STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
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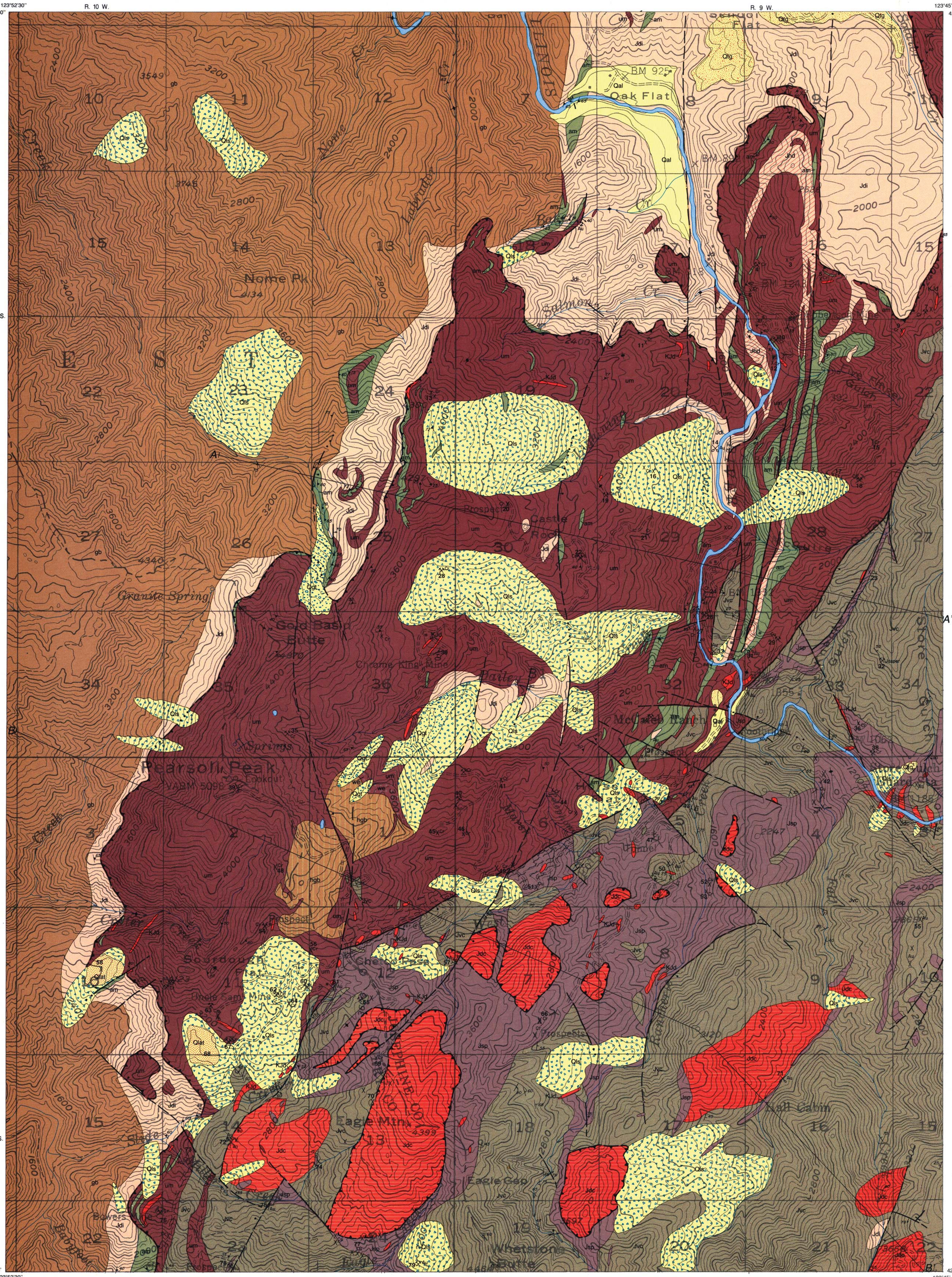
GEOLOGIC MAP OF THE SOUTHEAST QUARTER OF THE PEARSOLL PEAK QUADRANGLE, CURRY AND JOSEPHINE COUNTIES, OREGON
1984

