STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
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Geology and Mineral Resources Map of the Mt. Ireland Quadrangle, Baker and Grant Counties, Oregon

GMS - 22

1982

Base Map by U. S. Geological Survey
Control by USGS and NOS/NOAA
Topography by photogrammetric methods from aerial photographs taken 1971. Field checked 1972
Projection and 10,000-foot grid ticks: Oregon coordinate system, north zone (Lambert conformal conic)
1000-metre Universal Transverse Mercator grid ticks, zone 11, shown 1927 North American datum
Map prepared by STATE OF OREGON DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
Cartography by Paul E. Staub, 1982

Geology by M. L. Ferns, H. C. Brooks, and J. Ducette

Field work completed 1981

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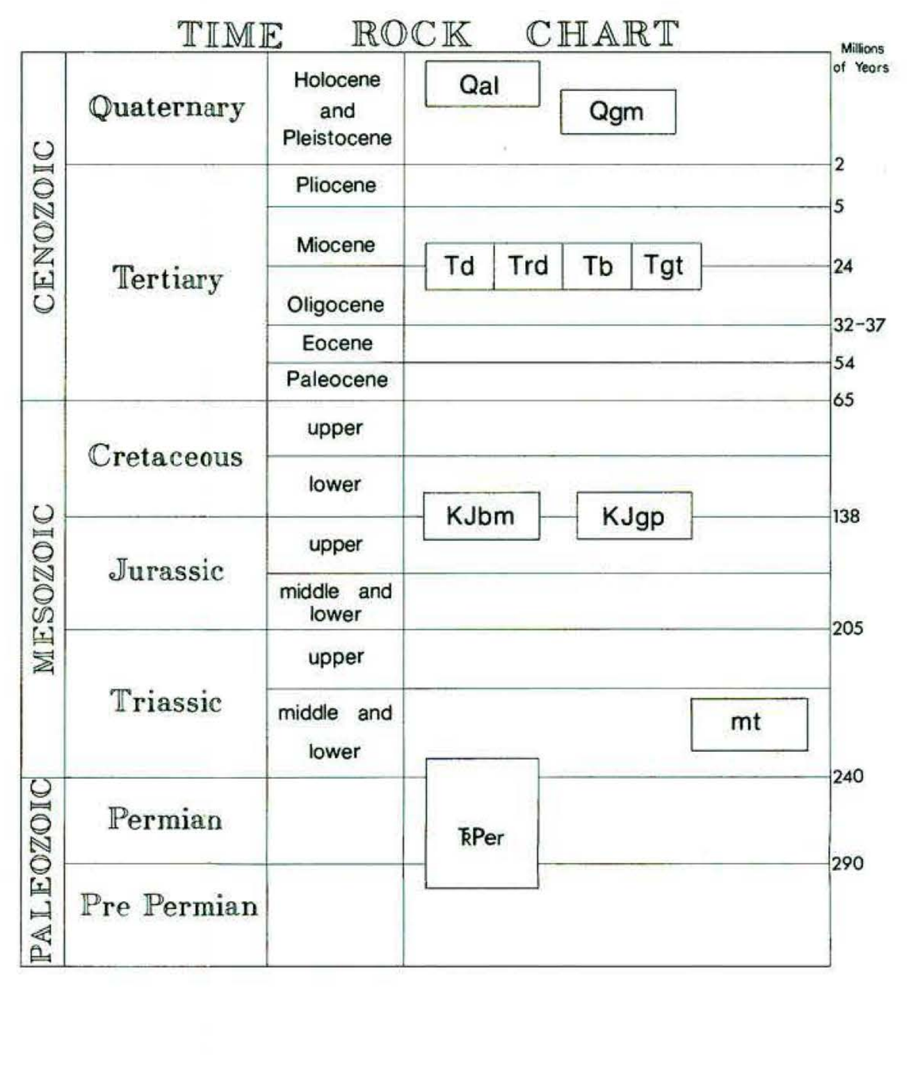
TIME ROCK CHART



