized: Blue Canyon Tonalite, Knowles Granodiorite, Dinkey Creek Granodiorite, Lake Edison Granodiorite, Mono Recesses Granite, and Evolution Basin Alaskite.

1. Menlo Park, California

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Introduction

The following tables include major-oxide analyses, CIPW norms, modes, and specific gravities of 499 samples of plutonic rocks collected from the area of the Mariposa, California 1° x 2° sheet during the 30-year period between 1953 and 1983. Samples averaged about 1 kg in weight. The Mariposa sheet spans the central part of the Sierra Nevada batholith between lat 37° and 38° N. The analyses are reported in four groups corresponding to four geographic areas: (1) the Sierra National Forest, (2) the Yosemite area, (3) the eastern Sierra Nevada and the Benton Range, and (4) the White and northern Inyo Mountains (Fig. 1). Within these areas the analyses are arranged by intrusive suite, lithodeme, and pluton and (or) facies. The analyzed samples were collected during the course of geologic mapping and were selected as being representative of the rocks sampled. Modes, norms, and most chemical compositions were determined in the laboratories of the Geological Survey. However, samples from the Tuolumne Intrusive Suite numbered Z-5 to Z-64 were analyzed chiefly by X-ray fluorescence in the laboratories of the Australian National University.

Major oxides

Most of the samples were analyzed by the rapid method of Shapiro and Brannock (1962), but some, especially prior to 1960, were analyzed by conventional chemical methods (Peck, 1964). A few since 1975 were analyzed by X-ray fluorescence (Taggart and others, 1981) with FeO, H_2O and CO_2 determined by wet chemical methods. The X-ray fluorescence analyses made in Australia of the Z-numbered samples from the Tuolumne Intrusive Suite were completed in the laboratories of the U. S. Geological Survey by wet chemical analyses for FeO, H_2O, and CO_2. Sums of conventional chemical analyses are reported to two decimal places (e.g., 99.89), whereas rapid and X-ray fluorescence analyses are reported to only one decimal place (e.g., 99.9) with the exception of the Z-numbered samples, which are reported to two decimal places.

CIPW norms

A graphic normative analysis program (GNAP) developed by Stuckless and Van Trump, (1979) was used to calculate the CIPW norms. Chemical analyses were adjusted to sum to 100 percent on a H_2O-CO_2-free basis prior to norm calculation.

Modes

Modes of medium- and coarse-grained rocks and some fine-grained rocks were determined by point-counting sawed and polished slabs on which plagioclase was stained red and K-feldspar yellow (Norman, 1974); the modes of most fine-grained rocks were determined by point counting thin sections. Only quartz, K-feldspar, plagioclase, and total mafic minerals can be distinguished on stained slabs, and where hornblende, biotite, and accessory minerals are reported, their ratios to one another were determined in thin section and apportioned to the total content of mafic and accessory minerals determined on stained slabs.

The areas of most stained slabs exceed 70 cm^2 and many are more than twice this size. However, some slabs from the eastern Sierra Nevada and Benton Range, which were cut from samples collected before 1955, are smaller. At least 1,000 points were counted on each slab, which would permit assigning limits of error of less than $\pm$ 3 percent, if the distance between the points had been at least as great as the distance across the largest grains (Van der Plas and Tobi, 1965). However, few of the slabs are large enough in relation

to the grain size to permit assigning meaningful limits of error on the modes. Nevertheless, plots of modes on maps and diagrams make reasonable and informative patterns.

Specific gravities

Specific gravities were determined with a direct-reading beam balance. Samples of at least 0.5 kg were first weighed in air. They were then weighed in water following a period of immersion to allow air in cracks and adhering to the surface to escape.

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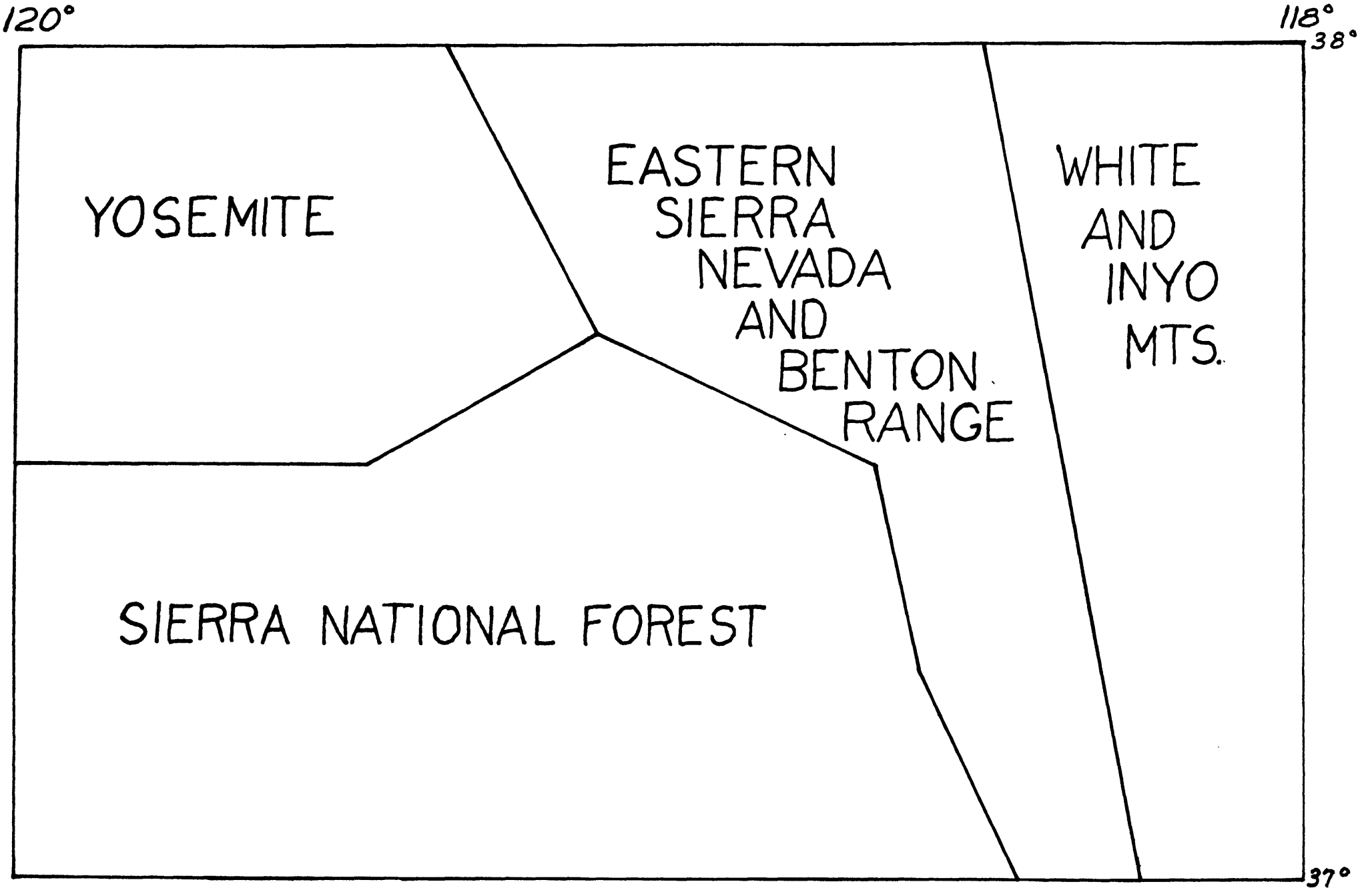

Figure 1. Mariposa 1° x 2° sheet showing the different geographic areas

SIERRA NATIONAL FOREST

FINE GOLD INTRUSIVE SUITE

	Tonalite of Ross Creek	Blue Canyon Tonalite								
Field No.	SLb-64	Ma-8	Ma-27	Ma-44	Mb-6	Mb-30	Mc-19	Mc-21	Md-5	Mc-49
Lab. No.	M-118542W	M-145307	M-145309	M-145310	M-145311	M-145312	M-145314	M-145315	M-145316	M-145319
North Lat.	37°14.0'	37°28.8'	37°26.7'	37°22.7'	37°27.2'	37°29.7'	37°19.7'	37°18.8'	37°20.5'	37°22.0'
West Long.	119°20.6'	119°53.9'	119°57.9'	119°54.1'	119°54.7'	119°48.5'	119°54.9'	119°47.3'	119°49.5'	119°52.5'
Chemical analyses (weight percent)										
SiO_2	61.6	59.4	64.4	61.3	67.7	66.2	61.8	61.9	60.4	67.1
Al_2O_3	16.8	17.6	16.4	16.6	15.2	16.2	17.1	15.9	17.7	17.0
Fe_2O_3	2.1	1.15	0.82	1.38	0.85	1.26	1.06	0.86	0.82	0.66
FeO	4.3	4.65	3.49	4.38	2.65	2.55	4.35	4.43	4.48	2.67
MgO	3.3	3.47	2.30	3.24	1.80	1.85	3.13	3.94	3.36	1.66
CaO	5.6	6.84	4.67	5.91	3.53	4.46	6.07	5.17	6.55	4.46
Na_2O	3.1	3.17	3.24	3.11	2.86	3.44	3.41	3.36	3.36	3.99
K_2O	2.5	1.43	2.45	1.84	3.77	2.05	1.46	2.37	1.32	1.31
H_2O^+	0.70	0.92	0.96	0.95	0.63	0.88	1.00	1.13	1.15	0.80
H_2O^-	0.06	0.14	0.17	0.11	0.11	0.21	0.12	0.16	0.12	0.10
TiO_2	0.81	0.79	0.55	0.77	0.50	0.48	0.68	0.77	0.69	0.51
P_2O_5	0.14	0.18	0.14	0.18	0.1	0.15	0.13	0.19	0.17	0.15
MnO	0.08	0.1	0.07	0.1	0.05	0.07	0.09	0.08	0.09	0.05
CO_2	0.06	0.18	0.19	0.32	0.07	0.16	0.09	0.12	0.16	0.19
Sum	101.2	100.0	99.9	100.2	99.8	100.0	100.5	100.4	100.4	100.7
CIPW norms (weight percent)										
Q	15.7	14.1	21.2	17.2	25.4	25.4	16.9	14.8	14.8	25.7
C	—	—	0.3	—	0.2	0.6	—	—	—	1.3
or	14.7	8.6	14.7	11.0	22.5	12.3	8.7	14.2	7.9	7.8
ab	26.1	27.2	27.8	26.6	24.4	29.5	29.1	28.7	28.7	33.9
an	24.5	29.9	22.6	26.2	17.0	21.4	27.2	21.5	29.6	21.2
di	1.9	2.6	—	1.9	—	—	1.8	2.6	1.7	—
hy	12.2	14.0	10.8	13.1	8.0	7.7	13.2	15.0	14.3	7.8
mt	3.0	1.7	1.2	2.0	1.2	1.9	1.5	1.3	1.2	1.0
il	1.5	1.5	1.1	1.5	1.0	0.9	1.3	1.5	1.3	1.0
ap	0.3	0.4	0.3	0.4	0.2	0.4	0.3	0.5	0.4	0.4
ol	—	—	—	—	—	—	—	—	—	—
Total	99.9	100.0	100.0	99.9	99.9	100.1	100.0	100.1	99.9	100.1
Modes (volume percent)										
Quartz	—	15	23	13	27	29	15	16	18	12
K-feldspar	—	0	4	1	16	0	0	1	0	2
Plagioclase	—	53	50	45	35	49	55	47	49	65
Biotite	—	20	13	24	15	17	17	23	14	18
Hornblende	—	12	10	17	7	5	13	13	19	3
Mafic minerals undivided	—	—	—	—	—	—	—	—	—	—
Total	—	100	100	100	100	100	100	100	100	100
Bulk specific gravity	—	2.80	2.73	2.78	2.70	2.72	2.76	2.77	2.77	2.74

	Blue Canyon Tonalite—Continued									
Field No.	C-CR-5	C-CR-10	C-CR-19	C-CR-27	BLa-5	BLa-11	BLa-16	BLa-29	BLa-35	BLc-11
Lab. No.	M-112949W	M-112950W	M-112953W	M-112954W	M-145282	M-145284	M-145286	M-145290	M-145291	M-145295
North Lat.	37°28.1'	37°21.9'	37°17.6'	37°8.9'	37°26.8'	37°28.5'	37°25.6'	37°28.3'	37°26.2'	37°15.5'
West Long.	119°52.5'	119°52.3'	119°45.6'	119°51.5'	119°44.9'	119°38.4'	119°38.1'	119°42.6'	119°40.5'	119°42.1'
Chemical analyses (weight percent)										
SiO_2	60.1	54.2	66.4	64.6	69.4	67.8	61.6	73.0	62.1	62.6
Al_2O_3	17.1	18.7	16.4	17.1	15.4	14.7	16.5	13.9	16.5	15.2
Fe_2O_3	0.70	0.00	0.14	0.32	1.07	1.15	1.54	0.71	1.46	0.76
FeO	5.0	7.2	3.6	3.8	2.32	2.44	4.06	1.24	3.51	5.62
MgO	3.3	4.3	1.8	2.1	1.4	1.8	3.0	0.85	3.2	3.5
CaO	6.1	6.9	4.5	4.9	3.86	3.74	5.34	2.26	5.34	4.95
Na_2O	3.2	3.4	3.5	3.4	3.4	3.0	3.0	3.1	3.4	2.9
K_2O	1.7	2.4	1.9	1.7	2.20	3.14	2.25	3.82	2.06	2.35
H_2O^+	1.1	1.2	0.77	0.97	0.65	0.55	1.06	0.36	1.13	1.05
H_2O^-	0.14	0.11	0.13	0.13	0.05	0.06	0.20	0.06	0.17	0.03
TiO_2	0.88	0.93	0.50	0.62	0.39	0.49	0.80	0.23	0.66	0.84
P_2O_5	0.18	0.26	0.11	0.13	<0.1	<0.1	0.1	<0.1	0.2	0.1
MnO	0.13	0.15	0.07	0.08	0.06	0.06	0.09	0.04	0.08	0.1
CO_2	<0.05	<0.05	<0.05	<0.05	0.09	0.01	0.01	<0.01	0.01	0.09
Sum	99.7	99.8	99.9	99.9	100.3	98.9	99.6	99.6	99.8	100.1
CIPW norms (weight percent)										
Q	14.8	0.2	24.4	22.7	29.7	27.1	18.1	33.9	17.4	18.0
C	—	—	0.7	1.1	0.4	—	—	0.6	—	—
or	10.2	14.4	11.4	10.2	13.1	18.9	13.5	22.8	12.4	14.0
ab	27.5	29.2	29.9	29.1	28.9	25.8	25.8	26.5	29.2	24.8
an	27.7	29.1	21.8	23.8	19.2	17.7	25.3	11.3	24.0	21.8
di	1.5	3.3	—	—	—	1.0	0.8	—	1.2	2.0
hy	15.1	21.4	10.4	11.2	6.4	7.0	12.3	3.5	11.9	16.4
mt	1.0	—	0.2	0.5	1.6	1.7	2.3	1.0	2.1	1.1
il	1.7	1.8	1.0	1.2	0.7	1.0	1.5	0.4	1.3	1.6
ap	0.4	0.6	0.3	0.3	—	—	0.2	—	0.5	0.2
ol	—	—	—	—	—	—	—	—	—	—
Total	99.9	100.0	100.2	100.1	100.0	100.2	99.8	100.0	100.0	99.9
Modes (volume percent)										
Quartz	25	15	34	28	30	25	20	33	19	25
K-feldspar	0	0	1	tr	6	11	1	18	1	1
Plagioclase	51	60	50	54	53	45	53	41	51	46
Biotite	—	—	—	—	—	—	—	—	—	18
Hornblende	—	—	—	—	—	—	—	—	—	10
Mafic minerals undivided	24	25	15	18	12	19	26	8	29	—
Total	100	100	100	100	101	100	100	100	100	100
Bulk specific gravity	—	—	—	—	2.70	2.70	2.75	2.66	2.73	2.79

Blue Canyon Tonalite—Continued

Field No.	BLc-42	BLd-13	BLd-27	BLd-30	SP-149	RDa-1	MLa-19	MLb-6	MLb-12	MLb-69	MLc-154
Lab. No.	M-145297	M-145301	M-145303	M-145304	M-101050W	W-192284	W-192273	W-192274	W-192490	W-192275	W-192281
North Lat.	37°16.9'	37°16.1'	37°18.9'	37°21.9'	37°21.2'	37°8.8'	37°8.8'	37°12.6'	37°8.2'	37°11.3'	37°6.6'
West Long.	119°44.2'	119°34.9'	119°30.1'	119°31.0'	119°29.0'	119°54.8'	119°43.9'	119°33.5'	119°36.2'	119°36.5'	119°39.7'
Chemical analyses (weight percent)											
SiO_2	64.1	65.9	69.3	66.9	65.6	65.0	64.3	65.0	65.0	63.4	65.7
Al_2O_3	16.5	14.9	15.5	15.8	16.2	16.7	16.5	16.7	16.6	16.9	16.5
Fe_2O_3	0.60	0.09	0.72	1.17	1.4	0.97	0.82	1.2	1.1	1.1	0.97
FeO	4.10	3.97	1.93	2.66	2.8	3.5	4.1	3.6	3.0	4.0	3.0
MgO	2.6	1.9	1.2	1.8	2.0	2.3	2.6	2.1	2.3	2.3	1.8
CaO	4.79	3.90	3.88	4.45	4.6	5.1	5.0	5.0	5.0	5.4	4.8
Na_2O	3.5	2.2	3.6	3.4	3.1	3.5	3.4	3.5	4.0	3.3	3.6
K_2O	2.24	4.13	2.25	2.20	3.0	1.6	1.9	1.6	1.3	2.1	1.9
H_2O^+	0.73	0.76	0.53	0.70	0.74	0.76	0.84	0.89	0.66	0.81	0.83
H_2O^-	0.01	0.03	0.06	0.08	0.07	0.07	0.04	0.00	0.15	0.08	0.05
TiO_2	0.61	0.53	0.39	0.55	0.61	0.73	0.64	0.68	0.50	0.62	0.53
P_2O_5	<0.1	0.1	<0.1	0.1	0.12	0.18	0.17	0.17	0.16	0.15	0.15
MnO	0.08	0.08	0.04	0.06	0.10	0.05	0.07	0.06	0.06	0.06	0.05
CO_2	<0.01	<0.01	<0.01	0.01	<0.05	0.02	0.01	0.02	0.04	0.06	0.02
Sum	99.9	98.5	99.4	99.9	100.4	100.5	100.4	100.5	99.9	100.3	99.9
CIPW norms (weight percent)											
Q	18.6	24.0	28.9	25.6	22.4	22.7	20.5	23.1	21.6	19.4	23.4
C	—	—	0.1	—	—	0.4	0.2	0.5	—	—	0.2
or	13.4	25.0	13.5	13.1	17.8	9.5	11.3	9.5	7.8	12.5	11.3
ab	29.9	19.1	30.8	29.0	26.4	29.7	28.9	29.7	34.2	28.1	30.8
an	23.0	19.0	19.5	21.5	21.5	24.2	23.8	23.8	23.7	25.3	23.1
di	0.9	0.1	—	0.1	0.5	—	—	—	0.2	0.6	—
hy	12.3	11.4	5.4	7.6	7.9	10.3	12.5	9.9	9.6	11.0	8.5
mt	0.9	0.1	1.1	1.7	2.0	1.4	1.2	1.7	1.6	1.6	1.4
il	1.2	1.0	0.8	1.1	1.2	1.4	1.2	1.3	1.0	1.2	1.0
ap	—	0.2	—	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4
ol	—	—	—	—	—	—	—	—	—	—	—
Total	100.2	99.9	100.1	99.9	100.0	100.0	100.0	99.9	100.1	100.1	100.1
Modes (volume percent)											
Quartz	19	23	28	28	23	21	18	26	21	24	23
K-feldspar	1	16	8	4	6	2	1	<0.5	0	<0.5	1
Plagioclase	57	40	52	51	50	55	55	56	58	51	57
Biotite	—	—	—	—	—	15	17	14	13	20	13
Hornblende	—	—	—	—	—	8	7	3	8	5	6
Mafic minerals undivided	23	22	12	17	21	—	—	—	—	—	—
Total	100	101	100	100	100	101	98	99	100	100	100
Bulk specific gravity	2.74	2.72	2.69	2.72	2.70	2.75	2.77	2.75	2.73	2.76	2.75

FINE GOLD INTRUSIVE SUITE—Continued

	Blue Canyon Tonalite											
Field No.	MLd-9	MLd-52	JB-1	SL-32	SLa-48	SLb-63	SLc-107	SLc-115	SLd-36	SLa-39	SLc-70	HLc-58
Lab. No.	W-192282	W-192283	M-105843W	M-100928W	M-118535W	M-118541W	M-118549W	M-118551W	M-118555W	M-118534W	W-118548W	M-106635W
North Lat.	37°5.4'	37°1.9'	37°5.9'	37°2.2'	37°12.8'	37°12.7'	37°1.3'	37°7.0'	37°0.6'	37°13.4'	37°4.7'	37°0.1'
West Long.	119°32.0'	119°31.1'	119°22.8'	119°23.1'	119°29.8'	119°19.7'	119°28.9'	119°28.6'	119°17.7'	119°27.5'	119°24.9'	119°13.0'
Chemical analyses (weight percent)												
SiO_2	61.6	61.6	60.6	72.0	67.3	65.1	65.1	58.5	66.1	59.5	62.0	63.1
Al_2O_3	17.0	16.9	16.9	14.9	16.6	16.4	16.6	18.8	16.5	18.0	17.2	16.7
Fe_2O_3	1.8	2.0	1.6	0.77	1.8	1.8	2.1	2.8	2.0	2.7	2.4	1.8
FeO	3.9	3.8	4.4	1.3	2.2	1.9	2.4	3.8	2.6	4.6	3.5	3.4
MgO	2.6	2.6	2.7	0.76	1.6	1.6	2.0	2.9	1.9	3.0	2.5	2.2
CaO	5.9	6.0	5.6	2.8	4.6	3.8	4.7	6.5	4.8	6.0	5.5	5.0
Na_2O	3.5	3.2	3.2	3.2	3.5	3.5	3.6	3.7	3.2	3.2	3.5	3.3
K_2O	1.8	1.9	2.4	3.0	2.2	3.2	2.3	1.3	2.4	1.8	2.0	2.2
H_2O^+	0.80	0.93	1.2	0.82	0.64	0.58	0.74	0.88	0.82	0.88	0.63	0.91
H_2O^-	0.08	0.04	0.04	0.09	0.07	0.05	0.13	0.10	0.10	0.07	0.12	0.06
TiO_2	0.88	0.84	0.94	0.30	0.61	0.61	0.65	0.83	0.72	0.68	0.91	0.82
P_2O_5	0.21	0.21	0.20	0.08	0.14	0.10	0.16	0.18	0.13	0.11	0.14	0.25
MnO	0.07	0.08	0.10	0.04	0.05	0.03	0.05	0.08	0.05	0.16	0.07	0.08
CO_2	0.02	0.01	<0.05	<0.05	0.04	0.01	0.02	0.03	0.02	0.03	0.03	<0.05
Sum	100.2	100.1	99.9	100.1	101.4	98.7	100.6	100.4	101.3	100.7	100.5	99.9
CIPW norms (weight percent)												
Q	17.1	18.4	15.5	34.7	25.8	22.2	22.1	12.8	24.5	14.6	17.7	20.8
C	—	—	—	1.5	0.4	0.5	<0.05	—	0.2	0.1	—	0.4
or	10.7	11.3	14.4	17.9	12.9	19.3	13.6	7.7	14.1	10.7	11.9	13.2
ab	29.8	27.3	27.5	27.3	29.4	30.2	30.6	31.5	27.0	27.1	29.7	28.2
an	25.5	26.4	25.0	13.5	21.8	18.6	22.3	31.0	22.9	29.1	25.4	23.4
di	2.1	1.9	1.5	—	—	—	—	0.2	—	—	0.9	—
hy	9.9	9.8	11.5	3.3	5.6	5.1	6.7	10.6	6.7	12.9	8.9	9.1
mt	2.6	2.9	2.4	1.1	2.6	2.7	3.1	4.1	2.9	3.9	3.5	2.6
il	1.7	1.6	1.8	0.6	1.2	1.2	1.2	1.6	1.4	1.3	1.7	1.6
ap	0.5	0.5	0.5	0.2	0.3	0.2	0.4	0.4	0.3	0.3	0.3	0.6
ol	—	—	—	—	—	—	—	—	—	—	—	—
Total	99.9	100.1	100.1	100.1	100.0	100.0	100.0	99.9	100.1	100.1	100.1	99.9
Modes (volume percent)												
Quartz	21	16	15	33	29	28	25	18	31	20	19	23
K-feldspar	1	1	3	20	5	7	5	<0.5	5	0	1	5
Plagioclase	58	53	59	38	53	51	54	58	46	59	57	51
Biotite	13	16	—	—	—	—	—	—	—	—	—	—
Hornblende	6	12	—	—	—	—	—	—	—	—	—	—
Mafic minerals undivided	—	—	24	10	14	14	16	23	17	21	23	21
Total	99	98	101	101	101	100	100	101	99	100	100	100
Bulk specific gravity	2.78	2.78	2.77	—	2.72	2.69	2.74	2.80	2.73	2.79	2.77	2.73

	Blue Canyon Tonalite--Continued					Granodiorite of Goat Mountain	Tonalite south of Experimental Range	Trondhjemite of Ward Mountain			
	Hornblende-poor facies										
Field No.	MLc-10	MLd-27	MLd-59	SLa-97	SLc-111	BLd-51	MLc-45	MLa-12	MLc-43	SJ-1	BLc-43
Lab. No.	W-192276	W-192492	W-192493	M-118538W	M-118550W	M-145306	W-192279	W-192272	W-192278	M-105795W	M-145298
North Lat.	37°3.4'	37°0.3'	37°6.5'	37°8.3'	37°3.7'	37°15.9'	37°4.6'	37°12.4'	37°6.3'	37°5.7'	37°15.5'
West Long.	119°44.0'	119°37.0'	119°32.0'	119°23.4'	119°27.5'	119°32.5'	119°40.8'	119°42.9'	119°43.8'	119°44.3'	119°45.0'
Chemical analyses (weight percent)											
SiO_2	67.2	66.4	63.3	71.1	65.1	73.0	68.8	72.1	70.4	70.9	73.4
Al_2O_3	16.7	16.7	16.3	15.8	17.4	14.4	16.8	15.9	16.1	16.2	15.3
Fe_2O_3	0.79	1.0	1.1	1.2	1.8	0.36	0.77	0.48	0.46	0.27	0.09
FeO	2.6	3.0	3.9	1.9	2.5	1.31	2.2	1.1	1.4	1.3	0.69
MgO	1.5	1.4	2.0	1.0	1.6	0.3	0.93	0.58	0.61	0.73	0.30
CaO	4.2	4.4	4.5	3.2	4.9	1.06	3.8	2.5	3.0	2.3	1.54
Na_2O	3.9	4.0	3.7	3.8	3.7	3.0	4.3	4.4	4.5	4.3	3.8
K_2O	1.7	1.5	2.1	2.2	1.4	3.72	1.3	2.2	1.7	2.2	4.2
H_2O^+	0.70	0.66	0.73	0.47	0.72	1.31	0.23	0.61	0.75	0.16	0.38
H_2O^-	0.08	0.18	0.13	0.07	0.21	1.00	0.49	0.05	0.05	0.75	0.06
TiO_2	0.47	0.41	0.55	0.44	0.53	0.11	0.38	0.24	0.27	0.22	0.10
P_2O_5	0.16	0.18	0.20	0.08	0.13	<0.1	0.15	0.16	0.14	0.04	<0.1
MnO	0.05	0.06	0.08	0.02	0.06	0.04	0.03	0.03	0.03	0.03	<0.02
CO_2	0.02	0.04	0.00	0.03	0.07	0.04	0.01	0.02	0.02	0.05	<0.01
Sum	100.1	99.9	98.6	101.3	100.1	99.8	100.2	100.4	99.4	99.5	100.0
CIPW norms (weight percent)											
Q	25.8	24.7	19.6	31.4	24.9	38.7	28.6	31.8	30.4	31.2	31.4
C	1.2	0.9	0.2	1.5	1.2	3.6	1.8	2.1	1.8	2.7	2.0
or	10.1	9.0	12.7	12.9	8.3	22.6	7.7	13.0	10.2	13.2	24.9
ab	33.2	34.2	32.0	31.9	31.6	26.1	36.6	37.3	38.6	36.9	32.3
an	19.9	20.9	21.5	15.2	23.7	5.4	18.0	11.4	14.2	11.3	7.0
di	—	—	—	—	—	—	—	—	—	—	—
hy	7.2	7.7	10.7	4.3	6.4	2.8	5.2	2.7	3.4	3.7	1.8
mt	1.2	1.5	1.6	1.7	2.6	0.5	1.1	0.7	0.7	0.4	0.1
il	0.9	0.8	1.1	0.8	1.0	0.2	0.7	0.5	0.5	0.4	0.2
ap	0.4	0.4	0.5	0.2	0.3	—	0.4	0.4	0.3	0.1	0.2
ol	—	—	—	—	—	—	—	—	—	—	—
Total	99.9	100.1	99.9	99.9	100.0	99.9	99.9	99.9	100.1	99.9	99.9
Modes (volume percent)											
Quartz	27	31	15	37	29	38	31	34	31	26	29
K-feldspar	3	0	7	8	0	17	0	6	4	10	22
Plagioclase	55	54	57	44	57	39	57	53	58	60	43
Biotite	14	14	—	—	—	—	11	7	7	5	—
Hornblende	1	1	—	—	—	—	0	0	0	0	—
Mafic minerals undivided	—	—	22	11	14	7	—	—	—	—	6
Total	100	100	101	100	100	101	101	100	100	101	100
Bulk specific gravity	2.71	2.70	2.74	2.69	2.74	2.57	2.69	2.67	2.67	2.64	2.60