GMS-30
Geologic Map of the Southeast Quarter of the Pearsoll Peak Quadrangle, Curry and Josephine Counties, Oregon
By Len Ramp
Plate 1
Funded in part by United States Department of Agriculture — U.S. Forest Service



Base map from U.S. Geological Survey — enlarged version of Pearsoll Peak 15' quadrangle (original scale 1:62,500)
Control by USGS, USC&GS
Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1953. Field check 1954
Polyconic projection. 1927 North American datum
Map prepared by
STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
Cartography by Paul E. Staub

UTM GRID AND 1954 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 80 FEET

QUADRANGLE LOCATION

Geology by Len Ramp.

Field assistance by Mark L. Ferns and Craig D. Rankine.
Field work completed in 1983.
Map review by Barry Moring and Norman J. Page, U.S. Geological Survey, and Robert G. Coleman, Stanford University.

GEOLOGY AND MINERAL DEPOSITS

Geologic setting

The map area is underlain by rocks of an oceanic crust (ophiolite) and rocks of probable island-arc origin. The ophiolite suite includes ultramafic rocks (peridotite and serpentinite), gabbro, sheeted dikes, and overlying lavas, cherts, and fine-grained sediments. These overlying lavas and fine-grained sediments are interbedded with coarse volcanic conglomerates and pyroxene-bearing tuffs probably derived from a nearby island-arc environment. This composite unit (unit **Jvc**) is composed largely of coarse volcaniclastic material deposited on the ocean floor.

Origins of ultramafic units

Field evidence suggests the olivine-rich harzburgite- and dunite-bearing sheet (unit **um/we**) that underlies Pearsoll Peak and extends from Sourdough Flat north to the diorite body around Oak Flat and Soldier Creek is a tectonized segment of the upper mantle that has been lifted into the crust by both the compressional forces of thrusting and the upward buoying effect of the underlying intrusive diorite.

The following field evidence indicates a different origin for the clinopyroxene-rich serpentinite unit (unit **Jsp**) lying east and southeast of Chetco Pass:

1. Unit **Jsp** is intimately associated with the diabasic dike complex rocks that include a few dikes of essentially pure clinopyroxenite.
2. Areas of clinopyroxene-rich serpentinite with textures resembling vent breccia and with fragments of diabase occur near the dike complex rocks (sample 82PR039).
3. A few significant areas of serpentinized harzburgite and small areas of serpentinized dunite occur within this serpentinite unit (unit **Jsp**). Only small isolated pods of chromitite occur.
4. Several of unit **Jsp** serpentinites appear to occur as relatively thin, elongate bodies within the submarine volcaniclastic rock unit (unit **Jvc**).
5. Massive sulfide deposits resembling stratabound volcanogenic sulfides occur completely surrounded by these serpentinites as at the Fall Creek Mine (42) and Stone prospect (65).
6. A series of alternating dikes of diabase, gabbro, and serpentinite are exposed along the Illinois River immediately downstream from Store Gulch. At least one of the diabase dikes grades abruptly into overlying pillow basalt.

These locally clinopyroxene-rich serpentinites of unit **Jsp** may have been injected through spreading fractures in the ocean floor and deposited as dikes, sills, and even flows together with diabasic dikes, pillow lavas, and contemporaneous submarine volcaniclastic rocks. If still hot when injected or extruded in this manner, these ultramafic rocks were probably rapidly serpentinized in contact with sea water.