EXPLANATION

Qal — **Alluvium (Holocene and Pleistocene):** *Unconsolidated, poorly sorted fluviatile deposits consisting of gravel, sand, and silt in channels and flood plains of the present drainage system*

Qgm — **Glacial deposits (Holocene and Pleistocene):** *Unconsolidated, unsorted accumulations of boulders, cobbles, sand, and silt deposited by glaciers. Boulders are predominantly tonalite and granodiorite of unit* **KJbm** *and range up to 30 ft in diameter*

Tgt — **Gravel, tuff, and tuffaceous sediments (Miocene-Oligocene):** *Unconsolidated to weakly consolidated interlayered deposits of gravel and pale-brown, gray, and green water-laid silicic and andesitic tuff and tuffaceous sand and silt. Also includes local mudflow deposits and thin basalt flows. The gravels consist mainly of stream-rounded pebbles, cobbles, and boulders of chert, argillite, greenstone, and granitic rocks with generally lesser amounts of clasts representative of one or more of the Tertiary volcanic units in a matrix of volcanic ash, sand, and silt. Locally, the deposits have been worked for placer gold, especially where the gravels have been reworked by modern streams*

Tb — **Basalt (Miocene-Oligocene):** *Black and dark-gray, brown- and red-weathering, fine-grained, locally porphyritic, holocrystalline basalt flows. Most of the rocks contain olivine. Locally, silicic tuff and gravel deposits occur between flows. Three analyzed samples from different flows range from 48.39 to 50.10 percent SiO_2, 0.09 to 0.67 percent K_2O, and 2.09 to 2.68 percent Na_2O*

Trd — **Silicic tuff (Miocene-Oligocene):** *Pink and light-gray porphyritic and nonporphyritic, hornblende-bearing, crystal-vitric and vitric tuff of rhyodacitic composition. (Two typical samples averaged 70.91 percent SiO_2, 1.34 percent K_2O, and 2.84 percent Na_2O.) Porphyritic varieties contain relict plagioclase and crudely aligned euhedral hornblende phenocrysts in a glassy matrix which contains resorbed crystals of feldspar and quartz*

Td — **Silicic flows (Miocene-Oligocene):** *Light- and medium-gray porphyritic dacite, silicic andesite, and rhyodacite flows. Predominantly dacite with large spongy phenocrysts of plagioclase, smaller euhedral hornblende phenocrysts, and irregular quartz phenocrysts in an aphanitic groundmass. Biotite and orthopyroxene also occur as phenocrysts. Analyzed samples range from 66.27 to 69.83 percent SiO_2, 1.76 to 2.10 percent K_2O, and 2.98 to 3.11 percent Na_2O. Correlative with the "Olive Butte Andesites" of Perkins (1976) and "Olive Butte Volcanics" of Mullen (1979)*

KJbm — **Bald Mountain Batholith (Lower Cretaceous and Upper Jurassic):** *Dominantly tonalite and granodiorite, with small amounts of norite and quartz monzonite (Taubeneck, 1957). Dikes and sills of similar compositions occur along the borders of the batholith. Rb-Sr and K-Ar ages for the batholith range from 131 to 158 m.y. (Armstrong and others, 1977)*

KJgp — **Grays Peak Stock (Lower Cretaceous and Upper Jurassic):** *Satellite of the Bald Mountain Batholith consisting chiefly of norite and tonalite (Taubeneck, 1957, p. 191)*

mt — **Mixed rock terrane:** *A structurally chaotic assemblage of rocks of different compositions and ages consisting of tectonically juxtaposed blocks and slices of altered serpentinite, peridotite, pyroxenite, basalt, gabbro, diorite, quartz diorite, argillite, chert, volcaniclastic breccia and conglomerate, and limestone, all metamorphosed to the greenschist facies. The unit consists predominantly of greenstone, gabbro, and serpentinized ultramafic rocks. Locally, serpentinite is recrystallized to talc-chlorite and talc-carbonate rock. Blocks range from a few meters to several hundred meters in longest dimension. Tectonism responsible for development of the terrane probably occurred in Early to Middle Triassic time. This conclusion is based on the assumption that the included argillite, chert, and limestone are correlative with similar rocks in the Elkhorn Ridge Argillite and the fact that similar terranes near John Day are overlain unconformably by Upper Triassic sedimentary rocks*