UNASSIGNED ROCKS ENCLOSED WITHIN AND ADJACENT TO THE FINE GOLD INTRUSIVE SUITE

	Tonalite of Millerton Lake		Knowles Granodiorite			Tonalite of Oakhurst					
					Eastman Lake pluton						
Field No.	SLc-151B-1	MLc-30	RDb-58	FD-20	Mc-15	BLa-7	BLa-18	BLa-22	BLa-25	C-CR-11	C-CR-14
Lab No.	M-118553W	W-192277	W-192285	M-100916D	M-145313	M-145283	M-145287	M-145288	M-145289	M-112951W	M-112952W
North Lat.	37°0.0'	37°1.6'	37°11.5'	37°12.4'	37°15.7'	37°23.7'	37°23.9'	37°23.2'	37°25.2'	37°22.5'	37°20.5'
West Long.	119°28.9'	119°40.5'	119°48.6'	119°52.6'	119°56.6'	119°44.2'	119°37.9'	119°41.7'	119°42.2'	119°43.3'	119°40.7'
Chemical analyses (weight percent)											
SiO_2	64.5	65.0	72.1	72.22	73.4	63.0	68.3	69.7	66.2	66.4	64.6
Al_2O_3	17.3	16.6	16.0	14.98	15.2	16.4	15.7	15.3	15.5	15.8	16.5
Fe_2O_3	1.6	0.76	0.44	0.15	0.18	1.68	1.37	1.10	0.76	0.76	0.61
FeO	3.2	2.8	1.4	1.81	0.94	3.48	1.79	1.80	3.25	3.4	3.9
MgO	2.2	2.5	0.62	0.60	0.48	2.6	1.3	1.2	2.3	1.8	2.0
CaO	4.4	5.2	2.8	2.58	2.26	5.36	3.78	3.69	4.47	4.3	4.7
Na_2O	3.6	3.1	4.0	3.96	3.98	3.0	3.5	3.2	3.2	3.2	3.1
K_2O	2.2	1.3	2.2	2.48	2.40	2.31	2.73	2.81	2.85	2.4	2.6
H_2O^+	0.53	1.0	0.65	0.47	0.33	1.02	0.49	0.58	0.68	0.77	1.2
H_2O^-	0.12	0.14	0.10	0.02	0.04	0.09	0.08	0.08	0.05	0.13	0.11
TiO_2	0.60	0.41	0.25	0.28	0.13	0.67	0.49	0.34	0.51	0.52	0.56
P_2O_5	0.13	0.12	0.12	0.10	0.07	0.1	0.1	<0.1	<0.1	0.11	0.12
MnO	0.06	0.05	0.03	0.05	<0.02	0.08	0.05	0.05	0.07	0.13	0.09
CO_2	0.04	0.02	0.06	0.00	0.08	0.01	0.01	0.01	0.04	<0.05	<0.05
F	--	--	--	0.04	--	--	--	--	--	--	--
Sum	100.5	99.0	100.8	99.74	99.5	100.1	99.7	100.0	100.0	99.7	100.0
CIPW norms (weight percent)											
Q	21.2	26.2	33.0	32.5	35.4	20.4	27.3	30.0	22.3	25.0	21.5
C	1.3	0.9	2.2	1.3	2.1	--	0.4	0.3	--	0.4	0.3
or	13.0	7.9	13.0	14.8	14.3	13.8	16.3	16.7	17.0	14.4	15.6
ab	30.5	26.8	33.9	33.8	34.0	25.7	29.9	27.3	27.3	27.4	26.6
an	21.0	25.6	13.1	12.2	10.9	24.8	18.3	18.5	19.7	20.9	22.8
di	--	--	--	--	--	1.2	--	--	2.2	--	--
hy	9.2	10.4	3.4	4.4	2.6	10.1	4.7	5.0	9.4	9.6	11.0
mt	2.3	1.1	0.6	0.2	0.3	2.5	2.0	1.6	1.1	1.1	0.9
il	1.1	0.8	0.5	0.5	0.2	1.3	0.9	0.7	1.0	1.0	1.1
ap	0.3	0.3	0.3	0.2	0.2	0.2	0.2	--	--	0.3	0.3
Total	99.9	100.0	100.1	99.9	100.0	100.1	100.1	100.1	100.0	100.1	100.1
Modes (volume percent)											
Quartz	24	25	33	34	40	21	31	31	24	31	28
K-feldspar	6	0	6	14	6	2	9	10	7	14	7
Plagioclase	60	55	53	44	46	55	50	45	47	42	48
Biotite	--	14	8	8	8	--	--	--	--	--	--
Hornblende	--	6	0	0	0	--	--	--	--	--	--
Mafic minerals undivided	10	--	--	--	--	22	10	14	22	13	16
Total	100	100	100	100	100	100	100	100	100	100	99
Bulk specific gravity	2.72	2.73	2.67	2.64	2.67	2.76	2.67	2.68	2.73	--	--

UNASSIGNED ROCKS ENCLOSED WITHIN AND ADJACENT TO THE FINE GOLD INTRUSIVE SUITE--Continued

	Tonalite of Oakhurst--Continued						
Field No.	BLc-5	BLc-8	BLc-22	BLc-57	BLd-1	BLd-16	BLd-40
Lab. No.	M-145293	M-145294	M-145296	M-145299	M-145300	M-145302	M-145305
North Lat.	37°21.8'	37°17.2'	37°21.0'	37°20.1'	37°18.8'	37°17.1'	37°19.8'
West Long.	119°38.6'	119°39.2'	119°43.3'	119°38.7'	119°36.6'	119°35.1'	119°34.9'
Chemical analyses (weight percent)							
SiO_2	70.3	54.9	63.1	67.3	63.7	61.9	67.0
Al_2O_3	14.8	17.5	16.5	15.9	16.5	16.2	16.2
Fe_2O_3	0.96	1.32	1.67	1.78	1.47	1.01	1.15
FeO	1.71	6.26	3.54	2.69	3.07	4.44	2.45
MgO	1.1	5.32	2.5	1.5	2.1	3.4	1.6
CaO	3.14	8.75	5.45	3.99	5.11	6.23	4.72
Na_2O	3.1	2.6	3.1	3.2	3.2	2.7	3.5
K_2O	3.55	0.85	2.13	2.52	2.23	2.32	2.11
H_2O^+	0.58	1.20	0.76	0.73	0.73	0.86	0.66
H_2O^-	0.04	0.06	0.04	0.11	0.07	0.03	0.04
TiO_2	0.31	0.85	0.64	0.53	0.56	0.70	0.51
P_2O_5	<0.1	0.1	0.1	0.1	0.2	0.1	0.1
MnO	0.05	0.14	0.09	0.06	0.08	0.09	0.06
CO_2	<0.01	0.01	0.01	<0.01	0.01	0.01	0.01
F	--	--	--	--	--	--	--
Sum	99.8	99.9	99.6	100.4	99.0	100.0	100.1
CIPW norms (weight percent)							
Q	29.7	8.0	20.4	27.4	21.8	17.5	25.3
C	0.2	--	--	0.9	<0.05	--	--
or	21.2	5.1	12.7	15.0	13.4	13.8	12.5
ab	26.5	22.3	26.5	27.2	27.6	23.1	29.8
an	15.7	34.0	25.1	19.2	24.5	25.5	22.4
di	--	7.6	1.3	--	--	4.2	0.4
hy	4.7	19.1	9.9	6.5	9.0	12.9	6.6
mt	1.4	1.9	2.5	2.6	2.2	1.5	1.7
il	0.6	1.6	1.2	1.0	1.1	1.3	1.0
ap	--	0.2	0.2	0.2	0.5	0.2	0.2
Total	100.0	99.8	99.8	100.0	100.2	100.0	99.9
Modes (volume percent)							
Quartz	29	8	26	32	23	19	27
K-feldspar	21	0	2	4	3	4	6
Plagioclase	43	58	52	49	54	44	50
Biotite	7	7	--	--	13	--	--
Hornblende	2	27	--	--	8	--	--
Mafic minerals undivided	--	--	20	15	--	33	17
Total	102	100	100	100	101	100	100
Bulk specific gravity	2.67	2.86	2.76	2.69	2.75	2.78	2.72

SHAVER INTRUSIVE SUITE

	Dinkey Creek Granodiorite												
	Equigranular facies												
Field No.	SL-1	SLb-5	SLd-20	KPc-9	HL-9	HLa-33	HLa-40	HLa-91	HLc-11	HLc-140	HLd-18	BCc-13	Kdc-1a
Lab. No.	M-105851W	M-181675	M-118554W	165185	M-100929	M-109623W	M-109624W	M-109626W	M-109627W	M-109638W	M-109640W	H3205	M-147380
North Lat.	37°5.7'	37°8.9'	37°3.0'	37°16.5'	37°14.2'	37°10.6'	37°14.7'	37°8.8'	37°4.8'	37°3.4'	37°1.7'	37°0.3'	37°11.6'
West Long.	119°18.2'	119°16.0'	119°20.2'	119°8.0'	119°19.6'	119°11.9'	119°11.9'	119°9.3'	119°13.8'	119°8.5'	119°3.0'	118°59.2'	119°15.6'
Chemical analyses (weight percent)													
SiO_2	58.6	61.7	68.9	67.0	66.3	67.5	66.5	69.6	60.1	59.2	57.4	61.68	62.4
Al_2O_3	16.9	16.5	14.8	15.7	16.1	15.1	15.5	15.3	17.2	17.6	17.8	15.94	16.2
Fe_2O_3	1.9	2.1	1.7	1.2	1.2	1.8	1.1	0.88	2.1	2.0	2.3	0.97	1.46
FeO	4.8	4.2	2.3	2.7	2.8	2.4	3.5	2.2	4.0	4.6	4.8	5.12	4.34
MgO	3.0	2.7	1.6	1.4	1.6	1.5	1.6	1.1	2.7	2.9	3.1	2.75	2.30
CaO	6.3	5.2	3.3	3.6	4.6	3.7	4.2	3.0	5.9	6.2	6.7	5.73	5.22
Na_2O	3.1	2.7	3.0	3.4	3.2	2.7	3.0	2.7	3.3	3.2	3.1	2.82	2.98
K_2O	2.1	2.5	4.1	3.0	2.7	3.6	2.8	3.4	2.1	2.0	2.0	2.34	2.58
H_2O^+	1.0	0.89	0.70	0.89	0.67	0.69	0.84	0.85	1.2	0.80	1.2	0.87	0.73
H_2O^-	0.06	0.21	0.07	0.11	0.07	0.15	0.10	0.35	0.18	0.11	0.16	0.05	0.13
TiO_2	0.92	0.90	0.52	0.63	0.54	0.56	0.63	0.48	0.91	0.96	1.0	0.88	0.80
P_2O_5	0.19	0.20	0.08	0.11	0.14	0.09	0.15	0.09	0.22	0.24	0.25	0.17	0.17
MnO	0.10	0.13	0.05	0.07	0.07	0.08	0.08	0.06	0.11	0.11	0.12	0.11	0.09
CO_2	0.08	<0.05	0.03	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.03	0.01
Cl	--	--	--	--	--	--	--	--	--	--	--	0.03	--
F	--	--	--	--	--	--	--	--	--	--	--	0.05	--
Less O	--	--	--	--	--	--	--	--	--	--	--	0.03	--
Sum	99.0	100.0	101.2	99.9	100.0	99.9	100.1	100.1	100.1	100.0	100.0	99.51	99.4
CIPW norms (weight percent)													
Q	13.6	19.9	25.7	25.2	24.2	27.4	25.5	32.4	15.5	14.0	11.7	18.1	19.1
C	--	0.4	--	0.6	--	0.3	0.3	2.0	--	--	--	--	--
or	12.7	15.0	24.1	17.9	16.1	21.5	16.7	20.4	12.6	12.0	11.9	14.0	15.5
ab	26.8	23.1	25.3	29.1	27.3	23.1	25.6	23.1	28.3	27.3	26.6	24.2	25.6
an	26.6	24.8	14.8	17.3	21.8	17.9	20.0	14.5	26.3	28.0	29.2	24.3	23.5
di	3.4	--	0.8	--	0.3	--	--	--	1.6	1.2	2.4	2.9	1.3
hy	12.0	11.6	5.6	6.6	7.3	5.9	8.7	5.2	10.4	12.2	12.2	13.0	10.9
mt	2.8	3.1	2.5	1.8	1.8	2.6	1.6	1.3	3.1	2.9	3.4	1.4	2.1
il	1.8	1.7	1.0	1.2	1.0	1.1	1.2	0.9	1.8	1.8	1.9	1.7	1.5
ap	0.5	0.5	0.2	0.3	0.3	0.5	0.4	0.2	0.5	0.6	0.6	0.4	0.4
Total	100.2	100.1	100.0	100.0	100.1	100.0	100.0	100.0	100.1	99.9	100.0	100.0	99.9
Modes (volume percent)													
Quartz	15	21	29	28	31	28	23	26	28	17	17	21	--
K-feldspar	1	7	20	13	16	17	12	19	3	1	2	8	--
Plagioclase	61	51	39	45	31	39	48	43	57	61	53	47	--
Mafic minerals undivided	23	22	12	15	16	16	17	12	22	21	28	25	--
Total	100	101	100	101	99	100	100	100	100	100	100	101	--
Bulk specific gravity	2.80	2.78	2.71	2.71	2.72	2.71	2.75	2.67	2.78	2.77	2.80	2.75	--

	Dinkey Creek Granodiorite--Continued							Granodiorite of McKinley Grove		Granite of Shuteye Peak			
	Porphyritic facies					Mafic inclusions							
Field No.	SL-18	SLd-52	KPc-30	KPc-138	SLb-96 X-3	Kdc-1b	Kdc-1c	HLc-18	HLd-71	SP-457	SP-146	SLa-16	SLa-129
Lab. No.	H3202	M-118556W	165186	D-101247	M-121101WD	M-147381	M-147382	M-109634W	M-109644W	M-101051W	M-101052W	M-118533W	M-119816W
North Lat.	37°9.3'	37°2.6'	37°18.0'	37°18.1'	37°12.5'	37°11.6'	37°11.6'	37°0.3'	37°3.6'	37°19.4'	37°27.1'	37°14.7'	37°12.9'
West Long.	119°17.2'	119°21.4'	119°11.1'	119°10.3'	119°15.6'	119°15.6'	119°15.6'	119°8.1'	119°2.6'	119°28.2'	119°28.6'	119°28.0'	119°22.9'
Chemical analyses (weight percent)													
SiO_2	65.60	71.1	68.6	70.64	65.6	60.5	59.2	65.5	66.9	73.4	73.4	73.0	73.6
Al_2O_3	15.37	14.9	15.5	14.74	15.8	16.8	17.6	16.1	16.2	14.0	14.0	15.0	14.2
Fe_2O_3	1.16	1.3	0.84	0.73	1.4	2.12	1.79	1.4	0.85	0.84	1.0	1.4	0.88
FeO	3.60	1.2	2.6	2.27	2.9	4.80	4.52	3.4	3.5	1.6	0.84	1.3	1.2
MgO	1.91	0.66	0.9	0.80	1.6	2.15	2.41	1.0	0.63	0.37	0.50	0.48	0.52
CaO	4.39	2.0	3.1	2.66	3.5	5.46	6.19	3.0	3.4	1.6	1.8	2.0	2.2
Na_2O	3.03	3.4	3.7	3.71	3.3	3.50	3.52	3.4	3.8	3.6	3.2	4.2	3.0
K_2O	3.17	4.3	3.0	3.42	2.9	1.93	1.87	3.9	2.7	3.8	4.0	3.3	3.7
H_2O^+	0.47	0.57	0.60	0.41	0.61	0.69	0.79	1.4	0.74	0.51	0.58	0.33	0.43
H_2O^-	0.05	0.10	0.20	0.01	0.05	0.11	0.16	0.87	0.11	0.10	0.12	0.08	0.13
TiO_2	0.67	0.27	0.55	0.37	0.62	1.00	0.92	0.59	0.43	0.22	0.24	0.26	0.27
P_2O_5	0.13	0.04	0.11	0.10	0.15	0.31	0.20	0.18	0.16	0.00	0.06	0.06	0.06
MnO	0.09	0.02	0.06	0.07	0.05	0.08	0.09	0.07	0.08	0.08	0.00	0.01	0.06
CO_2	0.02	0.04	0.05	0.01	0.04	0.01	0.01	<0.05	<0.05	<0.05	<0.05	0.02	0.05
Cl	0.02	--	--	0.04	--	--	--	--	--	--	--	--	--
F	0.04	--	--	0.06	--	--	--	--	--	--	--	--	--
Less O	0.02	--	--	0.04	--	--	--	--	--	--	--	--	--
Sum	99.72	99.9	99.8	100.04	98.5	99.5	99.3	100.9	99.6	100.2	99.8	101.4	100.3
CIPW norms (weight percent)													
Q	22.4	29.6	26.7	28.1	24.9	16.5	13.6	21.8	24.7	33.2	35.2	30.3	36.3
C	--	1.1	0.8	0.3	1.3	--	--	1.3	1.2	1.1	1.3	1.5	1.4
or	18.9	25.6	17.9	20.3	17.5	11.6	11.2	23.4	16.2	22.6	23.9	19.2	21.9
ab	25.9	29.0	31.6	31.5	28.5	30.0	30.3	29.2	32.6	30.6	27.3	35.0	25.5
an	19.1	9.7	14.8	12.6	16.7	24.8	27.2	13.9	16.0	8.0	8.6	9.4	10.6
di	1.6	--	--	--	--	0.5	2.3	--	--	--	--	--	--
hy	8.7	2.4	5.6	5.1	7.4	10.8	10.6	6.8	6.8	3.0	1.6	2.0	2.4
mt	1.7	1.9	1.2	1.1	2.1	3.1	2.6	2.1	1.2	1.2	1.5	2.0	1.3
il	1.3	0.5	1.1	0.7	1.2	1.9	1.8	1.1	0.8	0.4	0.5	0.5	0.5
ap	0.3	0.1	0.3	0.2	0.4	0.7	0.5	0.4	0.4	--	0.1	0.1	0.1
Total	99.9	99.9	100.1	99.9	100.0	99.9	100.1	100.1	99.9	100.1	100.0	100.0	100.0
Modes (volume percent)													
Quartz	27	31	28	--	--	--	--	27	26	36	35	30	27
K-feldspar	14	23	28	--	--	--	--	13	22	18	26	25	24
Plagioclase	41	39	45	--	--	--	--	45	42	40	35	38	43
Mafic minerals undivided	18	7	14	--	--	--	--	15	11	6	5	7	6
Total	100	100	100	--	--	--	--	100	101	100	101	100	100
Bulk specific gravity	2.70	2.66	2.70	--	--	--	--	2.67	2.70	2.57	2.55	2.65	2.66

	Granite of Shuteye Peak--Continued			Granite of Dinkey Dome						Granite of Shorthair Creek		
Field No.	SLb-13	SLb-70	MP-629	HL-29	HLb-10	HLb-122	HLc-129	HLd-128	HLd-133	HLd-13	DC-10	DC-11
Lab. No.	M-118539W	M-118543W	W-185513	H3195	M-109628W	M-109631W	M-109637W	M-109646W	M-109647W	M-109642W	166093	166094
North Lat.	37°8.1'	37°9.7'	37°32.0'	37°6.5'	37°8.1'	37°10.0'	37°6.5'	37°6.2'	37°5.8'	37°3.1'	37°2.8'	37°4.6'
West Long.	119°20.4'	119°19.2'	119°27.7'	119°8.7'	119°3.2'	119°2.6'	119°8.8'	119°6.4'	119°6.6'	119°0.6'	118°59.8'	118°57.6'
Chemical analyses (weight percent)												
SiO_2	73.2	71.0	74.6	78.37	73.1	76.3	73.0	76.9	72.8	73.1	72.2	70.1
Al_2O_3	14.8	15.4	13.4	11.73	13.7	13.1	15.0	13.1	14.6	14.3	14.5	14.9
Fe_2O_3	1.1	1.4	0.16	0.33	0.64	0.37	0.33	0.00	0.43	0.45	0.89	1.0
FeO	1.1	1.3	0.56	0.74	1.6	0.40	1.7	1.1	1.7	1.5	1.2	2.0
MgO	0.48	0.64	0.00	0.20	0.22	0.05	0.39	0.04	0.39	0.56	0.7	1.2
CaO	1.8	2.0	0.67	0.86	1.5	0.59	1.4	0.43	1.5	2.0	2.1	2.7
Na_2O	3.6	3.8	4.3	3.35	3.3	2.8	3.5	3.7	3.5	2.9	3.1	2.8
K_2O	4.3	3.6	4.6	3.31	4.7	5.7	4.2	4.1	4.0	4.2	3.9	3.9
H_2O^+	0.21	0.45	0.26	0.25	0.53	0.36	0.50	0.43	0.65	0.63	0.56	0.62
H_2O^-	0.06	0.09	0.03	0.04	0.10	0.05	0.04	0.07	0.11	0.10	0.21	0.12
TiO_2	0.43	0.29	0.00	0.14	0.20	0.05	0.20	0.02	0.21	0.23	0.25	0.41
P_2O_5	0.05	0.08	0.09	0.02	0.06	0.02	0.10	0.06	0.10	0.06	0.06	0.10
MnO	0.02	0.02	0.00	0.05	0.05	0.08	0.08	0.08	0.08	0.06	0.06	0.07
CO_2	0.03	0.08	0.02	--	<0.05	<0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cl	--	--	--	0.01	--	--	--	--	--	--	--	--
F	--	--	--	0.02	--	--	--	--	--	--	--	--
Less O	--	--	--	0.01	--	--	--	--	--	--	--	--
Sum	101.2	100.2	98.7	99.41	99.8	99.9	100.5	100.1	100.1	100.1	99.8	100.0
CIPW norms (weight percent)												
Q	30.9	29.9	30.9	44.1	31.8	36.9	32.1	38.1	32.7	34.5	33.7	30.8
C	1.1	1.8	0.3	1.1	0.6	1.3	2.4	1.9	2.0	1.5	1.5	1.4
or	25.2	21.4	27.6	19.7	28.0	33.9	24.8	24.3	23.8	25.0	23.3	23.2
ab	30.2	32.3	37.0	28.6	28.2	23.8	29.6	31.5	29.8	24.7	26.5	23.9
an	8.5	9.4	2.8	4.2	7.1	2.8	6.3	1.8	6.8	9.6	10.1	12.8
di	--	--	--	--	--	--	--	--	--	--	--	--
hy	1.6	2.4	0.9	1.5	2.7	0.6	3.6	2.2	3.6	3.5	2.9	5.3
mt	1.6	2.0	0.2	0.5	0.9	0.5	0.5	--	0.6	0.7	1.3	1.5
il	0.8	0.6	--	0.3	0.4	0.1	0.4	<0.05	0.4	0.4	0.5	0.8
ap	0.1	0.2	0.2	<0.05	0.1	<0.05	0.2	0.1	0.2	0.1	0.1	0.2
Total	100.1	100.1	99.9	100.0	99.8	99.9	99.9	99.9	99.9	100.0	99.9	99.9
Modes (volume percent)												
Quartz	26	30	33	39	33	32	32	34	28	31	35	33
K-feldspar	25	18	36	31	26	49	26	38	28	31	26	24
Plagioclase	43	42	31	28	38	18	36	25	39	33	30	36
Mafic minerals undivided	6	10	--	3	3	1	6	3	5	6	9	8
Total	100	100	100	100	100	100	100	100	100	101	100	100
Bulk specific gravity	2.66	2.66	2.62	2.57	2.64	2.61	2.65	2.64	2.62	2.62	--	--

	Granite north of Snow Corral Meadow	Granite of Sheepthief Creek	Granite of Lower Bear Creek	Granite of Mushroom Rock		Granodiorite of Whisky Ridge		Granodiorite of Stevenson Creek
Field No.	MLd-79	KPc-1	MLc-72	SLb-57	SLb-109	SLa-77	SLa-552	SLb-166
Lab. No.	M-109645W	165184	M-109636W	M-118540W	M-118544W	M-118536W	M-109049W	M-118545W
North Lat.	37°2.5'	37°15.1'	37°2.6'	37°14.6'	37°13.6'	37°14.5'	37°18.0'	37°8.7'
West Long.	119°3.1'	119°13.3'	119°8.2'	119°17.7'	119°16.6'	119°24.9'	119°26.0'	119°21.7'
Chemical analyses (weight percent)								
SiO_2	73.7	72.1	73.7	73.8	73.2	64.3	68.4	70.3
Al_2O_3	13.7	14.6	14.2	14.4	14.8	16.8	15.4	15.5
Fe_2O_3	0.44	0.75	0.59	0.99	1.1	2.0	1.0	1.4
FeO	1.6	1.5	1.1	0.88	0.84	3.3	2.4	1.7
MgO	0.41	0.5	0.20	0.30	0.44	2.2	1.1	0.78
CaO	1.6	2.1	1.1	1.5	1.8	4.8	3.6	2.6
Na_2O	3.1	3.3	3.2	3.0	3.4	3.5	3.4	3.6
K_2O	4.3	3.8	4.8	5.3	4.2	2.3	2.9	3.4
H_2O^+	0.35	0.70	0.63	0.75	0.39	0.66	1.3	0.45
H_2O^-	0.15	0.06	0.18	0.03	0.07	0.13	0.08	0.11
TiO_2	0.24	0.32	0.16	0.34	0.20	0.79	0.46	0.36
P_2O_5	0.06	0.05	0.05	0.03	0.04	0.16	0.11	0.09
MnO	0.04	0.05	0.02	0.00	0.00	0.06	0.10	0.02
CO_2	<0.05	<0.05	<0.05	0.08	0.01	0.07	<0.05	<0.05
Sum	99.7	99.9	100.0	101.4	100.5	101.1	100.3	100.4
CIPW norms (weight percent)								
Q	34.6	32.8	33.9	32.2	32.8	20.5	27.4	29.3
C	1.2	1.4	1.9	1.1	1.5	0.2	0.4	1.4
or	25.6	22.7	28.6	31.2	24.8	13.6	17.3	20.1
ab	26.4	28.2	27.3	25.2	28.8	29.6	29.1	30.5
an	7.6	10.2	5.2	7.2	8.7	22.7	17.3	12.3
di	--	--	--	--	--	--	--	--
hy	3.3	3.0	1.8	1.0	1.4	8.7	5.8	3.4
mt	0.6	1.1	0.9	1.4	1.6	2.9	1.5	2.0
il	0.5	0.6	0.3	0.6	0.4	1.5	0.9	0.7
ap	0.1	0.1	0.1	0.1	0.1	0.4	0.3	0.2
Total	99.9	100.1	100.0	100.0	100.1	100.1	100.0	99.9
Modes (volume percent)								
Quartz	32	33	33	27	30	25	32	29
K-feldspar	30	20	34	27	27	4	10	21
Plagioclase	34	39	32	40	39	50	46	41
Mafic minerals undivided	5	9	2	6	4	21	12	10
Total	101	101	101	100	100	100	100	101
Bulk specific gravity	2.64	2.66	2.62	2.64	2.65	2.78	2.64	2.68