The amphibolite (unit **am**) has been interpreted as a tectonic slice of metamorphosed oceanic crust (Coleman and others, 1976) that was apparently subducted or underthrust through the lower crust and upper mantle, where it was infolded with the mafic and ultramafic rocks. Fluids, silica, and volatile materials rendered from this wet, subducted oceanic crust may have contributed to partial melting of the surrounding rocks and the formation of a diorite magma (unit **Jhd/Jdi**) in a process similar to that discussed by McBirney (1969) and Gill (1981) for the origin of andesites. Some of the amphibolites are infolded with the ultramafic rocks and appear to be concentrated near the base of the ultramafic sheet. Amphibolite bodies also occur within the diorite and along the diorite-gabbro margin. Amphibolites within the ultramafic rocks appear to be more highly metamorphosed than those bodies mapped along or adjacent to the diorite-gabbro margin. It should be noted that, except for a few control points, the contact between the diorite and gabbro is poorly defined and, in places, somewhat arbitrary because much of it is gradational.

Structure

Faulting: A major thrust fault occurs at the base of the main peridotite sheet. Most of this contact has the appearance of an intrusive contact, and probably little or no thrusting has occurred after emplacement of the diorite. Field relationships suggest that some of the diabasic dike complex bodies may be bounded by thrust faults, although little evidence of thrusting such as fault gouge has been recognized at the contacts. Such thrusting, however, may explain why some of these diabasic dike complex bodies are found out of the sequence normally occurring in an ophiolite.

The high-angle faults may be divided into two major sets: (1) north- to northeast-striking faults, and (2) northwest-striking cross-faults, most of which show later movement. Both sets of high-angle faults appear to be younger than the thrusting. A broad zone of intensely sheared serpentinite extending in a northeasterly direction from Chetco Pass to McCaleb Ranch and beyond probably represents considerable vertical displacement and appears to separate the harzburgite-dunite (unit **um/we**) from the clinopyroxene-rich serpentinite (unit **Jsp**).

Folding: Folding occurs in the ultramafic rocks, the amphibolite, and the volcaniclastic unit. Some of the folds in the ultramafic rocks are of relatively small magnitude and are interpreted as dragfolds developed at the time of thrusting. Alignment of orthopyroxene layers in harzburgite and chromitite schlieren suggests a pattern of broader open folding of the ultramafic rocks (Ramp, 1961). The amphibolite often displays two sets of tight isoclinal folds (Page and others, 1981). Ptygmatic folds also occur in the amphibolites. The volcaniclastic unit has been folded rather extensively along N. 70° W.- to N. 70° E.-trending axes, most frequently in a northerly to northeasterly direction. Overturned beds of graded volcanic wacke with generally steep eastward dips have been recognized in some of the better exposures. Folding of this unit also probably developed during thrusting.

Mineral deposits

A variety of mineral deposits, notably chromite, copper, gold (both placer and lode), and small areas of nickel-bearing laterite, occur within the map area. Basic data for mines and prospects are shown in Table 1. The chromite and nickel deposits are described in earlier Department publications (Ramp, 1961, 1978). Essentially all of the chromites sampled were analyzed for platinum and palladium, though only a few showed more than a very low background quantity (Table 2, Plate 2). The copper deposits are mainly stratabound volcanogenic sulfides within both volcaniclastic rocks and serpentinite. Sulfide mineralization occurs also along or adjacent to contacts of the diabasic dike complex unit with serpentinite and with volcaniclastic rocks. Low gold and cobalt values occur in these sulfide deposits (Table 2, Plate 2), with cobalt content being highest where associated with serpentinite. The only identified cobalt mineral, erythrite, was found in the Fall Creek Mine (42).

Lode gold occurs in quartz veins and in shear zones within units **Jvc**, **Jsp**, and **Jdc** and along contacts between these units. The Calumet Group (50), Robert E. (75), and Peck (78) Mines are examples of quartz veins in volcaniclastic rocks. Examples of shear-zone deposits are the Becca and Morning (57), Golden Dream (61), and Hustis (72) Mines.

REFERENCES

Coleman, R.G., Garcia, M.O., and Anglin, C., 1976, The amphibolite of Briggs Creek: A tectonic slice of metamorphosed oceanic crust in southwestern Oregon [abs.]: Geological Society of America Abstracts with Programs, v. 8, no. 3, p. 363.