TRPer — **Elkhorn Ridge Argillite (Triassic, Permian, and Pennsylvanian):** *Mainly dark-colored argillite, siliceous argillite, and chert, with small amounts of fine-grained felsic tuff, sandstone, and conglomerate. Some argillites are nearly black due to high carbon content. Some siliceous rocks are light gray, pale brown, or reddish. Rocks rich in volcanic material vary from grayish green to pale yellow. Argillite and siliceous argillite are the most abundant rock types; chert predominates locally. Many exposures consist of alternating siliceous and argillaceous layers ranging from a fraction of an inch to several feet thick. The siliceous layers commonly pinch and swell between layers of argillite. The tuffs generally are aphanitic, flinty-textured rocks. Tiny quartz and feldspar phenocrysts are barely discernable in some hand specimens. Rare pebble conglomerate beds consist of poorly sorted, subrounded fragments of felsic and mafic volcanic rocks, chert, and argillite up to 3 in. in diameter in a matrix of similar composition. The rocks underwent complex deformation and regional greenschist facies metamorphism prior to emplacement of the Bald Mountain Batholith and Grays Peak Stock. The most prominent structural features are a penetrative shear cleavage and small contorted folds with associated boudinage structures which generally trend easterly and dip steeply to the south. Intricate small-scale brecciation is common. Rocks in the thermal aureole of the Bald Mountain Batholith and Grays Peak Stock have been hornfelsed. Within a few hundred meters of the contact, argillite has been recrystallized to quartz-biotite-garnet schist. Biotite occurs in argillites as much as 1.5 mi from the intrusive contact.*

Fossils of Pennsylvanian, Permian, and Triassic age have been found in limestone pods in Elkhorn Ridge Argillite outside the Mt. Ireland quadrangle. The diverse age and structural complexity show that the Elkhorn Ridge Argillite is not a simple stratigraphic unit

GEOLOGIC SYMBOLS

- Contact — approximately located
- Fault — ball and bar on downthrown side
- Strike and dip of bed
- Strike of vertical bed
- Strike and dip of foliation
- Strike of vertical foliation
- Quartz veins and mineralized fault zones — dashed where approximately located
- ■76 Mine and prospect locations — numbers correspond to map numbers in Table 1

MINERAL DEPOSITS

Gold and silver from quartz vein and placer deposits have been the main mineral products of the quadrangle, which covers most of the Cable Cove mining district and parts of the Cracker Creek and Granite districts. Using historical values for gold and silver at the time of mining, total value of the output from mines in the quadrangle has been about $1.2 million, with the bulk of the production coming from mines along the Bald Mountain-Ibex vein.

In addition to gold and silver, small amounts of lead, zinc, and copper have been recovered as by-products from the complex sulphide ores in the Cable Cove district. Low-grade chromite deposits also occur within the quadrangle.

Known mines and prospects are located on the map by numbers that correspond to the list of names and locations in Table 1. Because of time constraints, some mapping traverses were as much as half a mile apart, and it is likely that many small veins and prospect excavations were not observed.