INTRUSIVE SUITE OF KAISER RIDGE

	Mount Givens Granodiorite										
	Equigranular facies										
Field No.	SP-445	SP-300	KPb-59	KPc-42	KPd-61	KP-AA	KPc-16	KP-AB	KP-AC	KPc-32	KP-Y
Lab. No.	M-101053W	162491	165170	165172	165173	M-114269W	M-112420W	M-114270W	M-114271W	M-112783W	M-112417W
North Lat.	37°20.2'	37°23.5'	37°24.6'	37°21.2'	37°20.9'	37°18.9'	37°19.2'	37°19.1'	37°19.2'	37°19.3'	37°19.3'
West Long.	119°21.8'	119°21.9'	119°5.9'	119°7.7'	119°2.1'	119°10.7'	119°11.0'	119°10.7'	119°10.7'	119°11.5'	119°13.6'
Chemical analyses (weight percent)											
SiO_2	67.5	67.7	68.2	70.4	71.1	54.5	56.5	58.9	60.4	61.5	64.6
Al_2O_3	15.6	16.0	15.5	15.1	14.4	16.8	18.0	17.7	16.9	16.8	16.0
Fe_2O_3	1.5	1.9	1.2	1.2	1.1	2.6	2.8	1.3	2.1	1.7	1.6
FeO	2.2	1.6	2.3	1.5	1.5	5.6	4.6	4.3	4.1	3.8	3.0
MgO	1.4	1.0	1.6	0.6	1.0	5.3	3.5	3.0	2.8	2.5	2.0
CaO	3.8	3.6	3.3	2.5	2.4	8.1	7.0	6.3	5.7	5.5	4.4
Na_2O	3.1	3.5	2.9	3.1	2.8	2.2	3.3	3.4	3.1	3.5	3.1
K_2O	3.5	3.2	3.6	4.0	4.4	1.4	1.6	1.7	2.0	2.5	3.0
H_2O^+	0.79	0.54	0.56	0.82	0.62	1.9	1.0	1.2	1.1	1.0	1.2
H_2O^-	0.06	0.25	0.03	0.05	0.05	0.23	0.16	0.19	0.21	0.13	0.14
TiO_2	0.54	0.47	0.47	0.45	0.38	0.93	0.89	0.86	0.83	0.77	0.62
P_2O_5	0.13	0.16	0.11	0.11	0.08	0.14	0.26	0.20	0.18	0.18	0.16
MnO	0.13	0.05	0.07	0.05	0.07	0.12	0.15	0.11	0.11	0.12	0.10
CO_2	<0.05	<0.05	0.09	0.08	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Cl	—	—	—	—	—	—	—	—	—	—	—
F	—	—	—	—	—	—	—	—	—	—	—
Less O	—	—	—	—	—	—	—	—	—	—	—
Sum	100.3	100.0	99.9	100.0	100.6	99.9	99.8	99.2	99.6	100.1	100.0
CIPW norms (weight percent)											
Q	25.4	26.2	27.4	30.9	31.2	10.2	10.3	13.4	17.2	15.4	21.9
C	0.1	0.6	1.1	1.4	0.9	—	—	—	—	—	<0.05
or	20.8	19.1	21.4	23.9	26.2	8.5	9.6	10.3	12.0	15.0	26.6
ab	26.4	29.9	24.7	26.5	23.9	19.1	28.3	29.4	26.7	30.0	26.6
an	18.1	17.0	15.8	11.8	11.5	32.6	30.0	28.7	26.8	23.0	21.1
wo	—	—	—	—	—	—	—	—	—	—	—
di	—	—	—	—	—	6.2	2.8	1.6	0.7	2.8	—
hy	5.7	3.2	6.6	2.6	3.9	17.5	12.5	12.6	11.5	9.5	8.5
mt	2.2	2.8	1.8	1.8	1.6	3.9	4.1	1.9	3.1	2.5	2.4
il	1.0	0.9	0.9	0.9	0.7	1.8	1.7	1.7	1.6	1.5	1.2
ap	0.3	0.4	0.3	0.3	0.2	0.3	0.6	0.5	0.4	0.4	0.4
ol	—	—	—	—	—	—	—	—	—	—	—
Total	100.0	100.1	100.0	100.1	100.1	100.1	99.9	100.1	100.1	100.1	100.1
Modes (volume percent)											
Quartz	25	27	27	30	29	14	12	18	22	22	22
K-feldspar	20	18	21	22	27	1	<0.5	1	4	5	13
Plagioclase	42	45	38	39	35	54	54	60	52	51	48
Biotite	—	—	—	—	—	7	14	11	12	12	12
Hornblende	—	—	—	—	—	22	17	10	10	8	5
Other	—	—	—	—	—	2	2	1	1	1	1
Mafic minerals undivided	13	10	13	8	9	—	—	—	—	—	—
Total	100	100	99	99	100	100	99	101	101	99	101
Bulk specific gravity	2.43	—	2.70	2.66	2.67	2.85	2.82	2.78	2.76	2.76	2.72

	Mount Givens Granodiorite—Continued										
	Equigranular facies—Continued						Porphyritic facies				
Field No.	KP-Z	HLb-61	BCa-20	BCc-12	A-103	A-212	SP-115	SP-334	KPa-104	KPa-66	KPc-26
Lab. No.	M-112416W	M-109629W	H3193	H3206	M-110125W	M-110126W	M-101054W	D-100433	M-112419W	165167	165171
North Lat.	37°19.9'	37°13.8'	37°14.9'	37°5.0'	37°20.1'	37°16.6'	37°28.4'	37°25.0'	37°24.0'	37°25.6'	37°20.4'
West Long.	119°14.4'	119°5.1'	118°56.4'	118°58.2'	118°58.8'	118°59.5'	119°28.6'	119°17.1'	119°13.4'	119°10.6'	119°14.6'
Chemical analyses (weight percent)											
SiO_2	65.2	66.8	67.36	68.42	61.7	66.0	68.6	71.55	66.1	71.8	71.2
Al_2O_3	15.7	15.6	14.72	14.36	16.9	16.0	15.4	14.37	16.2	14.7	14.8
Fe_2O_3	1.6	1.7	1.42	1.80	2.3	1.6	1.6	1.08	2.0	0.89	0.98
FeO	3.0	2.3	2.61	1.94	3.4	2.6	1.9	1.15	2.1	1.1	1.2
MgO	2.1	1.6	1.74	1.45	2.4	1.8	1.1	0.72	1.5	1.1	0.8
CaO	4.2	3.7	3.90	3.65	5.3	3.7	3.0	1.98	4.0	1.9	2.1
Na_2O	3.1	3.0	3.07	3.59	3.3	3.1	3.7	3.52	3.6	3.2	3.2
K_2O	3.0	3.4	3.45	2.80	2.5	3.4	3.5	4.52	3.0	4.0	4.2
H_2O^+	1.1	0.93	0.40	0.33	0.91	0.74	0.65	0.06	0.56	0.59	0.14
H_2O^-	0.09	0.17	0.07	0.06	0.19	0.18	0.06	0.38	0.10	0.10	0.76
TiO_2	0.62	0.59	0.57	0.61	0.73	0.57	0.46	0.32	0.53	0.34	0.38
P_2O_5	0.16	0.16	0.13	0.19	0.19	0.15	0.11	0.08	0.18	0.08	0.09
MnO	0.10	0.08	0.09	0.07	0.09	0.10	0.13	0.06	0.07	0.06	0.04
CO_2	<0.05	<0.05	0.08	0.02	<0.05	<0.05	<0.05	0.02	<0.05	0.05	0.05
Cl	—	—	0.01	—	—	—	—	—	—	—	—
F	—	—	0.03	0.04	—	—	—	—	—	—	—
Less O	—	—	0.01	0.02	—	—	—	—	—	—	—
Sum	100.0	100.1	99.64	99.31	100.0	100.0	100.3	99.81	100.0	99.9	99.9
CIPW norms (weight percent)											
Q	22.8	25.8	25.1	27.6	17.5	23.8	25.3	28.5	22.9	32.3	31.0
C	0.1	0.6	—	—	—	0.9	0.3	0.3	0.2	1.9	1.4
or	18.0	20.3	20.6	16.7	15.0	20.3	20.8	26.7	17.9	23.8	25.1
ab	26.6	25.7	26.2	30.7	28.3	26.5	31.5	30.0	30.7	27.3	27.4
an	20.0	17.5	16.3	15.0	24.2	17.5	14.2	9.4	18.8	9.0	9.9
wo	—	—	—	—	—	—	—	—	—	—	—
di	—	—	1.9	1.7	0.9	—	—	—	—	—	—
hy	8.7	6.0	6.3	4.1	8.9	7.3	4.4	2.6	5.2	3.6	2.9
mt	2.3	2.5	2.1	2.6	3.4	2.3	2.3	1.6	2.9	1.3	1.4
il	1.2	1.1	1.1	1.2	1.4	1.1	0.9	0.6	1.0	0.7	0.7
ap	0.4	0.4	0.3	0.5	0.5	0.4	0.3	0.2	0.4	0.2	0.2
ol	—	—	—	—	—	—	—	—	—	—	—
Total	100.1	99.9	99.9	100.1	100.1	100.1	100.0	100.1	100.0	100.1	100.0
Modes (volume percent)											
Quartz	22	27	27	23	21	26	25	26	22	33	31
K-feldspar	18	19	12	17	8	17	25	31	13	23	27
Plagioclase	49	41	36	49	51	40	39	38	55	38	36
Biotite	8	--	--	—	--	—	—	—	7	—	0
Hornblende	3	—	--	—	—	—	—	--	2	—	6
Other	<0.5	—	--	—	—	—	—	—	1	—	<0.5
Mafic minerals undivided	—	13	14	11	20	16	10	5	—	6	—
Total	100	100	100	100	100	99	99	100	100	100	100
Bulk specific gravity	2.72	2.69	2.65	2.66	2.73	2.71	2.61	—	2.72	2.65	2.64

	Mount Givens Granodiorite—Continued								
	Porphyritic facies—Continued					Fine-grained facies	Diorite inclusion	Hornfels inclusions	
Field No.	KP-X	KP-P	KPa-53	KPa-59	KPa-11	KP-AH	CR-50	CR-51	CR-52
Lab. No.	M-112418W	M-112415W	M-112421W	M-112422W	165166	M-114272W	165704	165705	165706
North Lat.	37°20.1'	37°21.9'	37°24.4'	37°25.8'	37°27.2'	37°25.9'	37°4.5'	37°4.5'	37°4.5'
West Long.	119°13.8'	119°14.6'	119°14.7'	119°14.6'	119°14.3'	119°18.8'	118°58.2'	118°58.2'	118°58.2'
Chemical analyses (weight percent)									
SiO_2	70.9	69.1	72.7	72.3	72.8	75.1	53.0	68.0	51.4
Al_2O_3	14.9	15.4	14.5	15.0	14.7	13.4	17.1	14.9	17.5
Fe_2O_3	1.1	1.4	1.1	0.78	0.51	0.34	2.2	1.6	3.3
FeO	1.3	1.5	0.80	1.2	0.72	0.36	7.4	2.9	5.6
MgO	0.76	0.92	0.29	0.41	0.5	0.12	4.6	1.8	1.5
CaO	2.5	2.9	1.2	1.8	1.7	1.0	6.9	3.3	15.3
Na_2O	3.2	3.3	3.3	3.5	3.6	3.2	4.0	3.2	2.2
K_2O	3.8	4.1	4.5	4.1	4.1	4.6	2.1	1.8	0.13
H_2O^+	0.81	0.66	1.1	0.62	0.60	0.51	0.64	0.48	0.42
H_2O^-	0.04	0.06	0.22	0.09	0.06	0.49	0.20	0.28	0.51
TiO_2	0.31	0.40	0.13	0.14	0.19	0.08	1.1	0.75	0.78
P_2O_5	0.10	0.12	0.07	0.09	0.05	—	0.37	0.20	0.24
MnO	0.05	0.05	0.14	0.05	0.04	0.02	0.23	0.04	0.38
CO_2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	0.15	<0.05
Cl^-	—	—	—	—	—	—	—	—	—
F^-	—	—	—	—	—	—	—	—	—
Less O	—	—	—	—	—	—	—	—	—
Sum	99.8	100.0	100.1	100.1	99.6	99.3	99.9	99.4	99.3
CIPW norms (weight percent)									
Q	31.4	26.7	33.6	31.6	32.0	37.1	—	32.5	8.7
C	1.2	0.6	2.2	1.8	1.4	1.4	—	2.2	—
or	22.7	24.4	26.9	24.4	24.5	27.7	12.5	10.8	0.8
ab	27.4	28.2	28.3	29.8	30.8	27.6	34.2	27.5	18.9
an	11.9	13.7	5.6	8.4	8.2	5.1	22.7	15.3	38.1
wo	—	—	—	—	—	—	—	—	5.0
di	—	—	—	—	—	—	7.8	—	21.5
hy	3.0	3.3	1.3	2.5	1.9	0.6	12.0	7.4	—
mt	1.6	2.0	1.6	1.1	0.7	0.5	3.2	2.4	4.9
il	0.6	0.8	0.3	0.3	0.4	0.2	2.1	1.4	1.5
ap	0.2	0.3	0.2	0.2	0.1	—	0.9	0.5	0.6
ol	—	—	—	—	—	—	4.5	—	—
Total	100.1	100.1	100.1	100.1	100.1	100.2	99.9	100.1	100.1
Modes (volume percent)									
Quartz	24	27	30	34	31	34	—	--	--
K-feldspar	23	23	27	22	29	33	--	--	--
Plagioclase	46	43	39	40	38	33	—	--	--
Biotite	6	6	4	4	2	2	--	--	--
Hornblende	<0.5	<0.5	0	0	0	0	—	--	--
Other	1	1	1	1	<0.5	<0.5	--	--	--
Mafic minerals undivided	—	—	—	—	—	—	—	—	—
Total	100	100	101	101	100	100	--	--	--
Bulk specific gravity	2.66	2.68	2.62	2.61	2.62	2.58	—	--	--

	Granodiorite of Red Lake					Granodiorite of Eagle Peak		Granodiorite of Big Creek	Granodiorite of Bald Mountain	Leucogranite of Big Sandy Bluffs		Granite of Lion Point
						Equigranular facies	Porphyritic facies					
Field No.	HL-4(1)	HL-4(2)	HLa-30	HLa-111	CP-205	HLd-5	HLd-51	HLa-62	HLc-2	SLc-60	SLc-119	SLa-91
Lab. No.	M-105137W	M-100930W	M-109625W	M-109627W	M-146891	M-109639W	M-109641W	M-109622W	M-109632W	M-118547W	M-118552W	M-118537W
North Lat.	37°14.0'	37°14.0'	37°12.1'	37°12.1'	37°13.3'	37°6.5'	37°5.6'	37°12.4'	37°5.6'	37°5.9'	37°2.4'	37°11.1'
West Long.	119°9.7'	119°9.7'	119°11.7'	119°8.7'	119°9.2'	119°2.8'	119°0.9'	119°14.9'	119°11.0'	119°27.2'	119°24.9'	119°23.1'
Chemical analyses (weight percent)												
SiO_2	68.6	70.0	69.7	68.3	69.4	68.3	70.9	69.7	75.3	74.3	74.8	72.3
Al_2O_3	16.0	15.2	15.5	15.8	15.3	15.9	15.2	14.7	13.5	14.9	14.1	15.3
Fe_2O_3	1.9	1.3	0.39	1.3	2.00	1.8	1.0	0.65	0.19	1.1	0.79	0.90
FeO	1.6	1.4	2.1	2.0	1.69	2.3	1.5	2.5	0.92	0.76	0.80	1.1
MgO	0.92	0.90	0.74	1.2	0.98	1.1	0.67	1.2	0.15	0.40	0.45	0.65
CaO	3.0	3.3	2.8	3.1	3.13	3.1	2.5	3.1	1.1	2.4	1.6	2.2
Na_2O	3.3	3.7	3.3	3.4	3.55	3.0	3.1	3.2	3.1	4.2	3.7	3.3
K_2O	3.0	2.8	3.8	2.8	2.96	3.4	3.8	3.7	4.6	1.9	3.6	4.1
H_2O^+	0.50	0.57	0.80	1.0	0.56	0.73	0.64	0.44	0.66	0.36	0.50	0.71
H_2O^-	0.12	0.07	0.13	0.31	—	0.09	0.07	0.08	0.15	0.04	0.06	0.43
TiO_2	0.51	0.46	0.47	0.52	0.41	0.53	0.36	0.48	0.09	0.17	0.14	0.25
P_2O_5	0.24	0.16	0.14	0.12	0.12	0.15	0.12	0.11	0.04	0.03	0.03	0.06
MnO	0.11	0.05	0.05	0.08	0.04	0.07	0.04	0.05	0.04	0.01	0.01	0.03
CO_2	0.05	<0.05	<0.05	<0.05	0.04	<0.05	<0.05	<0.05	<0.05	0.03	0.06	0.02
Cl	--	--	--	--	--	--	--	--	--	--	--	--
F	--	--	--	--	--	--	--	--	--	--	--	--
Less O	--	--	--	--	--	--	--	--	--	--	--	--
Sum	99.9	100.0	100.0	100.0	100.2	100.5	100.0	100.0	100.0	100.6	100.6	101.4
CIPW norms (weight percent)												
Q	30.7	29.6	28.2	29.3	29.3	29.2	31.9	27.4	36.9	36.8	35.2	32.3
C	2.5	0.5	1.2	1.9	0.9	2.0	1.7	<0.05	1.5	1.6	1.3	2.4
or	17.9	16.7	22.7	16.8	17.6	20.2	22.6	22.0	27.5	11.2	21.3	23.9
ab	28.2	31.5	28.2	29.2	30.2	25.5	26.4	27.2	26.5	35.5	31.3	27.6
an	13.4	15.4	13.1	14.8	14.8	14.5	11.7	14.8	5.2	11.7	7.7	8.0
wo	--	--	--	--	--	--	--	--	--	--	--	--
di	--	--	--	--	--	--	--	--	--	--	--	--
hy	3.0	3.1	4.7	4.9	3.3	4.7	3.1	6.4	1.9	1.2	1.7	2.2
mt	2.8	1.9	0.6	1.9	2.9	2.6	1.5	0.9	0.3	1.6	1.1	1.3
il	1.0	0.9	0.9	1.0	0.8	1.0	0.7	0.9	0.2	0.3	0.3	1.3
ap	0.6	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.1	0.1	0.1	1.0
ol	--	--	--	--	--	--	--	--	--	--	--	--
Total	100.1	100.0	99.9	100.0	100.1	100.1	99.9	99.9	100.1	100.0	100.0	100.0
Modes (volume percent)												
Quartz	28	—	26	19	—	27	28	30	31	39	32	32
K-feldspar	14	—	15	26	—	18	28	20	34	8	22	23
Plagioclase	50	—	50	46	—	50	37	40	33	50	41	38
Biotite	—	—	—	—	—	—	—	--	--	--	--	--
Hornblende	—	--	--	—	--	--	—	--	--	--	--	--
Mafic minerals undivided	9	—	9	9	—	5	6	10	2	4	5	7
Total	101	—	100	100	—	100	99	100	100	101	100	100
Bulk specific gravity	2.67	—	2.67	2.67	—	2.70	2.65	2.68	2.61	2.67	2.64	2.62

JOHN MUIR INTRUSIVE SUITE

	Lamarck Granodiorite			Lake Edison Granodiorite							Round Valley Peak Granodiorite	
Field No.	6-91-1	A-481	MG-1	KPb-34	KPb-10	A-425	A-448	A-4548	A-490	95-83-5	M-739	M-550
Lab. No.	53-1300SCD	M-108022W	M3204	165169	165168	M-110131W	M-110133W	M-108021W	M-110134W	53-1298SCD	144087	144086
North Long.	37°10.9'	37°17.0'	37°13.2'	37°29.9'	37°26.3'	37°21.5'	37°19.3'	37°24.8'	37°17.3'	37°22.2'	37°30.8'	37°30.6'
West Lat.	118°38.7'	118°51.1'	118°35.9'	119°4.4'	119°1.4'	118°50.6'	118°51.1'	118°56.4'	118°47.8'	118°43.3'	118°54.8'	118°48.2'
Chemical analyses (weight percent)												
SiO_2	66.92	62.6	64.76	67.3	66.9	66.1	66.7	66.4	68.8	71.42	65.1	68.0
Al_2O_3	15.19	16.5	15.77	16.2	15.5	16.0	16.1	15.7	15.4	14.03	16.6	15.6
Fe_2O_3	1.45	1.5	1.70	1.6	1.8	2.1	1.6	1.0	1.7	0.89	2.3	1.8
FeO	2.52	3.7	2.97	1.5	2.0	2.0	2.2	2.8	1.4	1.63	2.4	1.8
MgO	1.74	2.4	2.14	1.1	1.7	1.4	1.5	1.8	1.1	0.70	1.8	1.5
CaO	3.79	5.0	4.50	3.4	3.4	3.9	3.5	3.7	2.9	1.91	4.1	3.6
Na_2O	3.16	3.4	3.23	3.6	3.5	3.8	3.5	3.5	3.4	2.86	3.4	3.4
K_2O	3.82	2.9	3.30	3.6	3.6	3.3	3.7	3.3	3.9	5.35	3.2	3.4
H_2O^+	0.48	0.87	0.51	0.60	0.61	0.53	0.31	0.80	0.70	0.35	0.48	0.40
H_2O^-	0.06	0.03	0.02	0.13	0.04	0.12	0.07	0.05	0.09	0.08		
TiO_2	0.47	0.64	0.59	0.51	0.48	0.55	0.44	0.49	0.39	0.36	0.48	0.38
P_2O_5	0.18	0.20	0.18	0.16	0.16	0.20	0.16	0.15	0.17	0.09	0.19	0.15
MnO	0.08	0.09	0.10	0.06	0.08	0.07	0.08	0.08	0.10	0.05	0.09	0.08
CO_2	0.02	<0.05	0.02	<0.05	0.10	<0.05	<0.05	<0.05	<0.05	0.02	<0.05	<0.05
Cl	--	--	0.02	--	--	--	--	--	--	--	--	--
F	--	--	0.04	--	--	--	--	--	--	--	--	--
Less O	--	--	0.02	--	--	--	--	--	--	--	--	--
Sum	99.88	99.9	99.83	99.8	99.9	100.1	99.9	99.8	100.1	99.74	100.2	100.2
CIPW norms (weight percent)												
Q	22.9	16.5	20.2	24.0	22.9	21.3	22.0	21.8	26.6	28.8	21.4	25.1
C	--	--	--	0.6	<0.05	--	0.4	--	0.7	0.3	0.5	0.1
or	22.7	17.3	19.7	21.5	21.5	19.6	22.0	19.7	23.2	31.8	19.0	20.2
ab	26.9	29.1	27.5	30.8	29.9	32.3	29.8	29.9	29.0	25.4	28.9	28.9
an	16.1	21.4	18.9	16.0	16.0	17.0	16.4	17.6	13.4	9.0	19.2	16.9
di	1.4	1.9	1.9	--	--	1.0	--	--	--	--	--	--
hy	6.5	9.8	7.7	3.5	5.8	4.2	5.9	8.2	3.5	3.5	6.4	5.1
mt	2.1	2.2	2.5	2.3	2.6	3.1	2.3	1.5	2.5	1.3	3.3	2.6
il	0.9	1.2	1.1	1.0	0.9	1.1	0.8	0.9	0.7	0.7	0.9	0.7
ap	0.4	0.5	0.4	0.4	0.4	0.5	0.4	0.4	0.4	0.2	0.5	0.4
hm	--	--	--	--	--	--	--	--	--			
Total	99.9	99.9	99.9	100.1	100.0	100.1	100.0	100.0	100.0	100.0	100.1	100.0
Modes (volume percent)												
Quartz	24	20	28	25	25	21	26	22	25	30	22	28
K-feldspar	24	17	15	21	20	16	22	19	25	33	14	22
Plagioclase	43	50	42	45	42	52	44	49	41	31	50	43
Biotite	6	--	--	--	--	--	--	--	--	5	8	5
Hornblende	3	--	--	--	--	--	--	--	--	--	5	3
Accessory minerals	--	--	--	--	--	--	--	--	--	1	1	tr
Mafic minerals undivided	--	13	16	9	12	11	8	10	8	--	--	--
Total	100	100	101	100	99	100	100	100	99	100	100	101
Bulk specific gravity	2.67	2.75	2.71	2.68	2.70	2.71	2.70	2.68	2.67	2.61	2.64	2.60

	Round Valley Peak Granodiorite--Continued			Mono Recessess Granite								Turret Peak pluton	McGee Creek pluton
Field No.	A-237	6-51-2	MT-2	A-150	A-241	A-436	A-450	A-518	A-555	95-83-8	FD-8	A-304	95-51-4
Lab. No.	M-110128W	53-1302SCD	H3194	M-110126W	M-110129W	M-110132W	M-108020W	M-110138W	M-110142W	152445	162500	M-110130W	152446
North Lat.	37°29.8'	37°28.0'	37°27.4'	37°27.3'	37°26.2'	37°19.8'	37°21.1'	37°29.7'	37°25.8'	37°21.2'	37°33.7'	37°15.8'	37°15.9'
West Long.	118°48.9'	118°41.7'	118°43.3'	118°46.7'	118°48.7'	118°45.4'	118°50.6'	118°57.1'	118°52.5'	118°44.9'	119°5.1'	118°50.5'	118°38.7'
Chemical analyses (weight percent)													
SiO_2	68.4	63.53	67.12	67.1	71.3	72.1	70.2	70.0	70.6	71.8	70.3	64.5	73.0
Al_2O_3	15.2	15.61	13.93	15.8	15.0	14.7	15.2	15.2	15.1	15.3	15.2	15.8	15.2
Fe_2O_3	1.6	2.35	2.02	2.0	1.1	1.1	0.00	1.4	1.5	1.0	1.8	1.9	0.4
FeO	1.8	3.25	2.82	1.4	0.96	0.76	2.2	0.96	1.0	0.65	0.97	2.6	0.34
MgO	1.4	2.54	2.19	1.0	0.50	0.31	0.70	0.50	0.65	0.34	0.63	1.8	0.16
CaO	3.4	4.58	4.04	3.3	2.1	1.7	2.6	2.1	2.4	1.8	2.8	3.9	1.1
Na_2O	3.3	3.31	2.86	4.0	3.9	3.8	4.0	3.8	3.9	3.8	3.8	3.5	3.8
K_2O	3.6	2.98	3.14	3.2	4.1	4.3	3.5	3.8	3.8	4.1	3.1	3.2	5.0
H_2O^+	0.68	0.61	0.53	1.1	0.46	0.37	0.67	1.2	0.37	0.48	0.55	1.0	0.48
H_2O^-	0.09	0.04	0.04	0.23	0.08	0.08	0.00	0.05	0.11		0.11	0.30	
TiO_2	0.40	0.63	0.56	0.47	0.27	0.23	0.36	0.32	0.39	0.22	0.40	0.55	0.09
P_2O_5	0.15	0.23	0.20	0.20	0.13	0.11	0.13	0.12	0.05	0.05	0.14	0.19	0.05
MnO	0.10	0.12	0.11	0.06	0.02	0.10	0.05	0.06	0.04	0.06	0.07	0.08	0.06
CO_2	<0.05	0.03	0.00	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	<0.05	0.48
Cl	--	--	0.01	--	--	--	--	--	--	--	--	--	--
F	--	--	0.04	--	--	--	--	--	--	--	--	--	--
Less O	--	--	0.02	--	--	--	--	--	--	--	--	--	--
Sum	100.2	99.81	99.59	99.9	100.0	99.7	99.7	99.6	100.0	99.7	99.9	99.4	100.2
CIPW norms (weight percent)													
Q	26.0	19.1	26.7	23.8	28.0	29.8	25.9	28.9	27.5	30.0	30.0	20.7	29.4
C	0.1	--	--	0.2	0.6	1.0	0.4	1.3	0.3	1.5	0.8	--	1.7
or	21.4	17.8	18.7	19.2	24.4	25.6	20.9	22.9	22.6	24.4	18.5	19.3	29.8
ab	28.1	28.3	24.4	34.4	33.2	32.4	34.2	32.7	33.2	32.4	32.4	30.2	32.4
an	16.0	19.1	16.1	15.3	9.6	7.8	12.2	9.8	11.6	8.7	13.1	18.3	5.2
di	--	1.9	2.3	--	--	--	--	--	--	--	--	0.1	--
hy	5.0	8.7	7.2	2.8	1.7	1.1	5.3	1.5	1.7	1.0	1.6	7.0	0.7
mt	2.3	3.4	3.0	2.9	1.6	1.6	--	2.1	2.2	1.5	2.2	2.8	0.6
il	0.8	1.2	1.1	0.9	0.5	0.4	0.7	0.6	0.7	0.4	0.8	1.1	0.2
ap	0.4	0.6	0.5	0.5	0.3	0.3	0.3	0.3	0.1	0.1	0.3	0.5	0.1
hm	--	--	--	--	--	--	--	--	--	--	0.3	--	--
Total	100.1	100.1	100.0	100.0	99.9	100.0	99.9	100.1	99.9	100.0	100.0	100.0	100.1
Modes (volume percent)													
Quartz	19	28	--	30	28	30	24	28	30	19	--	24	--
K-feldspar	23	16	--	18	24	23	21	20	19	35	--	16	--
Plagioclase	50	40	--	48	44	45	51	48	47	42	--	50	--
Biotite	--	--	--	--	--	--	--	--	--	--	--	--	--
Hornblende	--	--	--	--	--	--	--	--	--	--	--	--	--
Accessory minerals	--	--	--	--	--	--	--	--	--	--	--	--	--
Mafic minerals undivided	8	16	--	5	4	3	4	4	4	4	--	11	--
Total	100	--	--	101	100	101	100	100	100	100	--	101	--
Bulk specific gravity	2.70	2.71	2.67	2.64	2.64	2.64	2.66	2.65	2.65	2.62	--	2.70	--