Gill, J.B., 1981, Orogenic andesites and plate tectonics (Minerals and rocks, v. 16): New York, Springer-Verlag, p. 298-304.

Hotz, P.E., 1971, Plutonic rocks of the Klamath Mountains, California and Oregon: U.S. Geological Survey Professional Paper 684-B, 20 p.

McBirney, A.R., 1969, Compositional variations in Cenozoic calc-alkaline suites of Central America, *in* McBirney, A.R., ed., Proceedings of the Andesite Conference (International Upper Mantle Project Scientific Report 16): Oregon Department of Geology and Mineral Industries Bulletin 65, p. 185-189.

Page, N.J., Gray, F., Cannon, J.K., Foose, M.P., Lipin, B., Moring, B.C., Nicholson, S.W., Sawlin, M.G., Till, A., and Ziemianski, W.P., 1981, Geologic map of the Kalmiopsis Wilderness Area, Oregon: U.S. Geological Survey Miscellaneous Field Studies Map MF-1240-A.

Palmer, A.R., 1983, The Decade of North American Geology 1983 geologic time scale: Geology, v. 11, no. 9, p. 503-504.

Ramp, L., 1961, Chromite in southwestern Oregon: Oregon Department of Geology and Mineral Industries Bulletin 52, 169 p.

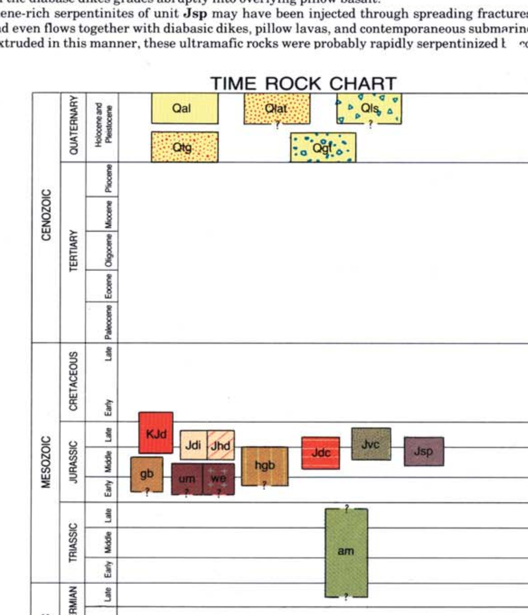
——— 1978, Investigations of nickel in Oregon: Oregon Department of Geology and Mineral Industries Miscellaneous Paper 20, 68 p.

Ramp, L., and Gray, F., 1980, Sheeted dikes of the Wild Rogue Wilderness, Oregon: Oregon Department of Geology and Mineral Industries, Oregon Geology, v. 42, no. 7, p. 119-129.

Saleeby, J., 1984, Pb/U zircon ages from the Rogue River area, western Jurassic belt, Klamath Mountains, Oregon [abs.]: Geological Society of America Abstracts with Programs, Cordilleran Section, in press.

Wells, F.G., and Walker, G.W., 1953, Geologic map of the Galice quadrangle, Oregon: U.S. Geological Survey Geologic Quadrangle Map GQ-25.

TIME ROCK CHART



Dates taken from Palmer (1983)

EXPLANATION

Qal — **Alluvium (Holocene-Pleistocene?)** — *Deposits of silt, sand, and gravel in stream channels and on present-day flood-plain terraces and a few older vegetation-covered terraces up to 200 ft above present stream grade*

Qlat — **Lateritic soil (Holocene-Pleistocene)** — *Iron-rich soil developed on peridotite surfaces; lateritic soil predominantly the result of chemical weathering in ultramafic landslide debris. Has residual enrichment of nickel and cobalt*

Qls — **Landslide debris (Holocene-Pleistocene)** — *Unsorted to crudely stratified mixtures of angular rock fragments and soil including a few large masses of displaced bed rock*

Qgt — **Glacial till (Pleistocene)** — *Partly cemented subrounded clasts of peridotite, amphibolite, and serpentinite in a fine-grained matrix. Unsorted debris ranges in size from rock flour to peridotite boulders 2 ft in diameter*