Bald Mountain-Ibex vein

The most productive lode gold deposits in the quadrangle are along the Bald Mountain-Ibex vein. Although not continuously exposed, the vein is traceable for about 3 mi by mine and prospect workings including, from east to west, the Mammoth (40), Belle of Baker (41), Grand Trunk (31), Bald Mountain (29), and Ibex (28) Mines. Production records are scarce. Hewett (1931, p. 321) estimates production from the Belle of Baker at $400,000 and the Mammoth at $40,000. He credits the Bald Mountain and Ibex Mines with "small" production. The present owners estimate that between 30,000 and 35,000 tons of ore have been removed from stopes in the Bald Mountain and Ibex Mines. It is not likely that ore averaging less than 0.30 oz gold/ton would have been mined, and therefore a minimum estimate of output from the Bald Mountain and Ibex Mines would be 9,000 oz of gold. Production from the Bald Mountain Mine in the early 1970's was 1,452 oz of gold and 19,654 oz of silver from 4,044 tons of ore shipped to smelters.

The Bald Mountain-Ibex vein is similar in character to, although generally narrower than, the North Pole-Columbia lode and consists of irregular bands and lenses of silicified argillite and chert breccia, quartz, and fault gouge. Some of the quartz replaced the country rock, and some was deposited in fractures and open spaces. Evidently quartz deposition was sporadic and repeatedly interrupted by brecciation. Near the end of the mineralizing process, sulfide minerals and gold were deposited locally. The vein attains maximum widths of 25 to 35 ft locally but averages about 5 ft. Dip of the vein varies from 60° to 80° SE.

In most places, the vein cuts only hornfelsed chert and argillite. Granodiorite dikes are cut by the vein at the Mammoth and Belle of Baker Mines. Ore mineralogy varies along the vein (Pardee and Hewett, 1914, p. 95-98). At the Mammoth and Belle of Baker Mines, the gold is largely free, occurring in narrow zones of highly silicified argillite breccia. Associated minerals include pyrite, arsenopyrite, and roscoelite. At the Ibex and Bald Mountain Mines, the gold is about 30 percent free. The remainder is in sulfide minerals, which include arsenopyrite, schwatzite (mercurial tetrahedrite), and secondary cinnabar. Pyrargyrite and native silver are found locally. The sulfide minerals generally comprise less than 5 percent of the ore. The ratio of gold to silver varies but averages about 1:10.

Cable Cove district

In the Cable Cove district, a broad zone of northeast-trending fissure veins cuts granodiorite and, in a few places, hornfelsed argillite. The veins for the most part consist of brecciated granodiorite which locally has been altered largely to clay minerals and sericite and impregnated with lenses and streaks of quartz, calcite, and sulfide minerals. Gold values are erratic and are generally confined to those portions of the veins rich in pyrite and arsenopyrite. Galena, sphalerite, chalcopyrite, and stibnite are present locally. At the Red Chief (63) and Black Dwarf (62), molybdenite occurs in quartz veinlets adjacent to the main fissures.

The Eagle vein (65), the largest known vein in the district, attains widths up to 25 ft and is traceable for more than 2 mi (Lindgren, 1901, p. 673). The Cable Cove veins pinch and swell rapidly and in places split off into sets of generally parallel fissures, e.g., the Imperial (66) and Winchester (68) veins (Swartley, 1914, p. 140).

Production records for the district are scarce, but total production is believed not to exceed $200,000. The bulk of the recorded production was from the Imperial-Eagle (66), California (71), and Last Chance (67) Mines.

Placer deposits

Two dredges have worked in the channel of Bull Run Creek. The Wetherall dredge worked the Haystack Meadows area in 1910-1911, and the Porter Brothers dredge worked from the mouth of Swamp Creek downstream in 1939. Total production from these operations within the quadrangle is unknown but is believed to be small.

Other placers of importance include reworked Tertiary gravel deposits at the Onion Gulch, Griffith, Weaver, and Buck Gulch placers and recent channel gravels at Umpqua Gulch. The Umpqua Gulch deposits may have been derived from reworked glacial debris.