	Evolution Basin Alaskite	
Field No.	MGa-18	MGa-23
Lab. No.	165150	165151
North Lat.	37°8.9'	37°7.3'
West Long.	118°44.0'	118°42.1'
Chemical analyses (weight percent)		
SiO_2	76.4	76.4
Al_2O_3	12.8	12.9
Fe_2O_3	0.35	0.29
FeO	0.36	0.24
MgO	0.3	0.1
CaO	0.24	0.37
Na_2O	4.3	4.3
K_2O	4.3	4.3
H_2O^+	0.55	0.45
H_2O^-	0.03	0.02
TiO_2	0.11	0.13
P_2O_5	0.02	0.02
MnO	0.07	0.10
CO_2	0.08	0.08
Cl	--	--
F	--	--
Less O	--	--
Sum	99.9	99.7
CIPW norms (weight percent)		
Q	34.1	34.3
C	0.7	0.6
or	25.6	25.6
ab	36.7	36.7
an	1.1	1.7
di	--	--
hy	1.1	0.4
mt	0.5	0.4
il	0.2	0.2
ap	<0.05	<0.05
hm	--	--
Total	100.1	99.9
Modes (volume percent)		
Quartz	--	--
K-feldspar	--	--
Plagioclase	--	--
Biotite	--	--
Hornblende	--	--
Accessory minerals	--	--
Mafic minerals undivided	--	--
Total	--	--
Bulk specific gravity	--	--

GRANITOIDS ASSOCIATED WITH THE MOUNT GODDARD ROOF PENDANT

	Sheared Granodiorite		Sheared leuco-granite	Grano-diorite of Margaret Lakes	Granite of Bear Dome			Alaskite of Graveyard Peak				Leucogranite of Finger Peak	
						Marginal facies							
Field No.	BCb-81	KR	BCd-2	KPb-74	A-511	A-512	A-536	KPb-83	KPb-53	A-514	A-406	BCd-17	BCd-50
Lab. No.	165158	D-100451	165157	165174	M-110135W	M-110136W	M-110140W	165176	165175	M-110137W	M-107207W	165152	165153
North Lat.	37°12.9'	37°14.0'	37°7.2'	37°27.6'	37°19.8'	37°18.3'	37°17.6'	37°29.4'	37°26.2'	37°27.1'	37°22.4'	37°2.6'	37°4.6'
West Long.	118°50.5'	118°50.3'	118°46.4'	119°0.6'	118°57.0'	118°54.0'	118°57.4'	119°1.2'	119°0.5'	118°59.5'	118°55.7'	118°50.4'	118°46.1'
Chemical analyses (weight percent)													
SiO_2	64.1	63.43	74.1	64.6	68.8	74.9	72.4	76.3	76.6	76.9	76.1	73.2	73.4
Al_2O_3	16.0	15.73	14.0	16.4	15.3	15.6	14.2	13.4	12.9	13.0	13.5	14.0	14.2
Fe_2O_3	2.2	2.31	0.64	2.0	1.1	0.77	0.84	0.21	0.11	0.23	0.08	0.54	0.72
FeO	2.8	3.35	0.78	2.6	1.9	0.48	0.96	0.22	0.22	0.44	0.40	0.96	0.80
MgO	2.2	2.34	0.5	1.6	0.95	0.22	0.38	0.1	0.1	0.04	0.04	0.5	0.6
CaO	3.9	3.72	0.90	2.4	2.4	0.75	1.2	0.34	0.42	0.54	0.60	1.9	1.5
Na_2O	3.3	3.68	4.6	4.0	4.0	4.2	4.1	4.3	3.5	3.3	3.5	3.6	3.1
K_2O	3.5	3.50	3.4	4.4	3.9	4.5	4.3	4.5	4.9	4.7	4.8	3.9	4.2
H_2O^+	0.77	0.63	0.34	0.77	0.65	0.14	0.57	0.27	0.96	0.67	0.28	0.60	0.97
H_2O^-	0.03	0.05	0.00	0.04	0.06	0.05	0.05	0.02	0.03	0.07	0.05	0.00	0.02
TiO_2	0.62	0.60	0.21	0.68	0.44	0.19	0.28	0.11	0.09	0.06	0.07	0.28	0.24
P_2O_5	0.16	0.16	0.05	0.20	0.14	0.04	0.08	0.00	0.02	0.02	0.00	0.08	0.08
MnO	0.17	0.17	0.00	0.22	0.10	0.05	0.06	0.06	0.02	0.04	0.03	0.04	0.05
CO_2	0.08	0.03	0.05	<0.05	<0.05	<0.05	0.08	<0.08	<0.05	<0.05	<0.05	0.05	<0.05
Cl	—	0.03	—	—	—	—	—	—	—	—	—	—	—
F	—	0.05	—	—	—	—	—	—	—	—	—	—	—
S	—	0.01	—	—	—	—	—	—	—	—	—	—	—
Less O	—	0.03	—	—	—	—	—	—	—	—	—	—	—
Sum	99.8	99.79	99.6	100.0	99.3	101.9	99.5	99.9	99.9	100.1	99.5	99.7	99.9
CIPW norms (weight percent)													
Q	19.3	16.4	32.8	16.6	24.6	30.9	29.2	33.3	36.8	38.6	36.1	32.6	35.5
C	0.1	—	1.2	1.2	0.5	2.5	0.8	0.8	1.1	1.6	1.5	0.6	2.0
or	20.9	20.9	20.3	26.2	23.4	26.2	25.7	26.7	29.3	28.0	28.6	23.3	25.1
ab	28.2	31.5	39.2	34.2	34.4	34.9	35.1	36.6	30.0	28.1	29.9	30.7	26.5
an	18.5	16.2	4.2	10.7	11.2	3.4	5.5	1.7	2.0	2.6	3.0	9.0	7.0
di	—	1.1	—	—	—	—	—	—	—	—	—	—	—
hy	8.2	9.0	1.8	6.5	3.2	0.6	1.7	0.4	0.5	0.7	0.7	2.2	2.1
mt	3.2	3.4	0.9	2.9	1.6	1.1	1.2	0.3	0.2	0.3	0.1	0.8	1.1
il	1.2	1.2	0.4	1.3	0.8	0.4	0.5	0.2	0.2	0.1	0.1	0.5	0.5
ap	0.4	0.4	0.1	0.5	0.3	0.1	0.2	—	<0.05	<0.05	—	0.2	0.2
Total	100.0	100.1	99.9	100.1	100.0	100.1	99.9	100.0	100.3	100.0	100.0	99.9	100.0
Modes (volume percent)													
Quartz	20	12	26	20	19	28	9	37	29	28	33	32	33
K-feldspar	14	13	29	11	23	37	34	38	42	36	35	27	27
Plagioclase	48	50	42	60	50	32	54	25	28	35	30	38	37
Biotite	—	—	3	—	8	3	4	1	1	1	2	4	4
Mafic minerals undivided	18	25	—	10	—	—	—	—	—	—	—	—	—
Total	100	100	100	101	100	100	101	101	100	100	100	101	101
Bulk specific gravity	2.71	—	2.62	2.71	2.68	2.62	2.63	2.62	2.61	2.62	2.62	2.64	2.63

JAWBONE INTRUSIVE SUITE

	Tonalite of Granite Creek			Granite of Woods Ridge
	LE-96 M-133929	LE-244 M-133934	LE-153 M-133932	LE-1092 M-133937
North Long.	37°49.3'	37°49.0'	37°54.1'	37°58.0'
West Lat.	119°59.0'	119°52.4'	119°59.9'	119°59.5'
Chemical analyses (weight percent)				
SiO_2	44.40	61.69	59.21	73.76
Al_2O_3	12.98	15.86	16.66	14.02
Fe_2O_3	1.19	0.94	0.82	0.73
FeO	11.30	5.23	6.00	0.96
MgO	10.98	2.89	3.55	0.57
CaO	10.85	6.21	6.31	2.32
Na_2O	2.06	2.43	2.49	2.93
K_2O	0.62	2.44	2.13	4.14
H_2O^+	2.06	0.68	1.51	0.30
H_2O^-	0.07	0.10	0.09	0.12
TiO_2	1.95	0.68	0.75	0.24
P_2O_5	0.15	0.17	0.19	0.08
MnO	0.188	0.120	0.118	0.033
CO_2	0.29	0.07	0.23	0.15
Sum	99.1	99.5	100.1	100.4
CIPW norms (weight percent)				
Q	—	18.7	14.8	35.0
C	—	—	—	0.7
or	3.8	14.6	12.8	24.5
ab	14.1	20.8	21.4	24.8
an	25.2	25.5	28.5	11.0
di	24.0	3.8	1.8	—
hy	—	13.4	17.6	2.2
mt	1.8	1.4	1.2	1.1
il	3.8	1.3	1.5	0.5
ap	0.4	0.4	0.5	0.2
ol	24.8	—	—	—
ne	2.1	—	—	—
Total	100.0	99.9	100.1	100.0
Modes (volume percent)				
Quartz	—	22	27	34
K-feldspar	—	2	1	28
Plagioclase	—	49	43	31
Mafic minerals undivided	—	28	29	8
Total	—	101	100	101
Bulk specific gravity	—	2.79	2.81	2.65

INTRUSIVE SUITE OF WAWONA

	Tonalite of Aspen Valley		Tonalite of the Gateway									
							Poopenaut Valley pluton					Tueeulala Falls pluton
	K-34-64	LE-1020	YV-13	Y-442	Y-656	Y-682	LE-31	LE-208	LE-122	LE-258	LE-1081	LE-60
	M-112665	M-133950	162494	M-194408	M-194497	M-194499	M-133931	M-133947	M-133945	M-133935	M-133952	M-133943
North Long.	37°48.4'	37°49.0'	37°40.6'	37°34.6'	37°30.4'	37°38.8'	37°55.4'	37°57.3'	37°55.4'	37°58.7'	37°59.4'	37°56.9'
West Lat.	119°55.7'	119°45.9'	119°44.4'	119°40.7'	119°43.0'	119°42.9'	119°48.5'	119°49.7'	119°57.4'	119°45.4'	119°49.4'	119°45.9'
Chemical analyses (weight percent)												
SiO_2	59.0	62.16	70.3	57.3	67.9	62.3	60.23	61.37	62.65	63.99	71.34	68.40
Al_2O_3	17.3	17.42	15.8	19.0	15.4	16.6	17.16	17.74	16.84	16.81	15.05	15.62
Fe_2O_3	2.2	1.99	1.1	1.9	1.2	1.9	1.95	1.78	1.93	1.55	0.88	1.66
FeO	4.0	3.22	1.4	3.9	2.2	3.3	4.17	3.60	3.16	2.56	1.18	2.04
MgO	3.0	2.32	0.66	2.5	1.5	2.0	2.84	2.28	2.39	2.03	0.71	1.32
CaO	6.2	5.68	3.4	6.4	3.6	5.2	6.32	5.78	5.70	5.03	2.73	3.69
Na_2O	3.0	3.68	3.6	4.0	3.7	3.4	3.42	3.98	3.70	3.83	3.73	3.86
K_2O	2.4	1.58	2.5	2.0	2.7	2.5	1.85	1.83	1.77	2.32	3.44	2.38
H_2O^+	1.0	0.69	0.45	0.89	0.54	0.87	0.77	0.89	0.93	0.66	0.42	0.60
H_2O^-	0.23	0.11	0.17	0.12	0.12	0.18	0.09	0.09	0.11	0.10	0.12	0.10
TiO_2	0.80	0.64	0.34	0.96	0.49	0.94	0.81	0.77	0.85	0.67	0.40	0.52
P_2O_5	0.20	0.25	0.10	0.38	0.17	0.30	0.21	0.22	0.24	0.19	0.12	0.13
MnO	0.09	0.107	0.04	0.10	0.05	0.06	0.112	0.092	0.080	0.072	0.051	0.100
CO_2	<0.05	0.06	<0.05	0.02	0.02	0.00	0.05	0.06	0.06	0.04	0.06	0.05
Sum	99.5	99.9	99.9	99.5	99.6	99.6	100.0	100.5	100.4	99.9	100.2	100.5
CIPW norms (weight percent)												
Q	14.0	18.4	31.5	8.5	25.8	18.8	14.8	14.7	18.6	19.0	29.6	26.6
C	—	—	1.2	—	0.3	—	—	—	—	—	0.5	0.3
or	14.4	9.4	14.9	12.0	16.1	15.1	11.0	10.9	10.5	13.8	20.4	14.1
ab	25.9	31.4	30.7	34.4	31.7	29.2	29.2	33.9	31.5	32.7	31.7	32.8
an	27.1	26.6	16.3	28.4	16.9	23.0	26.3	25.3	24.3	22.0	12.8	17.5
di	2.3	0.2	—	1.1	—	1.0	3.3	1.7	2.1	1.5	—	—
hy	10.9	9.2	2.8	10.1	6.1	7.7	10.5	8.9	7.9	6.8	2.7	5.0
mt	3.2	2.9	1.6	2.8	1.8	2.8	2.9	2.6	2.8	2.3	1.3	2.4
il	1.5	1.2	0.7	1.9	0.9	1.8	1.6	1.5	1.6	1.3	0.8	1.0
ap	0.5	0.6	0.2	0.9	0.4	0.7	0.5	0.5	0.6	0.5	0.3	0.3
ol	—	—	—	—	—	—	—	—	—	—	—	—
Total	99.8	99.9	99.9	100.1	100.0	100.0	100.1	100.0	99.9	99.9	100.0	100.0
Modes (volume percent)												
Quartz	27	20	29	12	29	22	21	19	17	19	29	25
K-feldspar	5	1	14	1	13	5	2	1	4	5	18	11
Plagioclase	54	61	47	63	45	50	50	56	57	56	45	52
Mafic minerals undivided	15	19	10	23	13	23	27	23	22	20	8	12
Total	101	101	100	99	100	100	100	99	100	100	100	100
Bulk specific gravity	2.79	2.75	—	2.78	2.72	2.73	2.78	2.77	2.76	2.73	2.66	2.70

	Tonalite of the Gateway—Continued									Granodiorite of Arch Rock	
	Hazel Green pluton										Crowsfoot Camp pluton
	Marginal facies										
	DF-5	LE-90	DF-1	DF-2	DF-3	DF-4	LE-86	456-I-36	456-M-23	Y-14	Y-645
	W-170090	M-133944	W-170086	W-170087	W-170088	W-170089	M-133954	W-170084	W-170081	162493	W-193412
North Long.	37°44.6'	37°45.6'	37°44.1'	37°44.3'	37°44.4'	37°44.5'	37°45.6'	37°44.9'	37°44.3'	37°41.2'	37°30.6'
West Lat.	119°55.5'	119°54.6'	119°54.9'	119°55.1'	119°55.2'	119°55.3'	119°55.6'	119°55.6'	119°55.8'	119°43.8'	119°44.2'
Chemical analyses (weight percent)											
SiO_2	60.7	63.74	45.3	47.5	45.2	49.9	48.65	47.1	44.1	71.1	70.6
Al_2O_3	16.6	16.29	22.3	17.7	22.5	21.4	24.97	25.2	23.7	15.4	15.6
Fe_2O_3	1.9	1.49	4.0	1.7	3.4	3.5	0.16	0.62	2.3	1.3	0.94
FeO	4.4	3.00	6.7	9.7	6.2	4.4	3.90	3.8	7.7	1.2	1.1
MgO	3.5	2.45	4.1	7.5	4.2	5.3	5.10	4.8	4.7	0.68	0.76
CaO	6.2	5.13	13.6	11.2	13.8	10.8	14.24	14.8	12.7	3.3	2.5
Na_2O	2.7	3.29	1.6	1.5	1.2	2.2	1.90	1.2	1.6	3.6	2.6
K_2O	2.0	2.26	0.20	0.22	0.15	0.27	0.35	0.15	0.13	2.5	3.5
H_2O^+	0.66	0.88	0.68	0.50	1.0	0.85	1.00	1.6	0.72	0.34	1.1
H_2O^-	0.08	0.16	0.16	0.06	0.28	0.25	0.10	0.11	0.15	0.17	0.83
TiO_2	0.89	0.60	0.52	1.2	1.3	0.84	0.22	0.44	1.6	0.31	0.19
P_2O_5	0.21	0.17	0.24	0.10	0.14	0.04	0.13	0.04	0.28	0.09	0.15
MnO	0.12	0.084	0.16	0.20	0.14	0.14	0.085	0.09	0.16	0.04	0.05
CO_2	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	0.48	<0.05	0.08	<0.05	0.04
Sum	100.0	99.6	99.6	99.1	99.6	99.9	101.3	100.0	99.2	100.1	100.0
CIPW norms (weight percent)											
Q	17.6	20.8	—	—	1.8	4.6	—	0.3	—	32.6	36.3
C	—	—	—	—	—	—	—	—	—	1.0	3.4
or	11.9	13.6	1.2	1.3	0.9	1.6	2.1	0.9	0.8	14.8	21.1
ab	23.0	28.3	13.7	12.9	10.3	18.8	16.1	10.3	13.7	30.6	22.5
an	27.5	23.4	53.8	41.5	56.6	48.3	58.7	64.1	57.7	15.9	11.7
di	1.7	1.1	10.7	11.7	9.9	4.5	9.1	8.4	3.4	—	—
hy	13.2	9.2	12.0	25.7	12.6	15.3	7.2	14.1	9.7	2.4	3.0
mt	2.8	2.2	5.9	2.5	5.0	5.1	0.2	0.9	3.4	1.9	1.4
il	1.7	1.2	1.0	2.3	2.5	1.6	0.4	0.9	3.1	0.6	0.4
ap	0.5	0.4	0.6	0.2	0.3	0.1	0.3	0.1	0.7	0.2	0.4
ol	—	—	—	—	—	—	—	—	—	—	—
Total	99.9	100.2	100.1	100.0	99.9	99.9	99.9	100.0	100.1	100.0	100.2
Modes (volume percent)											
Quartz	—	26	—	—	—	—	11	—	—	25	—
K-feldspar	—	7	—	—	—	—	0	—	—	16	—
Plagioclase	—	48	—	—	—	—	77	—	—	50	—
Mafic minerals undivided	—	20	—	—	—	—	12	—	—	9	—
Total	—	101	—	—	—	—	100	—	—	100	—
Bulk specific gravity	—	2.73	—	—	—	—	2.81	—	—	2.66	—

	Granodiorite of Sawmill Mountain			
	LE-1036 M-133936	LE-249 M-133948	LE-183 M-133946	LE-1104 M-133938
North Long. West Lat.	37°49.7' 119°53.7'	37°54.4' 119°53.6'	37°53.8' 119°55.6'	37°45.8' 119°46.5'
Chemical analyses (weight percent)				
SiO_2	69.99	71.48	72.12	65.39
Al_2O_3	15.18	15.10	14.26	16.60
Fe_2O_3	1.05	0.85	1.04	1.02
FeO	1.74	1.40	1.28	3.16
MgO	0.87	0.52	0.39	1.50
CaO	2.92	2.16	1.71	4.21
Na_2O	4.20	2.94	3.76	3.96
K_2O	2.34	4.14	4.19	2.46
H_2O^+	0.58	0.75	0.52	0.58
H_2O^-	0.16	0.37	0.10	0.12
TiO_2	0.36	0.29	0.32	0.62
P_2O_5	0.17	0.13	0.10	0.19
MnO	0.082	0.065	0.050	0.084
CO_2	0.06	0.31	0.07	<0.05
Sum	99.7	100.5	99.9	99.9
CIPW norms (weight percent)				
Q	29.0	33.1	30.0	20.5
C	0.8	2.2	0.7	0.2
or	14.0	24.7	25.0	14.7
ab	35.9	25.1	32.1	33.8
an	13.5	10.0	7.9	19.8
di	—	—	—	—
hy	4.1	2.8	2.0	7.9
mt	1.5	1.2	1.5	1.5
il	0.7	0.6	0.6	1.2
ap	0.4	0.3	0.2	0.5
ol	—	—	—	—
Total	99.9	100.0	100.0	100.1
Modes (volume percent)				
Quartz	31	26	30	22
K-feldspar	9	30	28	55
Plagioclase	51	37	38	4
Mafic minerals undivided	10	7	4	19
Total	101	100	100	100
Bulk specific gravity	2.65	2.63	2.65	2.72

INTRUSIVE SUITE OF YOSEMITE VALLEY

	El Capitan Granite								Rancheria Mountain pluton					
	K-43-69	K-36-67	K-35-64	FD-14	Y-10	Y-562	Y-508	Y-721	H-22-69	H-33-69	H-34-69	D-6	LE-175	FD-31
	M-112661W	M-112674W	M-112668W	162504	162492	W-193409	W-194491	W-194502	M-112670W	M-112673W	D-102869	M-112672W	M-133933	D-102772
North Long.	37°46.0'	37°46.0'	37°48.3'	37°43.7'	37°42.9'	37°33.0'	37°43.8'	37°33.9'	37°55.9'	37°58.8'	37°58.7'	37°57.9'	37°56.7'	37°57.9'
West Lat.	119°37.5'	119°42.4'	119°39.9'	119°37.4'	119°42.1'	119°38.1'	119°41.3'	119°37.0'	119°38.0'	119°36.9'	119°37.4'	119°41.3'	119°46.7'	119°42.9'
Chemical analyses (weight percent)														
SiO_2	69.8	70.1	73.1	73.3	70.3	65.3	73.5	73.7	74.2	69.0	76.6	74.9	72.18	77.4
Al_2O_3	14.9	14.8	14.3	14.4	16.1	16.7	14.4	14.1	14.0	16.5	12.9	13.5	14.61	12.2
Fe_2O_3	1.1	0.81	1.0	0.59	1.1	1.2	0.78	0.68	0.40	0.84	0.29	0.28	0.78	0.51
FeO	2.1	1.9	0.92	0.92	1.2	3.2	0.92	1.2	1.0	1.6	0.55	0.84	1.44	0.45
MgO	0.89	0.78	0.50	0.71	0.51	2.0	0.42	0.68	0.35	0.65	0.09	0.33	0.46	0.16
CaO	2.7	2.6	1.4	1.8	3.0	4.4	1.6	2.1	1.7	2.4	0.89	1.5	2.10	0.63
Na_2O	3.5	3.7	3.4	3.0	4.4	3.3	3.5	3.7	3.1	3.7	3.7	3.0	3.86	3.66
K_2O	3.0	3.0	4.2	4.6	2.4	2.3	4.0	3.2	4.1	3.8	4.3	4.2	3.07	4.49
H_2O^+	0.77	1.2	0.61	0.47	0.39	0.90	0.55	0.41	0.54	0.78	0.00	0.48	0.34	0.00
H_2O^-	0.17	0.14	0.12	0.11	0.15	0.06	0.19	0.19	0.11	0.08	0.04	0.18	0.04	0.00
TiO_2	0.39	0.35	0.32	0.02	0.23	0.67	0.19	0.26	0.15	0.32	0.07	0.12	0.32	0.12
P_2O_5	0.14	0.12	0.11	0.02	0.10	0.20	0.11	0.12	0.04	0.13	0.02	0.05	0.11	0.02
MnO	0.04	0.06	0.03	0.03	0.03	0.07	0.02	0.03	0.04	0.06	0.06	0.03	0.063	0.06
CO_2	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	0.00	0.04	<0.05	<0.05	<0.03	<0.05	0.09	0.03
Sum	99.6	99.6	100.1	100.0	100.0	100.4	100.2	100.4	99.8	99.9	99.5	99.5	99.4	99.7
CIPW norms (weight percent)														
Q	30.6	30.2	33.9	33.0	28.3	23.8	33.9	34.3	36.1	26.6	36.5	37.7	32.7	37.4
C	1.3	1.0	1.9	1.3	1.1	1.3	1.7	1.0	1.5	2.3	0.6	1.4	1.4	0.2
or	18.0	18.1	25.0	27.4	14.3	13.7	23.8	19.0	24.5	22.7	25.6	25.1	18.3	26.6
ab	30.0	31.9	29.0	25.5	37.5	28.1	29.8	31.4	26.5	31.6	31.5	25.7	33.0	31.1
an	12.7	12.3	6.3	8.9	14.3	20.7	7.3	9.7	8.2	11.2	4.3	7.2	9.8	3.0
hy	4.7	4.4	1.6	3.0	2.3	8.9	1.8	3.0	2.2	3.5	1.0	2.0	2.8	0.7
mt	1.6	1.2	1.5	0.9	1.6	1.8	1.1	1.0	0.6	1.2	0.4	0.4	1.1	0.7
il	0.8	0.7	0.6	<0.05	0.4	1.3	0.4	0.5	0.3	0.3	0.1	0.2	0.6	0.2
ap	0.3	0.3	0.3	<0.05	0.2	0.5	0.3	0.3	0.1	0.3	<0.05	0.1	0.3	<0.05
hm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	100.0	100.1	100.1	100.1	100.0	100.1	100.1	100.2	100.0	100.0	100.0	99.8	100.0	99.9
Modes (volume percent)														
Quartz	27	32	25	35	26	27	32	28	37	21	38	37	35	28
K-feldspar	11	12	34	23	11	4	24	21	23	25	34	22	20	48
Plagioclase	52	46	36	38	53	49	40	43	38	49	27	37	39	24
Mafic minerals undivided	11	11	4	4	10	20	4	8	3	6	1	3	6	1
Total	101	101	99	100	100	100	100	100	101	101	101	99	100	101
Bulk specific gravity	2.64	2.65	2.62	2.63	--	2.74	2.63	2.66	2.62	2.78	2.64	2.62	2.67	2.58