Qtg — **Older terrace gravels (Holocene?-Pleistocene)** — *Erosional remnant deposits of unconsolidated silt, sand, and gravel on isolated terraces from 200 ft to as much as 800 ft above present stream grade*

KJd — **Dikes (Lower Cretaceous?-Upper Jurassic?)** — *Small dikes with a wide range in texture and composition including gabbro, rodingite, diabase, diorite, andesite, granite pegmatite, and essentially pure quartz. Many of the dikes appear to be broken fragments floating in highly sheared serpentinite. The most common variety is a gray, medium-grained andesite or diorite with plagioclase, hornblende, biotite, quartz, and epidote*

Jdi | Jhd — **Diorite and related rocks (Upper Jurassic)** — *Medium-grained, equigranular, locally foliated rock composed of varying amounts of plagioclase, quartz, hornblende, biotite, potassium feldspar, and muscovite with accessory garnet and epidote and secondary chlorite and clay minerals including hornblende diorite (unit* **Jhd***), quartz-rich plagiogranite, and muscovite granodiorite. Occurs underlying and intruded into the Pearsoll ultramafic sheet. Unit may be a partial melting product of the adjacent gabbros affected by fluids from the subducted amphibolite. K-Ar age on muscovite is 151 ± 4.5 m.y. (Hotz, 1971)*

Jvc — **Volcaniclastic rocks (Upper-Middle Jurassic)** — *Includes very coarse volcanic conglomerate, pyroxene-bearing tuff, and agglomerate of Page and others (1981), volcanic wacke with graded bedding, siltstone, small bodies of chert, and larger areas of pillow basalt directly overlying and derived in part from the diabasic dike complex rocks. This unit is possibly age equivalent to the Rogue Formation of Wells and Walker (1953). Concordant dates from dacite tuff breccia of the type Rogue Formation are 157 ± 2 m.y. B.P. (Saleeby, 1984)*

Jsp — **Serpentinite (Upper-Middle Jurassic?)** — *Serpentinites, locally clinopyroxene-rich, in close proximity to the diabasic dike rocks. Small lenticular bodies of stratabound massive sulfides enclosed in sheared serpentinite occur at the Fall Creek Mine (42) in what may be submarine serpentinite flows (komatiites). This unit includes areas of serpentinized harzburgite and dunite as well as a few small scattered pods of associated chromitite*

Jdc — **Diabasic dike complex (Upper-Middle Jurassic?)** — *Includes sheeted diabasic dikes with textures varying from medium coarse to very fine and composed of varying amounts of plagioclase and clinopyroxene. Chilled margins are common. Includes gabbro screens and overlying intermixed areas of volcanic rock. Dikes of pyroxenite and wehrlite are possibly the source of serpentinite flows (unit* **Jsp***) in the zone extending from the Eagle Mountain area to Store Gulch. Similar dikes in the Wild Rogue Wilderness Area (Ramp and Gray, 1980) have been dated at 164 ± 2 m.y. B.P. by Saleeby (1984)*

hgb — **Hornblende gabbro (Middle-Lower Jurassic?)** — *Hornblende gabbro overlying ultramafic rocks in the area east of Pearsoll Peak. Composition ranges from very coarse hornblendite with dark hornblende crystals up to 16 cm in length to medium-grained hornblende gabbro with about 40 percent hornblende crystals from 2 to 10 mm in length. Plagioclase constitutes the other major rock-forming mineral, with accessory magnetite, epidote, and pyrite*

gb — **Gabbro (Lower-Middle-Lower Jurassic?)** — *Medium- to coarse-grained two-pyroxene gabbro locally altered to hornblende gabbro with apparent cumulate layering or foliated structure. Contains clinopyroxene, orthopyroxene, plagioclase, hornblende, accessory magnetite, epidote, quartz, and pyrite. Locally with poikilitic texture in both pyroxenes and replacement hornblende. Includes some areas of hornblende gabbro and hornblende diorite not mapped separately*