Chromite deposits

Low-grade chromite deposits occur at the Ford and Myers (23), Meadows and Duckworth (24), and an unnamed chromite prospect (9) (Westgate, 1921). The chromite is disseminated in thin lenses and bands in serpentinite and talc-carbonate rock. Only a small amount of prospect work has been done on these properties.

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Table 1. MINES AND PROSPECTS IN THE MT. IRELAND QUADRANGLE

Map no. Mine or prospect name	Quarter section	Section	Township (South)	Range (East)	Elevation (ft)	Geologic formation	Geologic description	Surface and/or underground workings	Past production	References
1. Buck Gulch	SW	26	9	36	5,200	Tgt	Placer. Semiconsolidated Tertiary gravel	900-ft-drift on bed rock; several acres mined	Estimated minimum 1,000 oz Au	1, 2, 5, 9, 14 (8/13/04, 9/19/09)
2. Weaver Placer	NE	27	9	36	5,550	Tgt	Placer. Semiconsolidated Tertiary gravel	Several acres mined; nearly all of the gravel has been worked	Unknown; operated profitably during 1900-1909	2
3. Allen Prospect	E½	22	9	36	5,400	mt	Hornfelsed serpentinite	Short adit	None	12
4. Name unknown	SE	10	9	36	5,600	mt	Shear zone between argillite and hornfelsed ultramafic rocks	Short adit	None	—
5. Maidens Dream	NW	16	9	36	6,200	KJgp	Residual placer and quartz vein in diorite	Several acres placered; short adit in bed rock	Small	10
6. Name unknown	Center	15	9	36	6,440	KJgp	Hornblende dike with quartz in diorite	30-ft open cut	None	—
7. Name unknown	SW	22	9	36	5,640	TRPer	Shear zone in carbonaceous argillite	Short adit	None	—
8. Gold Center	NE	28	9	36	5,280	Tgt	Placer. Semiconsolidated gravel with tuffaceous interbeds	Several acres mined	Small	2, 14 (3/13/09)
9. Chromite Prospect	NE	9	9	36	6,550	mt	Chromite lenses in hornfelsed ultramafic rocks	Small hand-dug pit	Small	6
10. Name unknown	NW	9	9	36	6,200	mt	Quartz stringers in a sheared and silicified block of argillite in serpentinite	100-ft shaft	Unknown	—
11. Harris Placer	NE	17	9	36	5,640	Tgt	Placer. Semiconsolidated gravel with tuffaceous interbeds	80-ft-deep dozer cut	None	—
12. Griffith Placer	NW	16	9	36	5,400	Tgt	Placer. Semiconsolidated gravel	Several acres mined	Small	1,2,3,4,5,10
13. Name unknown	NW	20	9	36	5,360	Tgt	Placer. Semiconsolidated gravel underlying basalt	Several acres mined	Small	—
14. Haystack Meadow, Wetherall Dredge(?)	SW	20	9	36	5,100	Qal	Placer. Channel gravel of Bull Run Creek	About 0.2 mi of creek has been mined	Small	2, 14 (1/16/09)
15. Name unknown	SE	19	9	36	5,200	TRPer	40-ft-wide limonitic silicified argillite breccia zone with pyrite; strikes N. 40° E.	Two short adits	Unknown	—
16. Name unknown	SE	19	9	36	5,300	TRPer	40-ft-wide limonitic silicified argillite-chert breccia zone; strikes NE.	200-ft adit	Unknown	—
17. Name unknown	Center	19	9	36	5,200	TRPer	4-ft-wide limonitic silicified argillite-chert breccia zone	About 300 ft of workings in two adits	Unknown	—