	El Capitan Granite--Continued							
	Double Rock pluton		Mount Hoffman pluton			Swamp Lake pluton	Bald Mountain pluton	Gray Peak pluton
	K-18-64 M-112667W	H-27-69 M-112676W	H-47-66 M-112662W	K-51-66 M-112656W	K-45-66 M-112658W	LE-1111 M-133953	LE-28 M-133941	MP-773 161592
North Long.	37°53.1'	37°59.0'	37°51.8'	37°51.4'	37°53.6'	37°57.2'	37°54.2'	37°41.0'
West Lat.	119°50.0'	119°30.2'	119°47.3'	119°46.2'	119°31.8'	119°50.1'	119°49.6'	119°24.6'
Chemical analyses (weight percent)								
SiO_2	71.8	70.3	72.0	68.2	72.8	72.54	71.08	70.1
Al_2O_3	14.2	14.8	14.6	15.8	14.7	14.86	14.92	14.6
Fe_2O_3	0.94	0.70	0.94	1.1	0.50	0.88	0.85	1.7
FeO	1.6	2.0	1.6	2.1	1.0	1.32	1.48	2.2
MgO	0.59	0.78	0.69	0.94	0.47	0.50	0.59	0.51
CaO	1.7	2.0	2.2	2.7	1.8	2.23	2.57	2.3
Na_2O	3.0	4.0	3.2	3.1	3.7	3.48	3.31	3.9
K_2O	4.7	3.8	3.5	4.5	4.1	3.96	3.70	3.8
H_2O^+	0.67	1.0	0.62	0.65	0.50	0.35	0.39	0.25
H_2O^-	0.14	0.10	0.09	0.13	0.07	0.05	0.19	0.06
TiO_2	0.33	0.34	0.38	0.45	0.25	0.31	0.33	0.36
P_2O_5	0.08	0.10	0.04	0.13	0.06	0.12	0.10	0.10
MnO	0.03	0.07	0.04	0.06	0.06	0.054	0.069	0.08
CO_2	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	0.09	<0.05
Sum	99.8	100.0	100.0	99.9	100.1	100.7	99.7	100.0
CIPW norms (weight percent)								
Q	31.6	26.4	33.9	25.3	30.9	31.3	31.1	26.6
C	1.3	0.7	1.7	1.2	1.1	1.1	1.1	0.1
or	18.1	22.7	20.9	26.8	14.4	23.3	22.1	22.5
ab	25.6	34.2	27.3	26.5	31.5	29.4	28.3	33.1
an	8.0	9.4	10.7	12.7	8.6	10.3	12.2	10.8
hy	3.2	4.7	3.4	4.7	2.3	2.5	3.1	3.5
mt	1.4	1.0	1.4	1.6	0.7	1.3	1.2	2.5
il	0.6	0.7	0.7	0.9	0.5	0.6	0.6	0.7
ap	0.2	0.2	0.1	0.3	0.1	0.3	0.2	0.2
hm	--	--	--	--	--	--	--	--
Total	100.0	100.0	100.1	100.0	100.1	100.1	99.9	100.0
Modes (volume percent)								
Quartz	28	24	33	18	24	25	32	28
K-feldspar	32	21	18	23	33	30	21	25
Plagioclase	35	46	40	48	36	38	39	38
Mafic minerals undivided	5	9	9	11	7	8	8	9
Total	100	100	100	100	100	101	101	100
Bulk specific gravity	2.62	--	2.65	2.65	2.63	2.64	2.66	2.66

INTRUSIVE SUITE OF YOSEMITE VALLEY--Continued

	Taft Leucogranite						
			Ten Lakes pluton		Stovepipe Camp pluton	Hogan Mountain pluton	
	FD-12 162502	Y-161 M-193402	K-45-67 M-112669W	M-25-69 M-112671W	Y-663 M-194498	BLa-45 M-145292	BLa-14 M-145285
North Long.	37°42.8'	37°42.2'	37°53.6'	37°59.2'	37°32.4'	37°27.6'	37°26.6'
West Lat.	119°36.2'	119°39.1'	119°31.7'	119°31.3'	119°43.5'	119°41.4'	119°39.0'
Chemical analyses (weight percent)							
SiO_2	74.0	75.2	76.9	75.0	72.6	74.6	75.5
Al_2O_3	14.5	14.0	12.7	14.4	14.6	12.9	13.1
Fe_2O_3	0.36	0.53	0.15	0.64	1.0	0.35	0.65
FeO	0.40	0.80	0.76	0.60	0.84	0.67	0.45
MgO	0.11	0.33	0.09	0.06	0.76	0.2	0.2
CaO	1.3	1.6	0.82	0.73	1.5	0.87	0.85
Na_2O	3.5	3.3	3.4	3.1	3.2	2.9	2.9
K_2O	4.5	3.9	4.1	4.5	3.5	4.24	5.12
H_2O^+	0.54	0.54	0.58	0.71	1.4	0.64	0.41
H_2O^-	0.22	0.13	0.14	0.10	0.99	0.42	0.16
TiO_2	0.03	0.19	0.08	0.10	0.27	0.07	0.08
P_2O_5	0.00	0.11	0.05	0.00	0.12	<0.01	<0.01
MnO	0.02	0.03	0.05	0.00	0.03	<0.02	<0.02
CO_2	<0.05	0.00	<0.05	<0.05	0.02	0.02	--
Sum	99.5	100.7	99.9	100.0	100.8	98.1	99.4
CIPW norms (weight percent)							
Q	33.7	37.1	39.5	38.2	37.0	41.4	37.6
C	1.5	1.7	1.3	3.1	3.2	3.0	1.6
or	26.9	23.1	24.5	26.8	21.0	25.6	30.4
ab	30.0	27.9	29.0	26.5	27.5	25.1	24.7
an	6.5	7.2	3.8	3.7	6.8	1.6	3.2
hy	0.7	1.6	1.5	0.6	2.3	0.5	0.5
mt	0.5	0.8	0.2	0.9	1.5	0.5	0.5
il	0.1	0.4	0.2	0.2	0.5	1.2	0.8
ap	--	0.3	0.1	--	0.3	1.0	0.4
hm	--	--	--	--	--	--	0.3
Total	99.9	100.1	100.1	100.0	100.1	99.9	100.0
Modes (volume percent)							
Quartz	36	33	22	--	28	39	34
K-feldspar	29	32	30	--	25	24	34
Plagioclase	31	31	39	--	43	34	29
Mafic minerals	4	4	8	--	4	3	3
Total	100	100	99	--	100	100	100
Bulk specific gravity	2.60	2.65	2.63	2.58	2.57	2.56	2.59

INTRUSIVE SUITE OF MERCED PEAK

	Granodiorite of Jackass Lakes				Leuco-granite of Timber Knob
Field No.	MP-578	MP-520	MP-180	MP-253	MP-640
Lab No.	W-194921	D-100201	W-185505	W-194917	161528
North Lat.	37°38.4'	37°35.4'	37°35.7'	37°39.3'	37°35.0'
West Long.	119°24.6'	119°23.9'	119°20.9'	119°17.1'	119°18.8'
Chemical analyses (weight percent)					
SiO_2	64.9	68.57	66.6	72.0	74.7
Al_2O_3	16.2	15.60	16.4	15.3	13.2
Fe_2O_3	2.1	1.15	1.6	0.90	0.40
FeO	2.5	1.89	1.5	0.92	0.73
MgO	1.7	0.99	0.62	0.32	0.08
CaO	4.1	3.02	4.0	0.98	1.0
Na_2O	3.8	4.02	4.2	4.6	3.3
K_2O	2.9	3.43	2.9	4.2	5.2
H_2O^+	0.69	0.41	0.59	0.43	0.40
H_2O^-	0.14	0.05	0.04	0.12	0.04
TiO_2	0.83	0.47	0.37	0.30	0.12
P_2O_5	0.23	0.13	0.27	0.08	0.02
MnO	0.07	0.08	0.00	0.04	0.06
CO_2	0.01	0.01	0.02	0.01	<0.05
Cl	--	0.01	--	--	--
F	--	0.05	--	--	--
Less O	--	0.02	--	--	--
Sum	100.2	98.86	99.1	100.2	99.3
CIPW norms (weight percent)					
Q	20.5	23.8	22.5	26.7	33.4
C	--	0.1	--	1.6	0.4
or	17.3	20.4	17.4	24.9	31.1
ab	32.4	34.2	36.1	39.1	28.3
an	18.7	14.2	17.6	4.4	4.9
di	0.2	--	0.6	--	--
hy	5.8	4.4	2.1	1.3	1.1
mt	3.1	1.7	2.4	1.3	0.6
il	1.6	0.9	0.7	0.6	0.2
ap	0.5	0.3	0.7	0.2	<0.05
Total	100.1	100.0	100.1	100.1	100.1
Modes (volume percent)					
Quartz	20	24	22	27	29
K-feldspar	12	19	15	33	33
Plagioclase	53	47	52	37	35
Mafic minerals undivided	15	10	12	4	2
Total	100	100	101	101	99
Bulk specific gravity	2.72	2.70	2.70	2.64	2.62

INTRUSIVE SUITE OF BUENA VISTA CREST

	Granodiorite of Illilouette Creek									Granodiorite of Ostrander Lake				
								Tamarack Creek pluton	Leaning Tower pluton					
Field No.	MP-568	MP-478	Y-582	Y-132	Y-173	FD-13	K-46-64	LE-41	Y-583	Y-349	Y-733	MP-617	MP-574	MP-351
Lab No.	D-100202	W-185510	W-193410	W-194486	W-194488	162503	M-112677W	M-133942	W-194500	W-194489	W-194504	D-100204	161587	161582
North Long.	37°38.4'	37°32.6'	37°34.0'	37°35.0'	37°44.7'	37°43.2'	37°48.4'	37°46.6'	37°42.9'	37°36.9'	37°37.3'	37°37.4'	37°36.3'	37°31.4'
West Lat.	119°25.3'	119°28.4'	119°32.8'	119°32.1'	119°35.8'	119°33.3'	119°33.4'	119°45.1'	119°38.7'	119°35.8'	119°33.2'	119°26.7'	119°28.5'	119°27.0'
Chemical analyses (weight percent)														
SiO_2	64.71	69.1	64.0	67.8	59.5	61.3	61.0	62.79	70.4	66.6	71.7	70.32	72.2	73.2
Al_2O_3	15.86	14.8	16.2	15.5	16.6	16.5	16.4	16.77	14.9	15.8	14.9	14.69	14.7	13.9
Fe_2O_3	1.46	1.2	1.6	1.3	2.3	2.7	2.1	2.11	0.82	1.7	0.73	0.87	0.37	0.24
FeO	3.28	2.4	3.5	2.2	3.8	3.1	3.8	3.08	1.9	2.6	1.2	1.76	1.3	1.6
MgO	2.17	1.6	2.5	1.5	3.0	1.3	2.9	2.21	1.0	1.6	0.57	1.03	0.52	0.50
CaO	4.84	4.7	5.1	3.7	5.8	6.5	5.4	5.30	2.7	4.7	2.4	2.83	2.0	1.8
Na_2O	3.24	3.1	3.1	3.2	3.1	5.1	3.4	2.62	3.4	3.6	3.6	3.28	3.3	3.1
K_2O	2.71	2.4	2.5	2.9	2.5	1.7	2.6	2.00	3.3	1.5	3.6	4.01	4.0	4.5
H_2O^+	0.55	0.46	0.66	0.68	0.61	0.72	1.0	0.82	0.81	0.46	0.54	0.48	0.90	0.66
H_2O^-	0.06	0.03	0.10	0.12	0.18	0.00	0.12	0.20	0.11	0.22	0.12	0.05	0.07	0.05
TiO_2	0.72	0.33	0.80	0.65	0.83	0.61	0.84	0.70	0.40	0.58	0.35	0.40	0.30	0.22
P_2O_5	0.15	0.25	0.23	0.23	0.27	0.24	0.21	0.21	0.15	0.23	0.16	0.09	0.08	0.06
MnO	0.08	0.00	0.07	0.05	0.09	0.10	0.06	0.105	0.04	0.07	0.03	0.05	0.08	0.04
CO_2	0.01	0.02	0.00	0.02	0.00	<0.05	<0.05	0.09	0.00	0.00	0.01	0.02	0.08	<0.05
Cl	0.03	--	--	--	--	--	--	--	--	--	--	0.01	--	--
F	0.05	--	--	--	--	--	--	--	--	--	--	0.05	--	--
Less O	0.03	--	--	--	--	--	--	--	--	--	--	0.02	--	--
Sum	99.89	100.4	100.4	99.9	98.6	99.9	99.9	100.0	99.9	99.7	99.9	99.92	99.9	99.9
CIPW norms (weight percent)														
Q	21.2	29.4	20.9	27.9	15.0	11.8	15.1	25.0	30.4	27.2	31.2	27.8	32.4	32.7
C	--	--	--	0.9	--	--	--	1.2	1.2	0.3	1.1	<0.05	1.5	0.8
or	16.1	14.2	14.8	17.2	15.1	10.1	15.6	12.1	19.7	9.0	21.4	23.9	23.9	26.8
ab	27.6	26.3	26.3	27.3	26.8	43.5	29.1	22.6	29.1	30.8	30.7	27.9	28.2	26.5
an	20.9	19.4	23.0	17.0	24.5	17.3	22.1	25.5	12.5	22.0	10.9	13.5	9.5	8.6
di	1.9	1.9	0.7	--	2.5	11.2	3.0	--	--	--	--	--	--	--
hy	8.3	5.9	9.8	5.8	10.4	0.4	9.9	8.6	4.8	6.6	2.5	4.5	3.1	3.7
mt	2.1	1.7	2.3	1.9	3.4	3.9	3.1	3.1	1.2	2.5	1.1	1.3	0.5	0.4
il	1.4	0.6	1.5	1.2	1.6	1.2	0.6	1.4	0.8	1.1	0.7	0.8	0.6	0.4
ap	0.4	0.6	0.5	0.6	0.7	0.6	0.5	0.5	0.4	0.6	0.4	0.2	0.2	0.1
Total	99.9	100.0	99.8	99.9	100.0	100.0	100.0	100.0	100.1	100.1	100.0	99.9	99.9	100.0
Modes (volume percent)														
Quartz	23	27	22	30	17	19	--	28	27	21	31	29	31	31
K-feldspar	11	12	6	18	8	6	--	6	17	7	17	24	25	30
Plagioclase	48	43	50	40	49	51	--	51	46	51	46	39	39	35
Mafic minerals undivided	17	19	22	12	25	25	--	16	11	21	6	8	5	5
Total	99	101	100	100	99	101	--	101	101	100	100	100	100	101
Bulk specific gravity	2.74	2.74	2.74	2.72	2.79	2.76	--	2.75	2.69	2.76	2.66	2.67	2.65	2.65

INTRUSIVE SUITE OF BUENA VISTA CREST--Continued

	Granodiorite of Breeze Lake	Granodiorite of Horse Ridge	Bridalveil Granodiorite		Granite of Chilnualna Lakes
Field No.	MP-541	Y-408	Y-337	Y-165	Y-410
Lab. No.	161586	W-193406	W-193404	W-194487	W-193407
North Lat.	37°34.1'	37°35.9'	37°41.8'	37°41.4'	37°36.4'
West Long.	119°23.5'	119°30.9'	119°36.8'	119°36.9'	119°32.2'
Chemical analyses (weight percent)					
SiO_2	70.6	67.3	73.7	68.5	72.1
Al_2O_3	14.8	16.9	14.6	15.9	15.4
Fe_2O_3	0.90	1.2	0.45	1.0	0.78
FeO	1.8	2.1	1.1	2.2	0.80
MgO	0.65	1.1	0.44	1.1	0.43
CaO	2.4	3.7	1.8	3.2	2.1
Na_2O	3.9	3.9	3.4	3.5	3.9
K_2O	3.2	2.2	3.5	2.5	3.4
H_2O^+	0.85	0.70	0.50	0.65	0.57
H_2O^-	0.12	0.12	0.19	0.18	0.13
TiO_2	0.43	0.61	0.20	0.46	0.27
P_2O_5	0.16	0.26	0.12	0.17	0.21
MnO	0.08	0.09	0.04	0.06	0.02
CO_2	0.10	0.00	0.04	0.00	0.00
Cl	--	--	--	--	--
F	--	--	--	--	--
Less O	--	--	--	--	--
Sum	100.0	100.2	100.1	99.4	100.1
CIPW norms (weight percent)					
Q	29.4	26.6	35.9	29.8	31.8
C	0.9	2.0	2.2	2.1	2.0
or	19.1	13.1	20.8	15.0	20.2
ab	33.4	33.2	29.0	30.0	33.2
an	11.0	16.8	8.2	15.0	9.1
di	--	--	--	--	--
hy	3.7	4.8	2.5	5.4	1.5
mt	1.3	1.8	0.7	1.5	1.1
il	0.8	1.2	0.4	0.9	0.5
ap	0.4	0.6	0.3	0.4	0.5
Total	100.0	100.1	100.0	100.1	99.9
Modes (volume percent)					
Quartz	29	27	33	34	31
K-feldspar	17	7	21	8	19
Plagioclase	48	57	9	50	45
Mafic minerals undivided	6	9	7	7	5
Total	100	100	100	99	100
Bulk specific gravity	2.68	2.71	2.64	2.70	2.64

INTRUSIVE SUITE OF WASHBURN LAKE

	Granodiorite of Red Devil Lake						Granite of Turner Lake				Granite porphyry of Cony Crags	
Field No.	MP-728	MP-836	MP-789	MP-798	MP-730	MP-794	MP-682	MP-818	MP-795B	M-328	MP-821	MP-691
Lab No.	161590	W-196941	D-100205	161596	W-196937	161595	161589	W-196939	W-19663B	D-100199	W-196940	D-100206
North Lat.	37°43.3'	37°44.3'	37°40.0'	37°42.2'	37°43.0'	37°43.1'	37°42.1'	37°42.4'	37°42.8'	37°38.3'	37°43.8'	37°44.6'
West Long.	119°17.0'	119°16.2'	119°23.0'	119°17.9'	119°18.2'	119°18.6'	119°20.4'	119°19.8'	119°19.1'	119°20.8'	119°21.3'	119°21.9'
Chemical analyses (weight percent)												
SiO_2	66.7	67.9	68.09	69.3	70.5	72.5	72.4	72.4	73.2	73.58	70.6	72.30
Al_2O_3	15.3	15.3	15.15	14.9	14.9	14.3	14.6	14.1	13.8	13.64	14.7	14.45
Fe_2O_3	1.6	2.0	1.50	1.1	1.4	0.70	0.70	1.4	1.4	0.73	1.2	0.89
FeO	2.5	1.8	2.15	2.2	1.1	1.2	1.1	0.92	0.88	1.19	0.96	1.08
MgO	2.3	1.3	1.33	1.1	0.75	0.57	0.29	0.40	0.40	0.65	0.52	0.50
CaO	3.2	3.3	3.27	2.8	2.4	1.9	1.8	2.2	2.1	2.21	1.7	2.01
Na_2O	3.8	3.8	3.92	3.8	3.7	3.5	3.6	3.6	3.4	3.53	3.2	3.55
K_2O	3.0	3.2	3.12	3.3	3.9	4.2	4.7	3.8	4.0	3.57	4.9	4.27
H_2O^+	0.56	0.56	0.36	0.60	0.35	0.45	0.35	0.38	0.27	0.31	0.56	0.19
H_2O^-	0.06	0.06	0.06	0.08	0.07	0.04	0.02	0.22	0.13	0.08	0.17	0.06
TiO_2	0.62	0.58	0.60	0.48	0.36	0.25	0.25	0.32	0.34	0.30	0.32	0.29
P_2O_5	0.16	0.14	0.15	0.13	0.08	0.09	0.06	0.11	0.10	0.08	0.10	0.09
MnO	0.12	0.11	0.09	0.11	0.05	0.07	0.08	0.05	0.04	0.05	0.04	0.04
CO_2	<0.05	0.02	0.02	<0.05	0.02	0.09	<0.05	0.05	0.02	0.06	0.03	0.00
Cl	—	—	0.01	—	—	—	—	—	—	0.01	—	0.00
F	—	—	0.06	—	—	—	—	—	—	0.04	—	0.05
Less O	—	—	0.03	—	—	—	—	—	—	0.02	—	0.02
Sum	100.0	100.1	99.85	100.0	99.6	99.9	100.5	100.0	100.1	100.01	99.0	99.75
CIPW norms (weight percent)												
Q	22.3	24.7	24.2	26.3	28.1	31.0	28.9	32.1	33.4	33.5	29.5	30.3
C	0.4	—	—	0.3	0.4	0.8	0.5	0.3	0.3	0.1	1.3	0.6
or	17.9	19.0	18.6	19.7	23.3	25.0	27.9	22.6	23.7	21.2	29.5	-25.4
ab	32.4	32.3	33.4	32.4	31.6	29.8	30.6	30.7	28.9	30.0	27.6	30.2
an	14.9	15.3	14.6	13.1	11.5	8.9	8.6	10.3	9.8	10.5	7.9	9.4
di	—	0.2	0.6	—	—	—	—	—	—	—	—	—
hy	8.3	4.1	4.9	5.3	2.2	2.8	1.9	1.1	1.0	2.8	1.6	2.1
mt	2.3	2.9	2.2	1.6	2.0	1.0	1.0	2.0	2.0	1.1	1.8	1.3
il	1.2	1.1	1.1	0.9	0.7	0.5	0.5	0.6	0.6	0.6	0.6	0.6
ap	0.4	0.3	0.4	0.3	0.2	0.2	0.1	0.3	0.2	0.2	0.2	0.2
hm	—	—	—	—	—	—	—	—	<0.05	—	—	—
Total	100.1	99.9	100.0	99.9	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.1
Modes (volume percent)												
Quartz	23	26	21	27	30	30	31	28	28	30	32	30
K-feldspar	17	16	13	19	25	28	29	25	23	21	30	28
Plagioclase	48	45	52	44	39	34	35	42	44	43	33	38
Mafic minerals undivided	12	12	14	11	6	8	5	6	6	6	5	5
Total	100	99	100	101	100	100	100	101	101	100	100	101
Bulk specific gravity	2.69	2.68	2.69	2.68	2.66	2.65	2.64	2.65	2.64	2.66	2.65	2.65

PORPHYRIES AND OTHER SUBVOLCANIC ROCKS OF THE RITTER RANGE ROOF PENDANT

	Quartz monzodiorite of Rush Creek			Granite of Billy Lake			Granodiorite porphyry of Horsethief Canyon	Leucogranite porphyry of Post Peak		Leucogranite porphyry of Red Peak	
Field No.	Sr-13	MC-29	Sr-22	Sr-12	MC-14A	Sr-10	MP-395	MP-368	MP-192	MP-608A	MP-845
Lab. No.	W-186633	M-132770	W-186634	W-18632	M-132769	W-186631	161584	161583	W-185506	D-100203W	W-194920
North Lat.	37°45.1'	37°45.8'	37°45.1'	37°45.7'	37°45.8'	37°45.3'	37°36.0'	37°36.8'	37°37.8'	37°38.3'	37°39.4'
West Long.	119°9.9'	119°10.1'	119°10.3'	119°10.8'	119°10.5'	119°10.5'	119°23.3'	119°22.9'	119°19.1'	119°24.8'	119°24.7'
Chemical analyses (weight percent)											
SiO_2	60.0	63.37	64.5	68.1	68.99	69.0	67.6	73.0	77.2	74.05	77.9
Al_2O_3	17.0	15.87	16.2	15.0	15.22	14.7	15.9	13.8	11.9	13.57	12.8
Fe_2O_3	2.4	1.77	2.1	1.5	1.12	1.2	1.3	0.87	0.88	0.75	0.32
FeO	4.0	3.40	3.2	2.7	1.90	2.4	2.3	1.3	0.72	1.06	0.16
MgO	2.4	1.95	1.6	1.2	1.02	0.92	0.95	0.44	0.05	0.32	0.10
CaO	4.8	3.83	3.1	2.7	2.60	2.3	3.1	1.7	0.77	1.45	0.54
Na_2O	4.2	3.67	4.0	3.5	3.54	3.4	4.4	3.8	3.2	3.51	3.8
K_2O	2.9	3.64	3.6	4.5	3.92	4.7	3.0	3.9	4.8	4.64	4.3
H_2O^+	0.59	0.61	0.79	0.55	0.34	0.45	0.51	0.50	0.75	0.19	0.42
H_2O^-	0.28	0.10	0.31	0.28	0.04	0.25	0.06	0.14	0.01	0.08	0.19
TiO_2	0.80	0.72	0.68	0.58	0.42	0.47	0.55	0.32	0.02	0.20	0.14
P_2O_5	0.25	0.18	0.22	0.16	0.10	0.12	0.16	0.09	0.12	0.04	0.06
MnO	0.10	0.1	0.09	0.07	0.06	0.06	0.13	0.16	0.00	0.04	0.00
CO_2	0.02	0.02	0.07	0.06	0.01	0.04	<0.05	<0.05	0.01	0.01	0.00
Cl	—	—	—	—	—	—	—	—	—	0.02	—
F	—	—	—	—	—	—	—	—	—	0.04	—
Less O	—	—	—	—	—	—	—	—	—	0.02	—
Sum	99.7	99.2	100.5	100.9	99.3	100.0	100.0	100.1	100.4	99.92	100.7
CIPW norms (weight percent)											
Q	10.2	16.4	17.7	22.2	26.0	24.2	21.9	31.5	38.7	32.0	38.2
C	—	—	0.6	—	0.7	0.1	0.2	0.5	0.3	0.2	1.1
or	17.3	21.8	21.4	26.6	23.4	28.0	17.8	23.2	28.5	27.5	25.4
ab	36.0	31.5	34.1	29.6	30.3	29.0	37.5	32.4	27.2	29.8	32.1
an	19.2	16.3	14.0	11.9	12.4	10.7	14.4	7.9	3.0	7.0	2.3
di	2.7	1.5	—	0.4	—	—	—	—	—	—	—
hy	9.0	8.1	7.2	5.7	4.6	5.1	4.9	2.5	0.7	1.9	0.2
mt	3.5	2.6	3.1	2.2	1.6	1.8	1.9	1.3	1.3	1.1	0.1
il	1.5	1.4	1.3	1.1	0.8	0.9	1.1	0.6	<0.05	1.4	0.3
ap	0.6	0.4	0.5	0.4	0.2	0.3	0.4	0.2	0.3	0.1	0.1
hm	—	—	—	—	—	—	—	—	—	—	0.2
Total	100.0	100.0	99.9	100.1	100.0	100.1	100.1	100.1	100.1	100.0	100.1
Modes (volume percent)											
Quartz	—	—	—	—	—	—	20	30	34	29	24
K-feldspar	—	—	—	—	—	—	15	32	37	33	39
Plagioclase	—	—	—	—	—	—	54	33	26	34	37
Mafic minerals undivided	—	—	—	—	—	—	11	5	3	4	tr
Total	—	—	—	—	—	—	100	100	100	100	100
Bulk specific gravity	—	—	—	—	—	—	2.71	2.64	2.64	2.65	2.57