18. Name unknown	NE	13	9	35½	4,800	TRPer	Limonitic breccia and quartz stringers in chert	Three short adits	Unknown	—
19. Bull Run Placers, Porter Brothers Dredge	—	13	9	35½	4,720	Qal	Channel gravel of Bull Run Creek	Creek channel mined by bucket line dredge	Some	10, 11, 12
20. Name unknown	NW	8	9	36	5,300	Tgt	Placer. Semiconsolidated gravel	80-ft-deep pit	Small	—
21. Onion Gulch Placers	E½	12	9	35½	5,070	Tgt	Semiconsolidated gravel with tuffaceous interbeds	Several acres mined	Unknown	2
22. Name unknown	NE	12	9	35½	5,200	TRPer	2-ft-wide zone of sheared argillite with quartz stringers	Shallow pit	None	—
23. Ford and Myers	NW	7	9	36	5,760	mt	Low-grade chromite lens in sheared serpentinite	Shallow pit	Small	6
24. Meadows and Duckworth	SE	1	9	35½	5,200	mt	Low-grade chromite lens in talc-carbonate rock	Shallow pit	Unknown	6
25. Gold Bug-Grizzly	NW	5	9	36	5,900	mt TRPer	Contact between argillite and sheared ultramafic rocks and greenstone	300-ft shaft and two short adits	None	14 (6/4/03, 10/15/04)
26. Big Pine	SE	5	9	36	5,700	TRPer	Shear zone in argillite	Short adit	None	15
27. Name unknown	NW	4	9	36	6,200	TRPer	Silicified breccia zone	Short adit	None	—
28. Ibex	NE	4	9	36	6,300	TRPer	On the Bald Mountain-Ibex vein. Silicified quartz-argillite breccia zone 25 ft wide, with pyrite, arsenopyrite, tetrahedrite, marcasite, schwatzite, pyrargyrite, and cinnabar	More than 5,500 ft of workings on four levels from three adits	Minimum estimate of 9,000 oz gold and 90,000 oz silver from 30,000 tons of ore from Bald Mountain and Ibex mines	1,3,4,5,7,8,9,11,12
29. Bald Mountain	NW	3	9	36	5,800	TRPer	On the Bald Mountain-Ibex vein system	More than 3,000 ft of workings on three levels	See Ibex (28)	1,3,4,5,7,9,11,12
30. Name unknown	W½	3	9	36	6,300	TRPer	Quartz-argillite breccia zone	Shallow trenches	Unknown	—
31. Grand Trunk	NE	3	9	36	5,800	TRPer	On the Bald Mountain-Ibex vein system	More than 2,000 ft of workings in two adits	Unknown	1,14 (2/14/03)
32. Fairview (part of Bald Mountain Group)	SW	34	8	36	6,440	TRPer KJbm	Quartz stringers and limonitic breccia and gouge in hornfelsed argillite and granodiorite	Short adit and trenches	Unknown	1
33. Gold Ridge	NW	2	9	36	6,150	TRPer	Quartz stringers in brecciated argillite	Trenches and pits	None	15
34. Log Cabin(?)	SE	2	9	36	5,400	TRPer	Quartz stringers with pyrite in brecciated argillite	Trenches and pits	None	15
35. Even Chance(?)	NE	2	9	36	5,650	TRPer	Quartz stringers in brecciated argillite	Short adit	None	15
36. Blue Jacket(?)	SW	1	9	36	5,600	TRPer	Limonitic shear zone in carbonaceous argillite	Short adit	None	15
37. Bunker Hill (Lilac Claim)	SW	1	9	36	5,800	TRPer	Westernmost exposure of the North Pole-Columbia lode	600-ft adit	Unknown	1,3,4,5,7,9,11,15
38. Cracker-Klondike	NW	1	9	36	6,000	TRPer	Quartz stringers with pyrite in brecciated argillite	Short adits	Unknown	14,15 (8/20/04)
39. Morning Star	SW	36	8	36	6,600	TRPer	2-ft-wide quartz vein with pyrite and galena in hornfelsed argillite	Two short adits	Unknown	15
40. Mammoth	SE	35	8	36	6,450	TRPer KJbm	On the Bald Mountain-Ibex vein system	300-ft shaft with drifts	Estimated 2,000 oz Au	1,3,4,5,7,9,11
41. Belle of Baker	SE	35	8	36	6,450	TRPer	On the Bald Mountain-Ibex vein system	385-ft shaft with 2,000 ft of drifts	Estimated 20,000 oz Au	1,3,4,5,7,9,11
42. Umpqua Gulch Placer	SE	35	8	36	6,450	Qal	Channel gravels	Several acres mined	Some	2
43. Mammoth Placer	SW	26	8	36	6,600	Qal	Stream gravels adjacent to glacial deposits	Several acres mined	Some	—
44. Uncle Sam	SE	30	8	36	7,100	KJbm	4-ft-wide fault zone with quartz stringers and pyrite	Short adit	Unknown	10
45. Sheridan	NW	24	8	35½	5,480	KJbm	Quartz veinlets with pyrite, chalcopyrite, and tetrahedrite	Short adits	Small	14 (1/20/06, 12/9/05, 2/25/05)
46. Cap Martin	NW	24	8	35½	5,650	KJbm	Northeast-trending quartz veins with sulfides	300 ft of workings in three adits	Unknown	10
47. Monumental	SW	18	8	36	6,600	KJbm	Numerous quartz veins with pyrite, arsenopyrite, sphalerite, galena, and tetrahedrite	Over 4,000 ft of workings with a 200-ft shaft and two tunnels	Estimated 3,000 oz Au and 60,000 oz Ag	1,3,4,5,7,10,11,12
48. Ophir	N	20	8	36	7,000	KJbm	Narrow quartz vein with massive pyrite	1,400-ft crosscut adit	None	10
49. Summit	NE	16	8	36	7,300	TRPer	Fault zone with quartz and massive sulfides in hornfelsed argillite	Two short adits	Unknown	1
50. Lead Lode	NE	16	8	36	6,800	TRPer	Quartz veins with pyrite, arsenopyrite, sphalerite, chalcopyrite, and tetrahedrite	Three short adits; about 200 ft total	Unknown	—
51. Name unknown	E½	16	8	36	7,560	KJbm	Quartz veinlets in limonitic fault breccia	Shallow trench	None	—
52. Elk Heaven	E½	16	8	36	7,200	KJbm	Fault zone with quartz, pyrite, arsenopyrite, sphalerite, chalcopyrite, and galena	Two short adits; 500 ft total	Small	—
53. Buckhorn (Moon Anchor Group)	NE	21	8	36	7,400	KJbm	5-ft-wide fault zone with quartz, sericite, pyrite, arsenopyrite, and sphalerite	Four short adits; about 300 ft	Small	5,10,12
54. Crown Point (Moon Anchor Group)	NW	22	8	36	7,100	KJbm	4-ft-wide fault zone with quartz, sericite, pyrite, and arsenopyrite	1,800 ft of workings	Small	1,9,11
55. Name unknown (Mountain Slope?)	NW	22	8	36	7,600	KJbm	Quartz veinlets	Two short adits	None	15
56. Mile High	SW	22	8	36	7,200	KJbm	2-ft-wide fault zone with quartz, pyrite, arsenopyrite, chalcopyrite, sphalerite, and galena	More than 700 ft of workings in two adits	Small	11,12
57. Sunnybrook	NE	28	8	36	7,000	KJbm	Quartz vein with pyrite, arsenopyrite, sphalerite, and galena	Two short adits	Unknown	14 (5/12/06)
58. Black Dike	SE	22	8	36	7,250	KJbm	Fault zone 15 ft wide intruded by a basalt dike 2 ft wide; locally contains quartz, sericite, pyrite, arsenopyrite, chalcopyrite, and galena	Several short adits; longest is 120 ft	Small	—
59. Red Dike	SE	22	8	36	7,140	KJbm	Fault zone with quartz, sericite, pyrite, and arsenopyrite	Short adits	Unknown	—