INTRUSIVE SUITE OF HETCH HETCHY

	Quartz diorite of Yosemite Creek		Sentinel Granodiorite					
Field No.	K-29-66	M-48-69	LE-1008	Y-320	M-40-64	K-5-64	K-37-67	K-7-64
Lab. No.	M-112675W	M-112678W	M-113949	W-193403	M-112660W	M-112666W	M-112663W	M-112664W
North Lat.	37°51.8'	37°55.9'	37°50.3'	37°44.1'	37°50.4'	37°52.6'	37°49.8'	37°50.7'
West Long.	119°33.1'	119°40.5'	119°45.8'	119°35.8'	119°35.4'	119°40.3'	119°44.5'	119°41.4'
Chemical analyses (weight percent)								
SiO_2	62.0	65.2	64.69	65.3	66.5	58.5	67.8	61.1
Al_2O_3	16.1	17.3	16.86	16.0	15.6	18.0	17.2	17.5
Fe_2O_3	2.2	1.7	1.92	1.6	1.5	2.2	1.6	2.3
FeO	3.4	2.5	2.14	2.6	2.5	3.8	1.8	3.0
MgO	2.5	1.8	1.54	1.9	1.7	3.0	1.3	2.1
CaO	5.4	4.4	5.00	4.6	4.2	6.5	4.2	5.2
Na_2O	3.4	3.6	4.00	3.4	3.4	3.3	3.6	3.8
K_2O	2.0	1.7	2.06	2.7	3.0	1.8	2.6	2.2
H_2O^+	1.7	0.75	0.54	0.63	0.69	0.90	0.58	1.0
H_2O^-	0.13	0.09	0.16	0.10	0.10	0.20	0.13	0.16
TiO_2	0.87	0.63	0.73	0.78	0.63	1.0	0.66	0.82
P_2O_5	0.20	0.26	0.21	0.25	0.16	0.27	0.18	0.25
MnO	0.07	0.06	0.071	0.05	0.04	0.09	0.05	0.07
CO_2	<0.05	<0.05	0.06	0.06	<0.05	<0.05	<0.05	<0.05
Sum	100.0	100.0	100.0	100.0	100.1	99.6	101.8	99.6
CIPW norms (weight percent)								
Q	19.4	25.6	21.0	22.5	23.5	15.9	25.8	16.2
C	--	2.2	--	--	--	--	1.2	<0.05
or	12.0	10.1	12.3	16.1	17.9	11.1	15.2	13.2
ab	29.3	30.7	34.1	29.0	29.0	29.3	30.2	32.7
an	23.2	20.3	22.1	20.6	18.6	21.8	19.5	24.6
di	2.2	--	1.2	0.6	1.1	8.2	--	--
hy	8.4	6.8	4.6	6.7	6.1	7.7	4.2	7.7
mt	3.3	2.5	2.8	2.3	2.2	3.3	2.3	3.4
il	1.7	1.2	1.4	1.5	1.2	2.0	1.2	1.6
ap	0.5	0.6	0.5	0.6	0.4	0.7	0.4	0.6
	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.1
Modes (volume percent)								
Quartz	--	25	22	26	28	15	22	20
K-feldspar	--	8	5	12	14	2	15	6
Plagioclase.	--	55	59	46	45	61	54	59
Mafic minerals undivided	--	12	13	17	13	22	9	15
Total	--	100	99	101	100	100	100	100
Bulk specific gravity	--	--	2.72	2.74	2.70	2.78	2.69	2.73

TUOLUMNE INTRUSIVE SUITE

	Tonalite of Glen Aulin				Granodiorite of Kuna Crest							Granodiorite of Grayling Lake
Field No.	Z-64	Z-51	Z-52	Z-53	Z-54	Z-45	Z-46	Z-47	Z-15	Z-48	MP-816	MP-605A
Lab No.											161597	
North Lat.	37°51.2'	37°51.4'	37°51.4'	37°51.3'	37°51.3'	37°54.1'	37°54.3'	37°54.5'	37°54.0'	37°48.0'	37°44.5'	37°40.2'
West Long.	119°29.1'	119°29.3'	119°29.2'	119°29.1'	119°29.0'	119°16.0'	119°15.9'	119°15.9'	119°15.9'	119°18.2'	119°17.0'	119°26.4'
Chemical analyses (weight percent)												
SiO_2	55.27	58.59	58.91	62.18	62.78	61.87	62.48	59.74	58.66	66.57	60.1	58.7
Al_2O_3	17.39	16.93	16.87	16.12	15.74	16.25	16.03	16.58	16.84	15.41	19.2	16.8
Fe_2O_3	2.84	2.26	2.31	1.78	2.07	2.26	2.39	2.15	2.97	1.75	1.8	2.5
FeO	4.48	4.31	4.25	3.65	3.22	3.23	2.98	4.10	3.61	2.15	3.0	3.2
MgO	3.80	3.26	3.19	2.65	2.50	2.56	2.40	3.12	3.30	1.70	1.7	2.7
CaO	7.13	6.25	6.22	5.21	4.80	5.11	4.98	5.91	6.27	3.83	5.7	7.0
Na_2O	3.59	3.53	3.62	3.45	3.25	3.46	3.46	3.41	3.45	3.55	4.0	3.8
K_2O	1.51	2.38	2.04	2.83	3.22	2.84	2.89	2.45	2.25	3.48	2.4	2.4
H_2O^+	1.82	1.01	1.16	0.84	1.06	0.91	0.90	1.12	1.11	0.62	0.80	0.43
H_2O^-	0.33	0.14	0.13	0.11	0.25	0.18	0.15	0.14	0.20	0.12	0.08	0.03
TiO_2	0.94	0.90	0.89	0.77	0.70	0.77	0.74	0.85	0.87	0.51	0.75	0.70
P_2O_5	0.24	0.22	0.21	0.18	0.17	0.19	0.17	0.20	0.22	0.16	0.35	0.49
MnO	0.14	0.11	0.11	0.09	0.09	0.10	0.09	0.11	0.11	0.07	0.06	0.00
CO_2	0.13	0.07	0.07	0.07	0.11	0.07	0.06	0.07	0.05	0.06	<0.05	0.02
Other	0.22	0.25	0.22	0.23	0.24	0.28	0.24	0.23	0.24	0.22	--	--
Cl	--	--	--	--	--	--	--	--	--	--	--	--
F	--	--	--	--	--	--	--	--	--	--	--	--
Less O	--	--	--	--	--	--	--	--	--	--	--	--
Sum	99.83	100.21	100.20	100.16	100.20	100.08	99.96	100.18	100.15	100.20	100.0	98.8
CIPW norms (weight percent)												
Q	8.0	10.6	11.8	15.9	17.6	16.3	17.5	13.1	12.3	22.1	12.7	10.9
C	--	--	--	--	--	--	--	--	--	--	0.5	--
or	9.2	14.2	12.2	16.9	19.3	17.0	17.3	14.7	13.5	20.7	14.3	14.4
ab	31.2	30.3	31.1	29.5	27.9	29.7	29.7	29.3	29.6	30.3	34.2	32.7
an	27.6	23.6	24.1	20.4	19.1	20.7	19.9	22.8	24.2	16.0	26.2	22.1
di	5.8	5.1	4.7	3.7	3.2	3.0	3.2	4.6	4.8	1.7	--	8.1
hy	11.7	10.5	10.5	9.0	8.0	8.0	7.0	10.3	9.0	5.2	7.2	5.7
mt	4.2	3.3	3.4	2.6	3.0	3.3	3.5	3.2	4.4	2.6	2.6	3.7
il	1.8	1.7	1.7	1.5	1.3	1.5	1.4	1.6	1.7	1.0	1.4	1.4
ap	0.6	0.5	0.5	0.4	0.4	0.5	0.4	0.5	0.5	0.4	0.8	1.2
hm	--	--	--	--	--	--	--	--	--	--	--	--
Total	100.1	99.8	100.0	99.9	99.8	100.0	99.9	100.1	100.0	100.0	99.9	100.2
Modes (volume percent)												
Quartz	27.1	12.7	12.2	18.4	20.4	22.2	20.7	14.4	13.0	24.7	12	13
K-feldspar	25.0	7.8	3.0	10.6	15.9	14.6	12.7	8.8	6.3	17.3	10	7
Plagioclase	41.4	49.7	54.9	48.4	43.2	43.9	46.8	50.6	52.3	44.1	63	54
Biotite	3.7	12.6	12.0	10.6	11.1	9.9	11.7	12.3	12.5	7.5	--	--
Hornblende	1.4	15.8	16.3	10.9	7.9	7.5	6.9	12.8	14.8	4.7	--	--
Opaque minerals	0.6	0.7	0.9	0.5	0.7	0.6	0.7	0.5	0.6	1.0	--	--
Sphene	0.7	0.2	0.2	0.4	0.6	1.1	0.4	0.4	0.2	0.5	--	--
Apatite	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.3	0.2	--	--
Muscovite	--	0.3	0.3	--	--	--	--	--	--	--	--	--
Mafic & accessory	6.5	29.8	29.9	22.6	20.5	19.3	19.8	26.2	28.4	13.9	15	26
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100	100
Bulk specific gravity	2.66	2.80	2.80	2.76	2.74	2.73	2.76	2.78	2.81	2.70	2.77	2.80

	Half Dome Granodiorite										
	Equigranular facies										
Field No.	M-38-69	M-42-69	MP-792	TM-4	Z-55	Z-56	Z-57	Z-58	Z-59	Z-60	Z-43
Lab. No.	M-112659W	M-112657W	161594	D-100207							
North Lat.	37°45.4'	37°45.8'	37°44.7'	37°48.0'	37°51.3'	37°51.2'	37°51.0'	37°51.1'	37°51.6'	37°51.8'	37°53.4'
West Long.	119°33.4'	119°31.3'	119°28.1'	119°29.2'	119°28.9'	119°28.8'	119°28.6'	119°28.4'	119°28.2'	119°27.6'	119°16.7'
Chemical analyses (weight percent)											
SiO_2	70.8	70.4	67.3	67.18	65.61	67.06	65.57	68.20	69.23	68.99	66.18
Al_2O_3	14.4	14.5	15.7	15.51	15.44	14.91	15.57	15.19	14.55	15.01	15.71
Fe_2O_3	1.2	1.5	1.4	1.64	1.76	1.71	1.87	1.50	1.67	1.40	1.74
FeO	1.2	1.3	1.7	1.93	2.38	2.27	2.24	1.60	1.53	1.40	2.10
MgO	0.87	1.0	0.66	1.42	1.80	1.64	1.70	1.21	1.22	1.08	1.60
CaO	2.9	2.8	3.5	2.88	4.10	3.60	4.14	3.17	3.00	3.15	3.97
Na_2O	3.4	3.2	3.9	3.68	3.62	3.35	3.63	3.60	3.51	3.72	3.77
K_2O	3.7	4.1	3.6	3.34	3.11	3.89	3.20	3.88	4.02	3.79	3.24
H_2O^+	0.59	0.56	0.03	0.46	0.78	0.68	0.74	0.62	0.48	0.50	0.62
H_2O^-	0.10	0.06	0.40	0.04	0.14	0.07	0.13	0.11	0.11	0.08	0.09
TiO_2	0.28	0.36	0.44	0.58	0.54	0.54	0.54	0.42	0.44	0.42	0.55
P_2O_5	0.09	0.12	0.21	0.17	0.16	0.15	0.17	0.15	0.14	0.15	0.18
MnO	0.03	0.04	0.08	0.07	0.08	0.08	0.08	0.07	0.08	0.06	0.07
CO_2	<0.05	<0.05	0.09	0.03	0.09	0.12	0.16	0.09	0.11	0.09	0.05
Other	--	--	--	--	0.19	0.20	0.22	0.21	0.18	0.21	0.24
Cl	--	--	--	0.01	--	--	--	--	--	--	--
F	--	--	--	0.04	--	--	--	--	--	--	--
Less O	--	--	--	0.02	--	--	--	--	--	--	--
Sum	99.6	100.0	99.0	99.96	99.80	100.27	99.96	100.02	100.27	100.05	100.11
CIPW norms (weight percent)											
Q	29.7	28.9	22.9	25.0	21.5	22.8	21.3	24.2	25.7	25.1	21.4
C	--	--	--	1.0	--	--	--	--	--	--	--
or	22.1	24.4	21.6	20.1	18.6	23.2	19.2	23.2	23.9	22.6	19.3
ab	29.1	27.3	33.5	31.6	31.1	28.6	31.1	30.8	29.9	31.7	32.2
an	13.3	13.2	14.9	13.4	16.9	14.3	17.0	14.0	12.1	13.2	16.5
di	0.6	<0.05	1.1	--	2.1	2.2	2.2	0.7	1.5	1.3	1.7
hy	2.7	3.1	2.5	5.0	5.7	5.1	5.1	3.8	3.2	2.9	4.8
mt	1.8	2.2	2.1	2.4	2.6	2.5	2.7	2.2	2.4	2.0	2.5
il	0.5	1.7	0.8	1.1	1.0	1.0	1.0	0.8	0.8	0.8	1.1
ap	0.2	0.3	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4
hm	--	--	--	--	--	--	--	--	--	--	--
Total	100.0	100.1	99.9	100.0	99.9	100.1	100.0	100.1	99.8	100.0	99.9
Modes (volume percent)											
Quartz	--	--	--	--	22.5	24.2	24.3	25.4	26.0	25.3	24.8
K-feldspar	--	--	--	--	20.5	23.3	16.6	21.8	24.2	23.4	16.6
Plagioclase	--	--	--	--	42.5	39.6	44.9	42.7	39.7	43.5	46.3
Biotite	--	--	--	--	6.2	5.7	8.7	6.1	6.0	3.7	6.6
Hornblende	--	--	--	--	7.2	5.0	4.3	2.9	2.5	2.3	4.1
Opaque minerals	--	--	--	--	0.6	1.3	0.8	0.6	0.8	1.0	0.8
Sphene	--	--	--	--	0.4	0.7	0.2	0.3	0.6	0.6	0.7
Apatite	--	--	--	--	0.1	0.2	0.2	0.2	0.2	0.2	0.1
Muscovite	--	--	--	--	--	--	--	--	--	--	--
Mafic & accessory	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Bulk specific gravity	--	--	--	--	2.70	2.70	2.71	2.69	2.69	2.67	2.71

	Half Dome Granodiorite--Continued													
	Equigranular facies--Continued													
Field No.	Z-16	Z-44	Z-5	Z-23	Z-6	Z-24	Z-25	Z-26	Z-7	Z-27	Z-28	Z-17	FD-15	Y-473
Lab No.													162505	W-194490
North Lat.	37°53.6'	37°54.1'	37°48.8'	37°48.7'	37°48.8'	37°49.0'	37°49.2'	37°49.5'	37°49.6'	37°49.9'	37°50.0'	37°51.9'	37°54.0'	37°44.8'
West Long.	119°15.9'	119°16.1'	119°29.6'	119°29.1'	119°28.9'	119°28.7'	119°28.6'	119°28.4'	119°28.1'	119°27.9'	119°27.6'	119°17.1'	119°15.7'	119°31.9'
Chemical analyses (weight percent)														
SiO_2	70.35	63.47	69.79	66.93	65.86	68.04	66.12	68.08	64.96	70.07	67.76	71.31	71.2	69.5
Al_2O_3	14.48	15.81	14.75	15.44	15.68	15.56	15.62	15.33	15.97	14.45	15.61	14.31	14.8	15.4
Fe_2O_3	1.20	2.14	1.47	1.82	2.13	1.46	1.85	1.56	2.34	1.28	1.64	1.17	1.3	1.5
FeO	1.27	3.03	1.07	1.79	1.65	1.37	1.93	1.48	1.62	1.23	1.48	0.84	0.92	1.4
MgO	0.96	2.28	0.95	1.39	1.50	1.10	1.61	1.09	1.51	0.90	1.14	0.74	0.48	1.2
CaO	2.80	4.72	2.90	3.65	3.92	3.42	3.80	3.35	4.16	2.70	3.51	2.25	2.5	3.2
Na_2O	3.41	3.32	3.55	3.67	3.70	3.75	3.52	3.84	3.87	3.53	3.83	3.64	3.4	3.5
K_2O	3.96	3.22	3.96	3.63	3.41	3.61	3.75	3.69	3.21	4.20	3.66	4.10	4.2	3.7
H_2O^+	0.56	0.88	0.63	0.65	0.81	0.51	0.58	0.53	0.76	0.43	0.32	0.67	0.46	0.40
H_2O^-	0.19	0.15	0.15	0.08	0.17	0.11	0.19	0.05	0.18	0.12	0.07	0.27	0.29	0.14
TiO_2	0.33	0.72	0.34	0.50	0.52	0.40	0.55	0.45	0.60	0.37	0.46	0.28	0.27	0.41
P_2O_5	0.10	0.17	0.11	0.17	0.18	0.13	0.17	0.15	0.21	0.12	0.17	0.09	0.10	0.18
MnO	0.06	0.09	0.06	0.07	0.08	0.05	0.07	0.06	0.07	0.05	0.07	0.06	0.04	0.05
CO_2	0.18	0.03	0.16	0.10	0.10	0.11	0.04	0.06	0.12	0.15	0.09	0.01	<0.05	0.01
Other	0.18	0.26	0.19	0.22	0.25	0.22	0.24	0.20	0.27	0.18	0.24	0.17	--	--
Cl	--	--	--	--	--	--	--	--	--	--	--	--	--	--
F	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Less O	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum	100.03	100.29	100.08	100.11	99.96	99.84	100.04	99.92	99.85	99.78	100.05	99.91	100.0	100.6
CIPW norms (weight percent)														
Q	28.3	18.5	27.0	22.4	21.7	24.0	21.3	23.5	20.4	27.0	22.9	29.0	29.7	26.5
C	--	--	--	--	--	--	--	--	--	--	--	--	0.4	0.2
or	23.7	19.2	23.7	21.7	20.4	21.6	22.4	22.0	19.3	25.1	21.8	24.5	25.0	21.9
ab	29.2	28.4	30.4	31.3	31.7	32.1	30.1	32.8	33.2	30.2	32.6	31.2	29.0	29.6
an	12.6	18.9	12.7	15.1	16.3	15.1	15.9	13.8	17.0	11.3	14.7	10.7	11.8	14.7
di	0.6	2.9	0.8	1.7	1.7	0.9	1.6	1.6	2.0	1.2	1.4	--	--	--
hy	3.0	7.1	2.3	3.8	3.5	3.1	4.5	2.8	3.1	2.4	2.9	2.0	1.5	3.7
mt	1.8	3.1	2.2	2.7	3.1	2.1	2.7	2.3	3.4	1.9	2.4	1.7	1.9	2.2
il	0.6	1.4	0.7	1.0	1.0	0.8	1.1	0.9	1.2	0.7	0.9	0.5	0.5	0.8
ap	0.2	0.4	0.3	0.4	0.4	0.3	0.4	0.4	0.5	0.3	0.4	0.2	0.2	0.4
hm	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	100.0	99.9	100.1	100.1	99.8	100.0	100.0	100.1	100.1	100.1	100.0	99.9	100.0	100.0
Modes (volume percent)														
Quartz	28.9	19.9	27.1	25.0	23.5	26.0	22.2	23.4	20.3	27.5	24.9	23.0	--	30
K-feldspar	23.9	17.5	25.0	20.7	21.3	21.6	21.4	22.0	17.2	26.5	21.2	31.3	--	24
Plagioclase	39.7	44.7	41.4	43.4	44.2	42.8	44.7	44.8	49.2	39.3	44.8	40.7	--	38
Biotite	4.5	9.8	3.7	5.5	7.8	5.3	4.8	4.9	6.5	4.3	4.4	2.9	--	--
Hornblende	2.3	6.8	1.4	2.4	1.8	2.9	4.8	3.0	4.3	1.2	3.1	1.0	--	--
Opaque minerals	0.4	0.7	0.6	1.4	1.1	0.6	1.2	1.0	1.1	0.6	0.9	0.6	--	--
Sphene	0.2	0.5	0.7	0.8	0.2	0.6	0.7	0.6	1.2	0.5	0.5	0.4	--	--
Apatite	0.1	0.1	0.1	0.3	0.1	0.2	0.2	0.3	0.2	0.1	0.2	0.1	--	--
Muscovite	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mafic & accessory	7.5	17.9	6.5	10.4	11.0	9.6	11.7	9.8	13.3	6.7	9.1	5.0	--	8
Total	100.0	100.0	100.0	99.5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	--	100
Bulk specific gravity	2.68	2.73	2.66	2.69	2.71	2.67	2.70	2.68	2.71	2.66	2.68	2.65	2.63	2.67

	Half Dome Granodiorite--Continued								Cathedral Peak Granodiorite				
	Porphyritic facies												
Field No.	Z-61	Z-62	Z-42	Z-8	Z-29	Z-30	Z-31	Z-32	Z-63	Z-35	Z-10	Z-36	Z-11
Lab No.													
North Lat.	37°52.0'	37°52.1'	37°52.7'	37°50.0'	37°50.2'	37°50.4'	37°50.6'	37°50.7'	37°52.1'	37°52.4'	37°52.6'	37°52.8'	37°52.6'
West Long.	119°27.3'	119°26.8'	119°18.7'	119°27.4'	119°27.2'	119°27.0'	119°26.8'	119°26.7'	119°26.3'	119°25.4'	119°24.8'	119°24.1'	119°23.6'
Chemical analyses (weight percent)													
SiO_2	67.83	67.70	67.17	66.65	68.12	67.89	67.32	67.48	69.72	68.02	69.22	69.89	69.76
Al_2O_3	15.44	15.56	15.97	15.73	15.54	15.55	15.68	15.58	15.02	15.73	15.38	15.32	15.49
Fe_2O_3	1.55	1.52	1.79	1.93	1.55	1.52	1.69	1.64	1.39	1.59	1.36	1.14	1.24
FeO	1.44	1.41	1.47	1.47	1.36	1.40	1.58	1.43	1.18	1.28	1.00	1.05	0.95
MgO	1.03	1.10	1.15	1.23	1.03	0.98	1.10	1.09	0.81	0.87	0.77	0.67	0.66
CaO	3.22	3.41	3.62	3.62	3.15	3.19	3.59	3.27	2.90	3.10	2.73	2.78	2.52
Na_2O	4.02	3.91	4.07	4.14	3.99	4.02	4.17	3.86	4.03	4.34	4.31	4.43	4.33
K_2O	3.65	3.70	3.49	3.27	3.75	3.73	3.22	3.89	3.59	3.59	3.63	3.30	3.72
H_2O^+	0.61	0.54	0.53	0.66	0.36	0.50	0.42	0.45	0.59	0.56	0.49	0.49	0.45
H_2O^-	0.10	0.14	0.10	0.12	0.20	0.10	0.08	0.15	0.08	0.12	0.14	0.07	0.09
TiO_2	0.49	0.48	0.53	0.53	0.47	0.48	0.55	0.50	0.42	0.47	0.40	0.38	0.37
P_2O_5	0.17	0.17	0.19	0.19	0.18	0.17	0.19	0.19	0.15	0.18	0.14	0.14	0.13
MnO	0.06	0.06	0.06	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05
CO_2	0.13	0.15	0.02	0.09	0.04	0.14	0.04	0.10	0.11	0.04	0.05	0.04	0.05
Other	0.25	0.26	0.26	0.26	0.24	0.24	0.25	0.27	0.21	0.26	0.24	0.21	0.22
Cl	--	--	--	--	--	--	--	--	--	--	--	--	--
F	--	--	--	--	--	--	--	--	--	--	--	--	--
Less O	--	--	--	--	--	--	--	--	--	--	--	--	--
Sum	99.99	100.11	100.42	99.96	100.04	99.97	99.94	99.96	100.26	100.21	99.91	99.96	100.03
CIPW norms (weight percent)													
Q	22.8	22.6	21.5	21.5	22.9	22.6	22.2	22.3	25.8	21.9	24.0	25.1	24.4
C	--	--	--	--	--	--	--	--	--	--	--	--	0.1
or	21.8	22.1	20.7	19.6	22.3	22.3	19.2	23.2	21.4	21.4	21.7	19.7	22.2
ab	34.4	33.4	34.6	35.4	34.0	34.4	35.6	33.0	34.4	37.0	36.8	37.8	36.9
an	13.5	14.1	15.1	14.9	13.5	13.5	14.7	13.8	12.4	12.9	12.0	12.3	11.7
di	1.3	1.5	1.4	1.6	0.8	1.1	1.6	1.0	0.9	1.1	0.6	0.6	--
hy	2.7	2.7	2.7	2.7	2.7	2.6	2.7	2.8	2.0	2.0	1.8	1.9	1.9
mt	2.3	2.2	2.6	2.8	2.3	2.2	2.5	2.4	2.0	2.3	2.0	1.7	1.8
il	0.9	0.9	1.0	1.0	0.9	0.9	1.1	1.0	0.8	0.9	0.8	0.7	0.7
ap	0.4	0.4	0.5	0.5	0.4	0.4	0.5	0.5	0.4	0.4	0.3	0.3	0.3
hm	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	100.1	99.9	100.1	100.0	99.8	100.0	100.1	100.0	100.1	99.9	100.0	100.1	100.0
Modes (volume percent)													
Quartz	22.6	24.8	21.6	24.2	23.5	23.7	23.4	23.4	26.2	24.4	23.1	26.9	25.9
K-feldspar	24.5	21.9	21.4	20.9	23.4	24.2	16.4	22.1	20.9	20.1	22.5	24.0	20.8
Plagioclase	44.1	44.7	47.4	45.2	45.0	44.5	51.6	46.7	46.6	48.8	48.0	44.1	47.7
Biotite	5.5	4.8	5.0	4.6	5.6	4.6	5.2	3.5	3.1	3.6	4.0	3.3	3.8
Hornblende	1.6	2.4	2.5	3.4	1.1	1.6	1.5	2.2	1.6	1.4	1.0	0.4	0.4
Opaque minerals	0.8	0.7	1.1	1.0	0.7	0.7	0.9	1.2	0.9	0.9	0.7	0.7	0.7
Sphene	0.7	0.5	0.7	0.5	0.6	0.5	0.7	0.7	0.5	0.6	0.5	0.5	0.5
Apatite	0.2	0.2	0.3	0.2	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.2
Muscovite	--	--	--	--	--	--	--	--	--	--	--	--	--
Mafic & accessory	8.8	8.6	9.6	9.7	8.1	7.6	8.6	7.8	6.3	6.7	6.4	5.0	5.6
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
Bulk specific gravity	2.67	2.68	2.68	2.70	2.66	2.67	2.70	2.65	2.66	2.67	2.67	2.65	2.66

	Cathedral Peak Granodiorite--Continued												
Field No.	Z-37	Z-38	Z-12	Z-40	Z-13	Z-14	Z-41	Z-33	Z-9	Z-34	Z-20	TM-1	TM-2
Lab. No.												D-102873	D-102874
North Lat.	37°52.4'	37°52.4'	37°52.6'	37°52.6'	37°52.7'	37°52.8'	37°52.8'	37°50.9'	37°51.0'	37°51.1'	37°51.8'	37°51.2'	37°54.0'
West Long.	119°23.2'	119°22.6'	119°21.3'	119°21.0'	119°19.6'	119°19.1'	119°19.2'	119°26.6'	119°26.5'	119°26.3'	119°25.8'	119°26.3'	119°24.5'
Chemical analyses (weight percent)													
SiO_2	70.08	71.51	74.66	70.24	70.49	69.60	67.98	67.40	68.06	69.33	69.26	67.05	66.60
Al_2O_3	15.14	14.75	13.80	15.03	15.06	15.34	15.89	15.80	15.59	15.22	15.47	15.98	16.44
Fe_2O_3	1.26	0.78	0.56	1.16	1.11	1.30	1.59	1.77	1.19	1.40	1.40	1.62	1.69
FeO	1.08	0.89	0.28	1.07	0.83	0.95	1.40	1.36	1.21	1.29	0.97	1.01	1.37
MgO	0.71	0.49	0.19	0.63	0.61	0.70	0.98	1.02	0.90	0.85	0.73	0.60	0.96
CaO	2.79	2.07	1.52	2.47	2.41	2.68	3.57	3.45	3.28	3.12	2.91	3.71	3.46
Na_2O	4.62	4.07	4.17	4.39	4.33	4.31	4.37	4.08	4.11	4.12	4.26	3.80	4.12
K_2O	2.84	4.19	3.80	3.55	3.62	3.64	2.96	3.63	3.56	3.40	3.48	4.16	3.51
H_2O^+	0.55	0.50	0.38	0.49	0.60	0.58	0.45	0.35	0.64	0.30	0.55	0.28	0.45
H_2O^-	0.14	0.17	0.16	0.10	0.19	0.23	0.08	0.11	0.15	0.10	0.18	0.09	0.12
TiO_2	0.39	0.28	0.13	0.38	0.33	0.38	0.50	0.53	0.46	0.45	0.39	0.66	0.52
P_2O_5	0.15	0.10	0.03	0.13	0.12	0.14	0.19	0.20	0.18	0.17	0.16	0.33	0.20
MnO	0.06	0.05	0.02	0.06	0.05	0.06	0.06	0.06	0.06	0.06	0.05	0.06	0.06
CO_2	0.11	0.07	0.06	0.05	0.09	0.08	0.02	0.03	0.09	0.10	0.07	0.01	0.01
Other	0.17	0.21	0.12	0.23	0.21	0.23	0.23	0.27	0.25	0.21	0.24	--	--
Cl	--	--	--	--	--	--	--	--	--	--	--	0.00	0.00
F	--	--	--	--	--	--	--	--	--	--	--	0.05	0.05
Less O	--	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Sum	100.09	100.13	99.89	99.98	100.05	100.22	100.27	100.06	99.73	100.12	100.12	99.39	99.54
CIPW norms (weight percent)													
Q	25.9	26.9	32.7	25.4	26.0	24.5	22.8	21.8	23.0	25.1	24.6	21.8	21.0
C	--	--	0.1	--	--	--	--	--	--	--	--	--	0.1
or	16.9	25.0	22.7	21.2	21.6	21.7	17.6	21.6	21.3	20.2	20.8	24.8	21.0
ab	39.4	34.7	35.6	37.5	37.0	36.8	37.2	34.8	35.3	35.1	36.4	32.5	35.2
an	12.3	9.7	7.4	10.9	11.1	11.9	15.1	14.2	13.8	13.1	12.9	14.4	16.0
di	0.5	<0.05	0.5	0.5	0.2	0.5	1.2	1.4	1.2	1.1	0.5	1.6	--
hy	1.9	1.9	0.6	1.9	1.6	1.7	2.4	2.2	2.3	2.2	1.7	0.8	2.8
mt	1.8	1.1	0.2	1.7	1.6	1.9	2.3	2.6	1.8	2.0	2.0	1.6	2.5
il	0.7	0.5	0.2	0.7	0.6	0.7	1.0	1.0	0.9	0.9	0.7	1.3	1.0
ap	0.4	0.2	0.1	0.3	0.3	0.3	0.5	0.5	0.4	0.4	0.4	0.8	0.5
hm	--	--	--	--	--	--	--	--	--	--	--	0.6	--
Total	99.8	100.0	100.1	100.1	100.0	100.0	100.1	100.1	100.0	100.1	100.0	100.2	100.1
Modes (volume percent)													
Quartz	26.1	28.0	29.6	24.7	26.6	25.9	26.1	24.5	23.8	24.7	23.9	--	--
K-feldspar	17.6	23.9	28.1	23.2	23.0	20.9	15.1	21.5	21.2	22.8	21.2	--	--
Plagioclase	50.7	43.8	40.5	46.8	45.2	47.5	51.9	46.9	47.3	46.3	47.9	--	--
Biotite	4.4	3.1	1.3	4.0	3.4	3.5	3.4	3.6	4.2	4.0	4.5	--	--
Hornblende	0.1	tr	--	tr	0.3	0.8	1.6	2.0	1.6	1.0	1.2	--	--
Opaque minerals	0.6	0.5	0.3	0.7	0.6	0.6	1.1	0.8	1.0	0.6	0.8	--	--
Sphene	0.3	0.5	0.1	0.4	0.7	0.5	0.6	0.5	0.6	0.4	0.4	--	--
Apatite	0.2	0.2	0.1	0.2	0.2	0.3	0.2	0.2	0.3	0.2	0.1	--	--
Muscovite	--	--	--	--	--	--	--	--	--	--	--	--	--
Mafic & accessory	5.6	4.3	1.8	5.3	5.2	5.7	6.9	7.1	7.7	6.2	7.0	--	--
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	--	--
Bulk specific gravity	2.65	2.63	2.61	2.65	2.66	2.66	2.67	2.67	2.66	2.67	2.67	--	--

	Cathedral Peak Granite--Continued			Johnson Granite Porphyry			
Field No.	TM-1A	TM-3	TM-6	Z-39	Z-18	Z-19	I-397
Lab No.	D-100208	D-102875	D-102876				162495
North Lat.	37°54.0'	37°54.0'	37°54.2'	37°52.4'	37°52.4'	37°52.4'	37°50.1'
West Long.	119°24.5'	119°24.5'	119°24.8'	119°22.4'	119°22.1'	119°22.1'	119°22.2'
Chemical analyses (weight percent)							
SiO_2	68.46	65.89	64.91	73.95	71.65	74.24	74.7
Al_2O_3	15.77	16.39	16.96	13.75	14.87	13.55	13.8
Fe_2O_3	1.35	2.15	2.00	0.59	0.84	0.66	0.93
FeO	1.31	1.53	1.82	0.60	0.81	0.48	0.52
MgO	0.90	1.12	1.29	0.28	0.38	0.18	0.28
CaO	3.22	3.85	4.41	1.36	1.87	1.15	0.92
Na_2O	4.15	4.32	4.59	3.71	3.98	3.22	3.1
K_2O	3.69	2.91	2.36	4.58	4.19	5.47	5.0
H_2O^+	0.37	0.40	0.45	0.56	0.58	0.43	0.55
H_2O^-	0.05	0.10	0.05	0.18	0.17	0.09	0.04
TiO_2	0.44	0.61	0.63	0.16	0.24	0.14	0.14
P_2O_5	0.17	0.23	0.26	0.04	0.08	0.03	0.02
MnO	0.06	0.08	0.09	0.05	0.04	0.03	0.05
CO_2	0.02	0.02	0.01	0.03	0.13	0.08	<0.05
Other	--	--	--	0.20	0.26	0.23	--
Cl	0.00	0.01	0.00	--	--	--	--
F	0.05	0.06	0.07	--	--	--	--
Less O	0.02	0.03	0.03	--	--	--	--
Sum	99.99	99.64	99.87	100.04	100.09	99.98	100.1
CIPW norms (weight percent)							
Q	22.5	20.6	18.6	31.7	28.2	32.1	35.4
C	--	--	--	0.3	0.6	0.3	1.7
or	21.9	17.4	14.0	27.3	25.0	32.6	29.7
ab	35.3	36.9	39.1	31.7	34.0	27.5	26.4
an	13.6	16.9	18.8	6.5	8.8	5.6	4.5
di	1.1	0.7	1.2	--	--	--	--
hy	2.4	2.7	3.5	1.2	1.4	0.6	0.8
mt	2.0	3.1	2.9	0.9	1.2	1.0	1.4
il	0.8	1.2	1.2	0.3	0.5	0.3	0.3
ap	0.4	0.6	0.1	0.2	0.1	<0.05	0.4
hm	--	--	--	--	--	--	--
Total	--	100.1	99.9	100.0	99.9	100.1	100.2
Modes (volume percent)							
Quartz	--	--	--	28.5	27.6	32.7	--
K-feldspar	--	--	--	34.2	29.0	40.2	--
Plagioclase	--	--	--	35.0	41.1	26.1	--
Biotite	--	--	--	1.6	1.5	0.6	--
Hornblende	--	--	--	--	--	--	--
Opaque minerals	--	--	--	0.4	0.3	0.3	--
Sphene	--	--	--	--	0.1	0.1	--
Apatite	--	--	--	tr	0.1	tr	--
Muscovite	--	--	--	0.3	0.3	tr	--
Mafic & accessory	--	--	--	2.3	2.3	1.0	--
Total	--	--	--	100.0	100.0	100.0	--
Bulk specific gravity	--	--	--	2.61	2.63	2.61	2.57

UNASSIGNED ROCKS OF THE YOSEMITE AREA

	Quartz diorite of Long Creek	Leuco-granite of Mount Clark	Granite Porphyry of Star Lakes					Tonalite of Crane Creek	Grano-diorite of Hogden Ranch	Grano-diorite of Grizzly Creek	Quartz diorite of Mount Gibson
Field No.	MP-284	MP-766	Y-607	Y-610	Y-625	Y-732	Y-603	LE-3	LE-6	MP-402	H-11-69
Lab. No.	W-185507	161591	W-193411	W-194495	W-194496	W-194503	W-194494	M-133939	M-133940	W-193405	W-112679
North Lat.	37°40.5'	37°41.5'	37°30.6'	37°31.0'	37°30.7'	37°30.9'	37°34.5'	37°46.8'	37°48.5'	37°30.6'	37°59.8'
West Long.	119°16.2'	119°42.3'	119°33.0'	119°33.0'	119°31.2'	119°32.9'	119°33.4'	119°48.6'	119°52.3'	119°28.0'	119°42.9'
Chemical analyses (weight percent)											
SiO_2	61.7	75.6	71.3	72.2	68.9	71.6	70.2	64.16	67.56	65.1	55.6
Al_2O_3	17.9	13.0	15.1	14.8	15.4	15.1	15.1	16.46	16.07	16.3	17.2
Fe_2O_3	2.2	0.66	0.70	0.66	0.72	0.52	0.91	1.81	1.58	1.3	2.1
FeO	2.4	0.67	1.6	1.2	2.8	1.4	2.1	2.56	1.68	3.2	5.8
MgO	1.3	0.16	0.63	0.32	1.5	0.45	0.86	2.06	1.31	2.0	4.4
CaO	6.1	0.58	2.6	2.0	3.5	2.2	2.9	5.24	3.06	4.3	7.7
Na_2O	4.7	3.8	3.7	4.0	3.4	4.6	3.6	3.73	3.37	3.8	3.0
K_2O	1.8	4.7	4.3	3.5	3.1	3.7	3.3	1.84	2.95	2.4	1.6
H_2O^+	0.52	0.40	0.67	0.66	0.52	0.41	0.63	0.72	1.02	0.74	0.80
H_2O^-	0.01	0.09	0.20	0.21	0.17	0.13	0.20	0.14	0.74	0.03	0.18
TiO_2	0.59	0.09	0.30	0.21	0.50	0.22	0.36	0.74	0.59	0.59	1.2
P_2O_5	0.47	0.02	0.13	0.10	0.16	0.12	0.15	0.21	0.21	0.16	0.13
MnO	0.00	0.07	0.03	0.02	0.06	0.04	0.07	0.077	0.061	0.11	0.10
CO_2	0.01	<0.05	0.09	0.02	0.02	0.02	0.01	0.11	0.12	<0.05	<0.05
Sum	99.7	99.9	101.4	99.9	100.8	100.5	100.4	99.7	100.3	100.0	99.9
CIPW norms (weight percent)											
Q	14.2	34.0	26.2	30.7	26.2	24.9	28.5	21.4	28.8	19.8	6.8
C	—	0.7	—	1.0	0.5	—	0.7	—	2.3	—	—
or	10.7	28.0	25.3	20.9	18.3	21.9	19.6	11.0	17.7	14.2	9.5
ab	40.1	32.4	31.2	34.2	28.8	38.9	30.6	31.9	29.0	32.2	25.5
an	22.6	2.8	11.8	9.4	16.3	9.6	13.5	23.0	14.0	20.4	28.9
di	3.9	—	0.1	—	—	0.4	—	1.5	—	0.7	6.9
hy	3.0	1.1	3.4	2.2	7.6	2.8	4.8	6.6	4.2	9.4	17.5
mt	3.2	1.0	1.0	1.0	1.0	0.8	1.3	2.7	2.3	1.9	3.1
il	1.1	0.2	0.6	0.4	0.9	0.4	0.7	1.4	1.1	1.4	1.5
ap	1.1	<0.05	0.3	0.2	0.4	0.3	0.4	0.5	0.5	0.1	0.4
Total	99.9	100.2	99.9	100.1	100.1	100.1	100.1	100.0	99.9	100.0	100.0
Modes (volume percent)											
Quartz	11	37	23	24	23	—	23	24	31	26	4
K-feldspar	5	31	24	36	10	—	20	5	14	6	7
Plagioclase	68	30	45	36	51	—	49	56	47	54	61
Mafic minerals undivided	16	2	8	4	16	—	9	15	7	15	28
Total	100	100	100	100	100	—	101	100	99	101	100
Bulk specific gravity	2.75	—	2.65	2.63	2.70	—	2.68	2.74	2.64	2.73	2.83

SCHEELITE INTRUSIVE SUITE

	Wheeler Crest Granodiorite										
Field No.	95-43-1	MT-1	CT-27	GM-4	GM-6	GM-10	GM-30	GM-123	CT-2	CT-24	CT-103
Lab No.	53-1295SCD	H3196	M-116127D	M-116086W	M-116087W	M-116089W	M-116090W	M-116093W	M-116095W	M-116096W	M-116097W
North Lat.	37°25.2'	37°22.0'	37°53.6'	37°46.5'	37°46.4'	37°49.6'	37°49.3'	37°51.3'	37°52.5'	37°50.1'	37°49.8'
West Long.	118°42.1'	118°37.8'	118°50.9'	118°34.9'	118°30.1'	118°33.2'	118°37.0'	118°37.6'	118°48.1'	118°47.5'	118°49.6'
Chemical analyses (weight percent)											
SiO_2	71.42	71.46	65.77	67.8	63.3	71.8	68.0	69.4	64.6	66.5	65.1
Al_2O_3	14.47	13.62	16.75	15.1	16.1	13.6	14.7	14.8	15.8	15.1	16.0
Fe_2O_3	1.03	1.34	2.01	1.4	2.0	1.1	1.4	1.1	2.0	1.7	1.8
FeO	1.38	1.67	1.63	2.4	3.5	1.7	2.6	2.1	3.0	2.7	3.2
MgO	0.78	1.01	0.83	1.4	2.0	0.96	1.5	1.2	1.8	1.6	1.7
CaO	2.86	2.87	2.69	4.0	5.5	3.0	4.5	3.4	5.1	4.4	4.6
Na_2O	3.44	2.79	3.85	2.6	2.7	2.4	2.6	2.5	2.6	2.6	2.6
K_2O	3.69	3.71	4.95	4.2	3.4	5.0	3.5	4.4	3.7	4.0	3.6
H_2O^+	0.21	0.40	0.44	0.72	0.79	0.77	0.78	0.84	0.78	0.82	0.85
H_2O^-	0.06	0.05	0.09	0.11	0.11	0.10	0.08	0.09	0.11	0.07	0.07
TiO_2	0.25	0.33	0.32	0.38	0.56	0.20	0.41	0.34	0.48	0.45	0.52
P_2O_5	0.10	0.12	0.13	0.18	0.31	0.12	0.21	0.16	0.26	0.24	0.24
MnO	0.08	0.11	0.11	0.11	0.12	0.08	0.03	0.10	0.11	0.10	0.13
CO_2	0.03	0.01	0.09	0.02	0.02	0.01	0.03	0.13	0.01	0.02	0.01
Cl	—	0.01	—	—	—	—	—	—	—	—	—
F	—	0.03	—	—	—	—	—	—	—	—	—
Less O	—	0.01	—	—	—	—	—	—	—	—	—
Sum	99.8	99.52	99.66	100.4	100.4	100.8	100.4	100.5	100.4	100.3	100.4
CIPW norms (weight percent)											
Q	29.9	33.3	17.5	25.6	19.7	30.8	27.5	28.4	21.7	24.3	22.9
C	—	0.1	0.5	—	—	—	—	0.1	—	—	<0.05
or	21.9	22.1	29.5	24.9	20.2	29.6	20.8	26.1	22.0	23.8	21.4
ab	29.3	23.8	32.9	22.1	23.0	20.3	22.1	21.3	22.1	22.1	22.1
an	13.2	13.6	12.6	17.2	21.9	11.6	18.2	15.9	20.6	17.8	21.4
di	0.3	—	—	1.3	2.9	2.1	2.4	—	2.5	2.1	—
hy	3.2	4.2	3.1	5.7	7.7	3.4	5.8	5.6	6.5	6.0	8.0
mt	1.5	2.0	2.9	2.0	2.9	1.6	2.0	1.6	2.9	2.5	2.6
il	0.5	0.6	0.6	0.7	1.1	0.4	0.8	0.6	0.9	0.9	1.0
ap	0.2	0.3	0.3	0.4	0.7	0.3	0.5	0.4	0.6	0.6	0.6
Total	100.0	100.0	99.9	99.9	100.1	100.1	100.1	100.0	99.8	100.1	100.0
Modes (volume percent)											
Quartz	31	33	10	28	20	39	26	30	25	27	24
K-feldspar	28	22	35	25	18	22	19	23	27	23	20
Plagioclase	36	39	46	36	47	33	40	37	35	38	43
Biotite	—	—	—	—	—	—	—	—	—	—	—
Mafic minerals undivided	5	7	10	11	16	7	15	11	13	12	14
Total	100	101	101	100	101	101	100	101	100	100	101
Bulk specific gravity	—	2.66	2.68	2.69	2.74	2.67	2.72	2.68	2.73	2.72	2.72

SCHEELITE INTRUSIVE SUITE—Continued

	Tungsten Hills Granite		Granite of Lee Vining Canyon		
Field No.	98-66-2	MG-2	Sr-1	Sr-4	Sr-6
Lab No.	53-1297SCD	M3201	W-186628	W-186629	W-186630
North Lat.	37°15.5'	37°13.7'	37°46.4'	37°56.6'	37°57.0'
West Long.	118°33.8'	118°35.7'	119°7.6'	119°11.9'	119°13.4'
Chemical analyses (weight percent)					
SiO_2	69.60	79.97	73.7	74.5	73.2
Al_2O_3	14.89	10.62	13.5	12.8	14.0
Fe_2O_3	1.07	0.33	0.80	0.50	1.5
FeO	1.99	0.63	1.3	1.0	0.88
MgO	0.91	0.15	0.30	0.12	0.30
CaO	2.70	0.51	0.66	0.70	1.2
Na_2O	3.18	3.11	5.6	3.2	4.3
K_2O	4.45	3.96	1.9	5.3	3.4
H_2O^+	0.31	0.07	0.49	0.07	0.20
H_2O^-	0.08	0.11	0.28	0.21	0.26
TiO_2	0.42	0.13	0.21	0.10	0.17
P_2O_5	0.12	0.02	0.05	0.03	0.07
MnO	0.07	0.08	0.03	0.02	0.06
CO_2	0.01	0.04	0.06	0.08	0.05
Cl	—	0.01	—	—	—
F	—	0.02	—	—	—
Less O	—	0.01	—	—	—
Sum	99.80	99.75	99.9	98.6	99.6
CIPW norms (weight percent)					
Q	26.4	45.3	32.1	34.0	32.6
C	0.2	0.3	1.2	0.6	1.2
or	26.5	23.5	11.5	31.9	20.3
ab	27.1	26.4	48.3	27.6	36.7
an	12.7	2.4	3.0	3.3	5.5
di	—	—	—	—	—
hy	4.5	1.2	2.2	1.6	1.0
mt	1.6	0.5	1.2	0.7	2.2
il	0.8	0.2	0.4	0.2	0.3
ap	0.3	<0.05	0.1	0.1	0.2
Total	100.1	99.8	100.0	100.0	100.0
Modes (volume percent)					
Quartz	31	36	—	—	—
K-feldspar	37	27	—	—	—
Plagioclase	30	25	—	—	—
Biotite	3	—	—	—	—
Hornblende	—	—	—	—	—
Mafic minerals undivided	<0.5	2	—	—	—
Total	101	100	—	—	—
Bulk specific gravity	—	2.59	—	—	—

PALISADE CREST INTRUSIVE SUITE

	Tinemaha Granodiorite		Granodiorite of McMurray Meadows	
Field No.	6-151-5	BP-1	11-174-2	BP-2
Lab. No.	53-1299SCD	M3198	53-1301SCD	M3203
North Lat.	37°3.7'	37°7.2'	37°6.0'	37°6.0'
West Long.	118°25.8'	118°26.5'	118°22.2'	118°22.2'
Chemical analyses (weight percent)				
SiO_2	62.82	65.77	64.86	64.91
Al_2O_3	15.44	14.34	16.12	16.33
Fe_2O_3	2.59	2.10	1.90	1.56
FeO	3.17	2.62	2.52	2.47
MgO	2.35	2.02	1.55	1.48
CaO	5.04	4.24	3.80	3.81
Na_2O	3.15	3.18	3.44	3.51
K_2O	3.72	3.76	4.03	4.10
H_2O^+	0.62	0.51	0.51	0.44
H_2O^-	0.03	0.05	0.06	0.06
TiO_2	0.64	0.60	0.57	0.59
P_2O_5	0.01	0.24	0.23	0.19
MnO	0.30	0.10	0.09	0.09
CO_2	0.11	0.08	0.00	0.01
Cl	—	0.01	—	0.02
F	—	0.04	—	0.06
BaO	—	—	0.13	—
Less O	—	0.02	—	0.03
Sum	99.99	99.66	99.81	99.60
CIPW norms (weight percent)				
Q	16.4	21.9	18.9	18.2
C	—	—	—	—
or	22.2	22.5	24.0	24.5
ab	26.9	27.2	29.4	30.0
an	17.1	13.9	16.8	16.9
di	6.5	4.7	0.6	0.8
hy	6.0	5.1	5.9	5.8
mt	3.8	3.1	2.8	2.3
il	1.2	1.2	1.1	1.1
ap	<0.05	0.6	0.6	0.5
Total	100.2	100.2	100.1	100.1
Modes (volume percent)				
Quartz	23	21	24	16
K-feldspar	17	17	28	23
Plagioclase	46	45	41	44
Biotite	6	—	4	—
Hornblende	7	—	3	—
Accessory minerals	1	—	1	—
Mafic minerals undivided	—	16	—	18
Total	100	99	101	101
Bulk specific gravity	2.68	2.70	2.68	2.68

UNASSIGNED GRANITOIDS OF THE EASTERN SIERRA NEVADA AND BENTON RANGE

	Granite of Casa Diablo Mountain				Granodiorite of Mono Dome	Granite of Rawson Creek				Granodiorite of Coyote Flat	Inconsolable Monzodiorite		
Field No.	GM-9	GM-34	GM-106	DFC-15-68	FD-10	6-140-5	BP-3	98-15-5	12-13-31	BP-5	6-119-2	MG-3	12,520
Lab. No.	M-116088W	M-116091W	M-116092W	M-107391W	16250	53-1296SCD	H3197	152443	152444	H3199	53-1303SCD	H3200	M-116130W
North Lat.	37°48.8'	37°54.7'	37°48.3'		37°57.0'	37°7.5'	37°8.2	37°14.4'	37°11.3'	37°13.0'	37°7.3'	37°7.7'	37°6.2'
West Long.	118°33.0'	118°43.7'	118°30.5'		119°12.4'	118°29.1'	119°26.9'	118°23.7'	118°24.9'	118°26.0'	118°31.6'	118°31.7'	118°30.6'
Chemical analyses (weight percent)													
SiO_2	76.1	74.5	74.1	74.9	62.1	74.11	76.83	71.0	75.4	65.24	61.00	60.14	58.2
Al_2O_3	13.0	13.5	13.7	12.8	16.3	13.73	11.89	15.7	13.3	16.20	16.06	16.14	17.5
Fe_2O_3	0.84	0.80	0.79	0.69	2.6	0.60	0.67	0.9	0.3	1.80	1.86	2.11	2.3
FeO	0.26	0.52	0.76	0.28	3.6	0.88	0.71	0.81	0.74	2.36	4.06	4.09	3.9
MgO	0.19	0.34	0.45	0.17	1.6	0.32	0.28	0.39	0.12	1.75	3.10	3.16	3.0
CaO	0.56	0.91	1.2	1.0	6.1	1.29	1.21	1.6	0.48	4.36	5.46	5.31	5.3
Na_2O	3.0	3.0	3.1	3.3	3.2	3.44	3.06	3.8	4.1	3.49	3.45	3.31	3.8
K_2O	5.1	5.3	5.1	4.4	2.7	4.92	4.14	5.0	4.5	3.20	2.95	3.10	3.6
H_2O^+	0.54	0.60	0.52	0.77	0.62	0.18	0.41	0.69	0.46	0.43	0.58	0.85	0.82
H_2O^-	0.06	0.13	0.07	0.05	0.07	0.12	0.11			0.08	0.05	0.11	0.08
TiO_2	0.14	0.15	0.20	1.1	0.70	0.18	0.17	0.22	0.10	0.47	0.88	0.95	0.03
P_2O_5	0.02	0.04	0.06	0.03	0.28	0.01	0.04	0.05	0.01	0.21	0.25	0.22	0.31
MnO	0.06	0.07	0.05	0.05	0.11	0.06	0.05	0.04	0.08	0.10	0.10	0.12	0.13
CO_2	0.02	0.01	0.01	<0.05	<0.05	0.05	0.14	0.07	0.11	0.01	0.00	0.01	<0.05
Cl	--	--	--	--	--	--	--	--	--	0.01	--	0.07	--
F	--	--	--	--	--	--	0.02	--	--	0.03	--	0.06	--
Less O	--	--	--	--	--	--	0.01	--	--	0.01	--	0.05	--
Sum	99.9	99.9	100.1	99.5	100.0	99.89	99.72	100.3	99.7	99.73	99.80	99.70	99.0
CIPW norms (weight percent)													
Q	38.0	34.6	33.4	36.5	18.4	31.8	40.4	25.8	32.9	20.7	13.3	12.8	5.9
C	1.6	1.3	1.0	0.9	--	0.4	0.3	1.3	0.8	--	--	--	--
or	30.4	31.6	30.3	26.1	16.1	29.2	24.7	29.7	26.8	19.1	17.6	18.6	21.7
ab	25.6	25.6	26.4	28.1	27.3	29.2	26.1	32.3	35.0	29.8	29.4	28.4	32.8
an	2.7	4.3	5.6	4.7	22.3	6.4	5.8	7.6	2.3	19.2	19.8	20.3	20.5
di	--	--	--	--	5.2	--	--	--	--	1.0	4.8	4.0	3.5
hy	0.5	1.0	1.6	1.1	5.0	1.7	1.3	1.4	1.4	6.2	10.1	10.5	11.5
mt	0.6	1.2	1.2	1.0	3.8	0.9	1.0	1.3	0.4	2.6	2.7	3.1	3.4
il	0.3	0.3	0.4	1.5	1.3	0.3	0.3	0.4	0.2	0.9	1.7	1.8	0.1
ap	<0.05	0.1	0.1	0.1	0.7	<0.05	0.1	0.1	<0.05	0.5	0.6	0.5	0.7
hm	0.4	--	--	--	--	--	--	--	--	--	--	--	--
Total	100.2	100.0	100.0	100.1	100.1	100.0	100.0	99.9	99.9	100.0	100.1	100.0	100.1
Modes (volume percent)													
Quartz	36	33	31	--	12	32	29	33	35	25	16	9	20
K-feldspar	38	36	38	--	11	39	37	33	41	10	13	11	20
Plagioclase	25	29	28	--	60	25	30	32	22	48	52	51	46
Biotite	--	--	--	--	--	3	--	--	--	--	11	--	--
Hornblende	--	--	--	--	--	--	--	--	--	--	6	--	--
Accesory minerals	--	--	--	--	--	1	--	--	--	--	2	--	--
Mafic minerals undivided	2	3	3	--	18	--	4	2	3	17	--	29	14
Total	101	101	100	--	101	100	100	100	101	100	100	100	100
Bulk specific gravity	2.61	2.61	2.62	--	2.78	--	2.58	--	--	2.67	--	2.72	--

SOLDIER PASS INTRUSIVE SUITE

	Grano-diorite of Beer Creek	Granite of Cottonwood Creek		
Field No.	DS-1;Pc-7	KK66-11	KK67-78B	KK67-91
Lab. No.	M-110397W	M-104060W	M-104068W	M-104071W
North Lat.	37°23.3'	37°32.2'	37°35.7'	37°30.4'
West Long.	118°0.0'	118°10.1'	118°3.6'	118°1.6'
Chemical analyses (weight percent)				
SiO_2	71.0	71.0	68.2	67.2
Al_2O_3	15.4	14.6	15.4	15.5
Fe_2O_3	1.1	1.1	1.3	1.6
FeO	0.88	0.96	1.6	1.7
MgO	0.53	0.82	1.1	1.3
CaO	1.9	2.0	2.7	2.9
Na_2O	3.9	3.2	3.2	3.6
K_2O	4.5	5.0	4.9	4.5
H_2O^+	0.24	0.67	0.72	0.68
H_2O^-	0.18	0.15	0.19	0.18
TiO_2	0.34	0.33	0.43	0.49
P_2O_5	0.06	0.12	0.19	0.18
MnO	0.03	0.05	0.07	0.06
CO_2	<0.05	<0.05	<0.05	<0.05
Sum	100.1	100.1	100.1	99.9
CIPW norms (weight percent)				
Q	26.4	28.1	23.6	21.2
C	0.8	0.6	0.4	—
or	26.7	29.8	29.2	26.9
ab	33.1	27.3	27.3	30.8
an	9.1	9.2	12.3	13.0
di	—	—	—	0.3
hy	1.5	2.5	4.1	4.2
mt	1.6	1.6	1.9	2.3
il	0.6	0.6	0.8	0.9
ap	0.1	0.3	0.5	0.4
Total	99.9	100.0	100.1	100.0
Modes (volume percent)				
Quartz	—	—	25	—
K-feldspar	—	—	37	—
Plagioclase	—	—	31	—
Mafic minerals undivided	—	—	7	—
Total	—	—	100	—
Bulk specific gravity	—	—	2.68	—