60. Oregon Chief	SE	22	8	36	7,100	KJbm	4-ft-wide breccia zone with quartz, pyrite, arsenopyrite, galena, sphalerite, and chalcopyrite	Over 1,400 ft of workings	Small	1,5,11,12
61. Herculean	NE	22	8	36	6,640	KJbm	On the Eagle vein(?). 15-ft-wide breccia zone with quartz stringers and lenses of pyrite, arsenopyrite, galena, and sphalerite	Over 400 ft of workings in two adits	Unknown	1
62. Black Dwarf	SE	15	8	36	6,720	KJbm	Quartz veinlets with pyrite and molybdenite	Shallow shaft	None	—
63. Red Chief	S½	14	8	36	6,800	KJbm	Quartz stringers with molybdenite; gouge zone with pyrite and arsenopyrite	Over 1,800 ft of workings	Unknown	9,14 (5/14/04)
64. Alpine Group (Mormon Boy)	W½ SE	13 14	8 8	36 36	7,240	KJbm	Shear zone with quartz and iron oxides	About 800 ft of workings	Small	14 (10/12/01, 10/15/04)
65. Eagle Vein (Imperial-Eagle)	SW	14	8	36	7,140	KJbm	Fault zone 20 ft wide which contains stringers and lenses of gouge, quartz, calcite, and sulfides including pyrite, arsenopyrite, galena, sphalerite, and chalcopyrite	About 2,300 ft of workings on four levels	Small	1,3,4,5,6,7,9,11
66. Imperial Vein (Imperial-Eagle)	SW	14	8	36	7,200	KJbm	Fault zone 4 ft wide with veins and lenses of fault gouge, quartz, calcite, and sulfides including pyrite, arsenopyrite, galena, sphalerite, and chalcopyrite	About 4,500 ft of workings on three levels	Small	1,3,4,5,6,7,9,11
67. Last Chance	NE	14	8	36	7,300	KJbm	On the east extension of the Imperial vein	Short adit	Small	—
68. Winchester Vein (Imperial-Eagle)	SW	14	8	36	7,400	KJbm	Probably a branch of the Imperial vein. 10-ft-wide fault zone containing quartz, calcite, and sulfide lenses	About 600 ft of workings	Small	—
69. Jersey Group	NE	14	8	36	7,100	KJbm	Quartz vein	About 1,000 ft of workings	Unknown	14 (10/29/04)
70. Ivy Mae	NW	14	8	36	7,440	KJbm	May be an extension of the California vein. Ore minerals include pyrite, arsenopyrite, galena, and chalcopyrite	Short adit and shallow shaft	Small	1
71. California	SE	15	8	36	7,200	KJbm	3-ft-wide fault zone with gouge and quartz and calcite veins and lenses	About 2,200 ft of workings on six levels	Estimated 2,000 oz Au	1,3,4,5,7,9,11,14 (9/26/03)
72. Mountain View (Overland)	SE	15	8	36	7,200	KJbm	5-ft-wide fault zone with gouge, quartz stringers, and sulfides, including pyrite, arsenopyrite, sphalerite, and galena	About 500 ft of workings in four adits	Unknown	9,14 (5/19/06)
73. Stibnite	NW	14	8	36	6,950	KJbm	Small fracture zone with quartz stringers and sulfides including pyrite, galena, and stibnite	Prospect pits and open cuts	None	—
74. Rob Roy	NW	15	8	36	7,500	KJbm	Shear zone with gouge and quartz and sulfide stringers parallels argillite contact	Short adit and trenches	Unknown	—
75. Grand Central	NE	15	8	36	7,100	KJbm	On same structure as the Rob Roy. Ore minerals include pyrite, arsenopyrite, and chalcopyrite	Three short adits	Small	—
76. Granite Group	NE NW	23 24	8 8	36 36	7,500	KJbm	Limonitic gouge zones	Prospect pits	None	9

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Geologic Cross Sections