JURASSIC GRANITOIDS OF THE NORTHERN WHITE MOUNTAINS

	Quartz monzonite of Mount Barcroft					Granodiorite of Cabin Creek			Granite of Sage Hen Flat
Field No.	DFC-77-64	3-DR-70	6-DR-70	KK66-45	KK67-67	KK67-68	KK67-95	KK67-101	KK66-23
Lab. No.	M-107389W	M-111966W	M-111967W	M-104063W	M-104064W	M-104065	M-104073W	M-104074W	M-104061W
North Lat.	37°33.3'	37°32.9'	37°33.7'	37°34.2'	37°38.5'	37°41.6'	37°44.5'	37°42.0'	37°30.3'
West Long.	118°17.9'	118°19.9'	118°20.2'	118°14.2'	118°7.9'	118°10.4'	118°13.9'	118°13.1'	118°10.2'
Chemical analyses (weight percent)									
SiO_2	62.6	60.1	57.8	63.8	58.9	66.0	66.0	61.4	67.8
Al_2O_3	16.6	17.3	17.1	16.4	16.9	15.8	16.4	17.1	16.0
Fe_2O_3	1.9	2.1	2.2	1.5	2.4	1.6	1.4	1.8	0.79
FeO	3.2	3.6	4.5	3.4	4.4	2.8	2.4	3.8	2.1
MgO	2.2	2.5	3.4	1.8	2.9	1.7	1.4	2.6	1.0
CaO	3.9	4.6	6.0	3.6	5.0	3.4	3.4	4.5	2.7
Na_2O	3.2	3.2	2.9	3.2	3.2	3.2	3.4	3.3	3.8
K_2O	4.4	4.3	3.6	5.3	4.0	3.9	4.0	3.4	4.2
H_2O^+	0.90	1.0	1.0	0.67	0.81	0.59	0.81	1.0	0.71
H_2O^-	0.00	0.08	0.10	0.05	0.12	0.15	0.04	0.10	0.11
TiO_2	0.70	0.80	0.86	0.65	0.80	0.51	0.49	0.66	0.36
P_2O_5	0.28	0.33	0.42	0.27	0.39	0.24	0.21	0.31	0.15
MnO	0.10	0.11	0.11	0.10	0.14	0.09	0.08	0.11	0.08
CO_2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sum	100.0	100.1	100.0	100.8	100.0	100.0	100.1	100.1	99.9
CIPW norms (weight percent)									
Q	14.9	10.9	9.0	13.7	9.3	22.0	21.1	14.6	21.7
C	0.2	—	—	—	—	0.7	0.8	0.6	0.7
or	26.2	25.7	21.5	31.3	23.9	23.2	23.8	20.3	25.1
ab	27.3	27.4	24.8	27.1	27.3	27.3	29.0	28.2	32.5
an	17.7	20.4	23.3	14.7	20.1	15.4	15.6	20.5	12.5
di	—	0.4	3.3	1.1	1.9	—	—	—	—
hy	8.9	9.9	12.2	8.0	11.4	7.4	6.1	11.2	5.3
mt	2.8	3.1	3.2	2.2	3.5	2.3	2.0	2.6	1.2
il	1.3	1.5	1.7	1.2	1.5	1.0	0.9	1.3	0.7
ap	0.7	0.8	1.0	0.6	0.9	0.6	0.5	0.7	0.4
Total	100.0	100.1	100.0	99.9	99.9	99.9	99.8	100.0	100.1
Modes (volume percent)									
Quartz	12	7	4	21	16	26	27	19	24
K-feldspar	37	24	16	29	17	18	26	11	27
Plagioclase	31	38	47	39	43	42	38	56	41
Biotite	10	26	—	—	—	—	—	—	—
Hornblende	7	5	—	—	—	—	—	—	—
Clinopyroxene	2	—	—	—	—	—	—	—	—
Accessory minerals	1	—	—	—	—	—	—	—	—
Mafic minerals undivided	—	—	33	12	24	15	8	15	8
Total	100	100	100	101	100	101	99	101	100
Bulk specific gravity	2.74	2.76	2.76	2.74	2.79	2.70	—	—	2.67

CRETACEOUS GRANITES OF THE WHITE MOUNTAINS

	Granite of Pellisier Flats					Granite of Boundary Peak			
Field No.	KK66-35	DFC206-68	DFC152-68	11-DR-70	50-2-DR70	50-1-DR70	DFC116-68	DFC214-68	DFC241-68
Lab. No.	M-104062W	M-107393W	M-107396W	M-111968W	M-111970W	M-107969W	M-107390W	M-107397W	M-107392W
North Lat.	37°41.6'	37°48.2'	37°49.1'	37°50.0'	37°49.0'	37°50.1'	37°52.4'	37°49.6'	37°51.7'
West Long.	118°15.0'	118°19.7'	118°26.0'	118°26.1'	118°26.1'	118°26.1'	118°22.3'	118°19.2'	118°19.2'
Chemical analyses (weight percent)									
SiO_2	64.8	70.0	70.0	64.8	66.1	68.7	71.4	72.4	70.4
Al_2O_3	16.0	14.7	15.0	16.4	15.8	16.8	15.4	15.3	15.7
Fe_2O_3	2.0	1.4	1.2	1.8	1.5	1.0	0.87	0.82	1.0
FeO	2.2	1.2	1.1	2.6	2.4	0.96	0.57	0.44	0.42
MgO	1.3	0.70	0.61	1.6	1.5	0.43	0.24	0.22	0.24
CaO	1.9	1.3	1.2	2.8	3.0	2.4	1.7	1.3	2.0
Na_2O	3.8	4.0	3.8	3.7	3.5	4.4	4.3	4.1	4.3
K_2O	6.0	4.7	4.9	5.0	4.6	4.2	3.8	4.0	3.8
H_2O^+	0.87	0.92	0.58	0.81	0.60	0.35	0.57	0.92	0.76
H_2O^-	0.07	0.06	0.05	0.12	0.07	0.08	0.03	0.08	0.10
TiO_2	0.76	0.43	0.44	0.80	0.62	0.34	0.18	0.16	0.21
P_2O_5	0.21	0.12	0.12	0.24	0.18	0.08	0.05	0.04	0.08
MnO	0.07	0.05	0.04	0.11	0.07	0.05	0.04	0.04	0.05
CO_2	<0.05	<0.05	<0.05	0.15	<0.05	<0.05	0.10	<0.05	<0.05
Sum	100.0	99.6	99.1	100.9	100.0	99.8	99.3	99.9	99.1
CIPW norms (weight percent)									
Q	13.9	25.4	26.2	15.5	19.1	21.4	28.3	30.6	26.9
C	0.3	1.0	1.6	0.4	<0.05	0.8	1.3	2.0	1.1
or	35.8	28.2	29.4	29.6	27.4	25.0	22.8	23.9	22.9
ab	32.5	34.3	32.7	31.4	29.8	37.5	36.9	35.1	37.1
an	8.1	5.7	5.3	12.3	13.2	11.5	8.2	6.3	9.6
di	--	--	--	--	--	--	--	--	--
hy	4.5	2.2	1.9	6.2	6.1	1.5	0.7	0.6	0.6
mt	2.9	2.1	1.8	2.6	2.2	1.5	1.3	1.1	0.9
il	1.5	0.8	0.8	1.5	1.2	0.7	0.3	0.3	0.4
ap	0.5	0.3	0.3	0.6	0.4	0.2	0.1	0.1	0.2
hm	--	--	--	--	--	--	--	0.1	0.4
Total	100.0	100.0	100.0	100.0	100.1	99.9	100.2	99.9	100.1
Modes (volume percent)									
Quartz	15	23	27	12	17	17	--	--	--
K-feldspar	48	44	45	39	27	30	--	--	--
Plagioclase	28	20	20	24	39	50	--	--	--
Biotite	--	13	8	25	11	3	--	--	--
Hornblende	--	--	--	--	5	<0.5	--	--	--
Accessory minerals	--	--	--	--	1	--	--	--	--
Mafic minerals undivided	9	--	--	--	--	--	--	--	--
Total	--	100	100	100	100	100	--	--	--
Bulk specific gravity	2.66	2.62	2.62	2.67	2.67	2.61	--	2.61	2.68

CRETACEOUS GRANITES OF THE WHITE MOUNTAINS--Continued

	Granite of Marble Creek		Granite of Leidy Creek	Granite of Indian Garden		Granite of McAfee Creek		
Field No.	KK67-73	KK67-128	KK67-69	KK67-82	KK67-92	KK67-89	KK67-109	KK67-117
Lab. No.	M-194067W	M-104077W	M-104066W	M-104069W	M-104072W	M-104070W	M-104075W	M-104076W
North Lat.	37°44.8'	37°39.9'	37°42.8'	37°33.1'	37°30.5'	37°35.9'	37°37.3'	37°40.0'
West Long.	118°11.7'	118°6.8'	118°11.3'	118°3.8'	118°0.1'	118°3.5'	118°8.8'	118°13.7'
Chemical analyses (weight percent)								
SiO_2	68.3	69.1	72.6	70.5	71.2	73.6	70.6	77.0
Al_2O_3	16.2	15.8	14.4	15.2	15.5	14.2	15.0	12.8
Fe_2O_3	0.74	1.4	0.65	1.0	0.80	0.56	0.82	0.39
FeO	1.6	1.4	0.68	0.80	1.0	0.40	0.80	0.24
MgO	0.75	0.88	0.34	0.44	0.53	0.26	0.47	0.08
CaO	2.2	3.3	1.8	1.8	3.0	1.1	1.7	1.0
Na_2O	3.4	3.9	3.7	3.9	3.5	4.2	4.2	3.1
K_2O	5.5	2.9	4.8	4.6	3.3	4.4	4.3	5.1
H_2O^+	0.53	0.61	0.62	0.44	0.62	0.69	1.5	0.21
H_2O^-	0.05	0.17	0.11	0.10	0.10	0.15	0.15	0.02
TiO_2	0.39	0.31	0.17	0.26	0.23	0.14	0.30	0.06
P_2O_5	0.14	0.15	0.08	0.09	0.07	0.05	0.12	0.02
MnO	0.05	0.10	0.06	0.05	0.05	0.05	0.07	0.02
CO_2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sum	99.9	100.1	100.1	99.2	100.0	99.9	100.1	100.1
CIPW norms (weight percent)								
Q	21.4	27.1	28.5	26.2	31.0	30.0	25.9	37.3
C	1.0	0.6	<0.05	0.8	0.9	0.7	0.6	0.4
or	32.7	17.3	28.6	27.6	19.7	26.3	25.8	30.2
ab	29.0	33.3	31.5	33.5	29.9	35.9	36.1	26.3
an	10.1	15.5	8.5	8.5	14.5	5.2	7.8	4.8
di	--	--	--	--	--	--	--	--
hy	3.7	3.3	1.4	1.4	2.2	0.8	1.6	0.3
mt	1.1	2.0	0.9	1.5	1.2	0.8	1.2	0.6
il	0.7	0.6	0.3	0.5	0.4	0.3	0.6	0.1
ap	0.3	0.4	0.2	0.2	0.2	0.1	0.3	<0.05
hm	--	--	--	--	--	--	--	--
Total	100.0	100.1	99.9	100.2	100.0	100.1	99.9	100.0
Modes (volume percent)								
Quartz	31	--	34	29	--	--	30	37
K-feldspar	27	--	32	26	--	--	27	34
Plagioclase	36	--	32	42	--	--	40	28
Biotite	--	--	--	--	--	--	--	--
Hornblende	--	--	--	--	--	--	--	--
Accessory minerals	--	--	--	--	--	--	--	--
Mafic minerals undivided	6	--	2	3	--	--	3	1
Total	100	--	100	100	--	--	100	100
Bulk specific gravity	2.65	--	2.62	2.61	--	--	2.62	2.59

	Serpentinite	Pyroxenite	Gabbro								Hornblende Gabbro		
Field No.	MA-48	LE-1044	LE-1040	LE-1096	LE-103	456-I-7	456-I-17	456-I-43	Y-708	MP-786	SLd-100	MLb-10	SLb-54
Lab. No.	M-145318	M-133956	M-133930	M-133957	M-133955	W-170082	W-170083	W-170085	W-194501	161593	M-118557W	W-192489	W-182753
North Lat.	37°27.5'	37°52.0'	37°50.6'	37°58.7'	37°51.6'	37°48.0'	37°47.5'	37°45.2'	37°33.7'	37°40.1'	37°3.5'	37°10.1'	37°12.9'
West Long.	119°54.7'	119°50.1'	119°51.8'	119°54.8'	119°56.8'	119°53.4'	119°52.8'	119°55.7'	119°43.2'	119°24.0'	119°21.6'	119°35.5'	119°16.3'
Chemical analyses (weight percent)													
SiO_2	44.1	42.60	42.54	43.07	43.50	44.1	45.4	45.8	52.0	54.4	45.8	46.8	46.9
Al_2O_3	1.45	9.66	20.53	19.33	16.41	24.7	19.1	13.0	18.9	17.1	24.0	21.3	17.7
Fe_2O_3	3.66	3.93	3.92	2.81	5.98	3.3	2.8	0.93	0.96	1.9	2.5	1.0	1.8
FeO	4.65	6.16	5.88	5.52	7.67	4.2	5.0	10.7	6.7	6.2	3.8	7.2	6.7
MgO	39.4	22.02	8.36	11.56	7.66	7.9	9.0	16.2	5.6	4.8	5.3	5.7	7.2
CaO	0.1	7.93	13.07	12.16	13.10	12.6	12.8	9.1	8.7	7.9	13.2	11.4	12.9
Na_2O	<0.15	0.98	2.02	1.38	1.53	0.96	2.0	0.91	3.0	3.7	1.7	2.1	1.9
K_2O	<0.02	0.13	0.34	0.35	0.36	0.15	0.41	0.32	0.43	1.5	0.42	0.38	0.60
H_2O^+	5.29	4.89	1.79	2.89	1.70	1.4	0.70	1.4	1.7	0.95	1.1	1.6	1.4
H_2O^-	0.51	0.08	0.15	0.25	0.16	0.12	0.08	0.10	0.62	0.13	0.22	0.15	0.11
TiO_2	<0.02	0.42	1.76	1.07	1.20	0.36	2.0	0.32	0.94	0.20	1.2	1.3	1.0
P_2O_5	<0.05	0.11	0.08	0.11	0.17	0.04	0.08	0.10	0.29	0.23	0.04	0.15	0.13
MnO	0.13	0.149	0.107	0.118	0.163	0.04	0.09	0.19	0.10	0.16	0.07	0.09	0.14
CO_2	0.22	0.08	0.08	0.06	0.05	0.05	<0.05	<0.05	0.04	<0.05	0.16	0.01	0.08
Sum	99.5	99.1	100.6	100.7	99.7	99.2	99.5	99.2	100.0	99.2	99.4	99.3	98.5
CIPW norms (weight percent)													
Q	—	—	—	—	—	—	—	—	3.1	1.9	—	—	—
C	2.3	—	—	—	—	0.1	—	—	—	—	—	—	—
or	0.1	0.8	2.0	2.1	2.2	0.9	2.5	1.9	2.6	9.0	2.5	2.3	3.7
ab	0.9	8.8	9.3	10.7	13.2	8.3	16.5	7.9	26.0	31.9	14.9	18.2	16.6
an	—	22.9	46.6	46.7	37.7	63.3	42.5	31.2	37.7	26.1	57.8	48.8	39.2
di	—	14.3	14.8	11.5	22.2	14.7	16.9	11.6	3.7	10.1	7.0	6.7	21.0
hy	51.6	12.5	—	—	4.2	—	—	19.4	22.9	17.2	8.6	12.9	5.5
mt	6.1	5.8	4.2	8.9	4.9	4.1	1.4	3.7	1.4	2.8	1.5	2.7	1.2
il	9.9	0.8	3.4	2.1	2.3	0.7	3.8	0.6	1.8	0.4	2.3	2.5	2.0
ap	1.2	0.3	0.2	0.3	0.4	0.1	0.2	0.2	0.7	0.6	0.1	0.4	0.3
hm	3.7	—	—	—	—	—	—	—	—	—	—	—	—
ol	33.1	33.5	13.6	21.8	8.9	7.0	13.2	25.7	—	—	3.3	6.7	9.0
rt	0.1	—	—	—	—	—	—	—	—	—	—	—	—
ne	—	4.4	0.7	—	—	—	—	—	—	—	—	—	—
Total	100.0	100.0	100.1	100.1	99.5	100.0	100.1	99.9	99.9	100.0	100.0	100.0	100.0
Modes (volume percent)													
Quartz	—	—	—	—	—	—	—	—	9	5	—	—	—
K-feldspar	—	—	—	—	—	—	—	—	0	0	—	—	—
Plagioclase	—	—	—	—	—	—	—	—	65	47	—	—	—
Biotite	—	—	—	—	—	—	—	—	26	—	—	—	—
Hornblende	—	—	—	—	—	—	—	—	—	—	—	—	—
Hypersthene	—	—	—	—	—	—	—	—	—	—	—	—	—
Mafic minerals - undivided	—	—	—	—	—	—	—	—	—	48	—	—	—
Total	—	—	—	—	—	—	—	—	100	100	—	—	—
Bulk specific gravity	—	3.01	2.98	2.95	3.02	—	—	—	2.81	—	—	—	—

	Hornblende gabbro—Continued		Diorite						Quartz diorite			Quartz diorite porphyry
Field No.	MLc-77	SLb-185	FD-7	Y-5208	Y-520C	SLc-118A	Sr4-74	MA-26	MP-811	6-66-2	MP-514	Y-402
Lab. No.	W-192491	M-118546	162489	W-194592	W-194593	W-182764	M-132772	M-145308	W-185514	138275	W-185511	W-193405
North Lat.	37°1.2'	37°8.6'	37°19.4'	37°43.3'	37°43.3'	37°3.1'	37°46.0'	37°25.6'	37°43.9'	37°19.5'	37°34.2'	37°34.8'
West Long.	119°38.1'	119°22.2'	119°10.5'	119°39.8'	119°39.8'	119°23.9'	119°10.9'	119°52.6'	119°15.7'	118°39.9'	119°28.1'	119°37.6'
Chemical analyses (weight percent)												
SiO_2	53.9	51.0	51.4	52.2	55.5	49.9	55.89	56.6	50.8	59.0	60.1	66.6
Al_2O_3	17.5	9.7	18.2	19.5	19.0	17.5	17.06	18.9	17.1	17.2	17.3	16.0
Fe_2O_3	0.8	1.9	2.5	2.0	2.4	3.1	2.12	1.64	4.5	2.0	1.7	0.93
FeO	6.6	10.0	6.8	5.3	4.8	7.7	5.25	5.28	6.9	4.6	4.0	3.1
MgO	4.5	16.5	6.1	3.6	2.7	4.1	4.26	4.50	3.9	2.8	2.8	1.4
CaO	7.5	6.4	9.5	9.3	7.5	8.1	6.66	7.96	6.4	6.2	6.9	3.9
Na_2O	3.2	1.6	1.8	3.2	3.6	3.7	3.56	3.37	2.4	3.3	3.5	3.6
K_2O	1.3	0.48	0.78	1.1	1.1	1.1	2.25	0.49	3.2	2.1	1.2	2.5
H_2O^+	1.9	0.51	1.7	1.2	1.0	0.86	0.82	0.46	1.6	1.0	0.61	0.80
H_2O^-	0.19	0.14	0.12	0.17	0.19	0.05	0.05	0.14	0.03		0.04	0.15
TiO_2	1.2	0.57	0.86	1.1	1.3	1.8	1.00	0.88	1.0	0.82	0.59	0.59
P_2O_5	0.35	0.10	0.10	0.30	0.51	0.47	0.24	0.19	0.69	0.34	0.36	0.19
MnO	0.10	0.15	0.14	0.11	0.10	0.16	0.12	0.12	0.11	0.14	0.00	0.06
CO_2	0.10	0.10	<0.05	0.09	0.06	0.02	0.01	0.14	0.06	<0.05	0.03	0.06
Sum	99.1	99.2	100.1	99.2	99.8	98.6	99.3	100.7	98.7	99.6	99.1	99.9
CIPW norms (weight percent)												
Q	5.4	—	6.2	3.9	9.9	—	5.4	9.4	3.9	13.4	16.0	24.6
C	—	—	—	—	—	—	—	—	—	—	—	0.7
or	7.9	2.9	4.7	6.7	6.6	6.7	13.5	2.9	19.5	12.6	7.2	14.9
ab	27.9	13.8	15.5	27.7	30.9	32.1	30.6	28.5	20.9	28.3	30.1	30.8
an	30.5	18.2	40.0	36.4	32.9	28.6	24.3	35.0	27.3	26.3	28.4	18.3
di	4.6	10.8	6.0	7.2	1.2	7.8	6.2	2.7	0.7	2.2	3.3	—
hy	19.3	43.3	22.0	12.3	11.2	15.6	14.3	17.0	17.4	11.8	10.5	7.6
mt	1.2	2.8	3.7	3.0	3.5	4.6	3.1	2.4	6.7	2.9	2.5	1.4
il	2.4	1.1	1.7	2.1	2.5	3.5	1.9	1.7	2.0	1.6	1.1	1.1
ap	0.9	0.2	0.2	0.7	1.2	1.1	0.6	0.5	1.4	0.8	0.9	0.5
hm	—	—	—	—	—	—	—	—	—	—	—	—
ol	—	7.0	—	—	—	0.1	—	—	—	—	—	—
rt	—	—	—	—	—	—	—	—	—	—	—	—
ne	—	—	—	—	—	—	—	—	—	—	—	—
Total	100.1	100.1	100.0	100.0	99.9	100.1	99.9	100.1	100.1	99.9	100.0	99.9
Modes (volume percent)												
Quartz	—	—	—	8	18	—	—	2	5	—	10	22
K-feldspar	—	—	—	tr	0	—	—	0	tr	—	tr	15
Plagioclase	—	—	—	68	60	—	—	70	57	—	55	48
Biotite	—	—	—	24	22	—	—	3	37	—	34	14
Hornblende	—	—	—	—	—	—	—	7	—	—	—	—
Hypersthene	—	—	—	—	—	—	—	18	—	—	—	—
Mafic minerals undivided	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	100	100	—	—	100	99	—	99	99
Bulk specific gravity	—	—	2.92	2.83	2.82	—	—	2.85	2.86	—	2.81	2.73

Field No.	MLc-84	SLb-86	MLb-114	MLd-61	A-410	YGL	DS-1;936.5	R-84b	MC-14B	H-41-69	DFC-174-66	MP-143	MP-296
Lab. No.	W-192280	M-107209W	M-109630W	M-109643W	M-107208W	M-116131W	M-116132W	165957	M-132772	M-112654W	M-107388W	W-194915	W-185508
North Lat.	37°2.2'	37°10.4'	37°10.5'	37°2.7'	37°26.9'	37°48.2'	37°23.3'	37°12.8'	37°46.0'	37°45.7'	37°33.3'	37°37.5'	37°38.4'
West Long.	119°33.2'	119°19.7'	119°1.3'	119°5.1'	118°53.5'	119°43.0'	118°0.0'	118°28.3'	119°10.7'	119°31.4'	118°17.7'	119°20.4'	119°20.9'
Chemical analyses (weight percent)													
SiO_2	74.8	76.1	73.6	73.2	76.6	75.4	83.2	76.3	76.12	76.5	73.9	76.1	77.8
Al_2O_3	14.4	13.3	14.1	13.5	13.1	13.7	9.1	13.0	12.77	13.3	14.0	13.7	13.2
Fe_2O_3	0.91	0.47	0.73	1.4	0.40	0.43	0.00	0.37	0.36	0.26	0.72	0.29	0.15
FeO	0.68	0.28	0.88	1.3	0.20	0.52	0.22	0.16	0.27	0.40	0.12	0.16	0.40
MgO	0.32	0.03	0.44	0.52	0.02	0.00	0.03	0.09	0.02	0.16	0.00	0.17	0.00
CaO	1.2	1.4	1.5	1.1	0.70	0.94	0.65	0.91	0.72	1.4	0.22	0.37	0.86
Na_2O	3.6	3.6	3.7	2.3	3.5	4.1	1.8	3.5	2.85	3.0	4.1	4.6	3.6
K_2O	3.7	3.9	3.8	5.5	4.7	3.5	4.0	5.2	5.99	4.4	5.2	4.4	5.0
H_2O^+	0.64	0.29	0.67	0.68	0.58	0.36	0.35	0.21	0.07	0.44	0.64	0.28	0.21
H_2O^-	0.05	0.03	0.11	0.14	0.03	0.04	0.04	0.10	0.06	0.05	0.02	0.11	0.04
TiO_2	0.15	0.04	0.21	0.27	0.05	0.02	0.56	0.06	0.11	0.06	0.20	0.06	0.00
P_2O_5	0.07	0.00	0.09	0.07	0.00	0.02	0.00	0.04	0.02	0.02	0.02	0.04	0.08
MnO	0.04	0.00	0.05	0.07	0.02	0.20	0.03	0.02	0.013	0.00	0.00	0.11	0.00
CO_2	0.03	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.02	<0.05	<0.05	0.01	0.02
Sum	100.6	99.0	99.9	100.1	100.0	99.3	100.0	100.0	99.4	100.0	99.2	100.4	101.4
CIPW norms (weight percent)													
Q	36.7	37.5	33.9	35.7	37.0	36.2	56.2	34.2	35.3	39.0	30.2	31.5	35.4
C	2.5	0.6	1.4	1.9	1.0	1.5	0.6	0.1	0.3	1.1	1.3	0.8	0.5
or	21.9	23.3	22.7	32.8	28.0	20.9	23.7	30.8	35.7	26.1	31.2	26.0	29.2
ab	30.5	30.7	31.6	19.6	29.8	35.1	15.3	29.7	24.3	25.5	35.2	38.9	30.1
an	5.5	7.0	6.9	5.0	3.5	4.6	3.2	4.3	3.5	6.8	1.0	1.6	3.7
hy	1.1	0.1	1.9	2.2	0.1	1.0	0.1	0.2	0.1	0.8	--	0.6	0.6
mt	1.3	0.7	1.1	2.0	0.6	0.6	--	0.4	0.5	0.4	--	0.4	0.2
il	0.3	0.1	0.4	0.5	0.1	<0.05	0.5	0.1	0.2	0.1	0.3	0.1	--
ap	0.2	--	0.2	0.2	--	<0.05	--	0.1	<0.05	<0.05	<0.05	0.1	0.2
hm	--	--	--	--	<0.05	--	--	0.1	--	--	0.7	--	--
rt	--	--	--	--	--	--	0.3	--	--	--	0.1	--	--
Total	100.1	100.0	100.1	99.8	100.2	100.0	99.9	100.0	100.0	99.9	100.1	100.0	99.9
Modes (volume percent)													
Quartz	35	35	29	32	29	--	--	--	--	--	--	--	--
K-feldspar	24	26	28	40	41	--	--	--	--	--	--	--	--
Plagioclase	36	39	40	24	30	--	--	--	--	--	--	--	--
Biotite	5	<0.5	3	3	<0.5	--	--	--	--	--	--	--	--
Mafic minerals undivided	--	--	--	--	--	--	--	--	--	--	--	--	--
Total	100	100	100	101	100	--	--	--	--	--	--	--	--
Bulk specific gravity	2.64	2.64	2.63	2.63	--	--	--	--	--	--	--	--	2.61