um | we — **Ultramafic rocks (Middle-Lower Jurassic?)** — *Including mainly harzburgite and dunite with varying degrees of serpentinization and some highly sheared serpentinite (*sp*). Areas of very coarse-grained dunite with olivine grains up to 6 cm long occur on the south slopes of Pearsoll Peak, in Crater Creek drainage, and on the western part of Sourdough Flat. A thin layer of partly serpentinized wehrlite (*we*) is sandwiched between hornblende gabbro and the underlying serpentinized harzburgite in the area about 1 mi east of Pearsoll Peak. Its relationship is unclear, but it may be a remnant primitive cumulate layer. The peridotite locally displays foliation and folding of orthopyroxene layers and chromite schlieren. Small chromite schlieren and a few pods of massive chromite weighing up to 5,000 tons have been mined. Deposits of crudely layered, disseminated chromite as much as 12 ft thick have also been prospected and mined (Ramp, 1961)*

am — **Amphibolite (Upper Triassic?-Permian?)** — *Includes amphibole schist, quartz-rich hornblende gneiss, and phyllonite derived from volcanic and sedimentary rocks that have been infolded with the ultramafic rocks; appears to be the product of a subducted oceanic crust which penetrated gabbros and peridotites of the lower crust and upper mantle. Age uncertain. This unit may be equivalent to the Briggs Creek Formation of Coleman and others (1976). Mineralogy includes hornblende, plagioclase, quartz, epidote, zoisite, calcite, chlorite, garnet, magnetite, and pyrite. Unit generally has two sets of isoclinal tight folds (Page and others, 1981)*

MAP SYMBOLS

Contact — Approximately located; queried where uncertain

Fault — Showing dip; bar and ball on downthrown side; dashed where approximate or inferred; queried where uncertain

Thrust fault — Dashed where approximate; teeth on upper plate; queried where uncertain

Zone of intense shearing

Strike and dip of bedding

Strike and dip of overturned bedding

Strike and dip of foliation in metamorphic rocks or layering in igneous rocks

Vertical foliation

Vertical joint

Strike and dip of joint

Strike and dip of dike margins

Plunge of fold axis

Anticline axis — Showing direction of plunge

79 **Shaft**, **Mine adit**, **Gold placer**, **Mine**, **Prospect**
Numbers correspond to numbers in Table 1

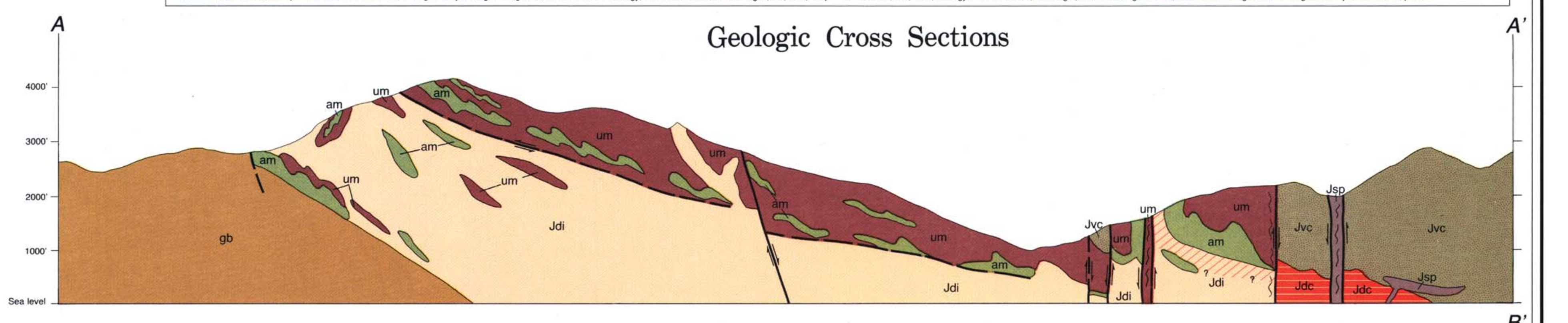
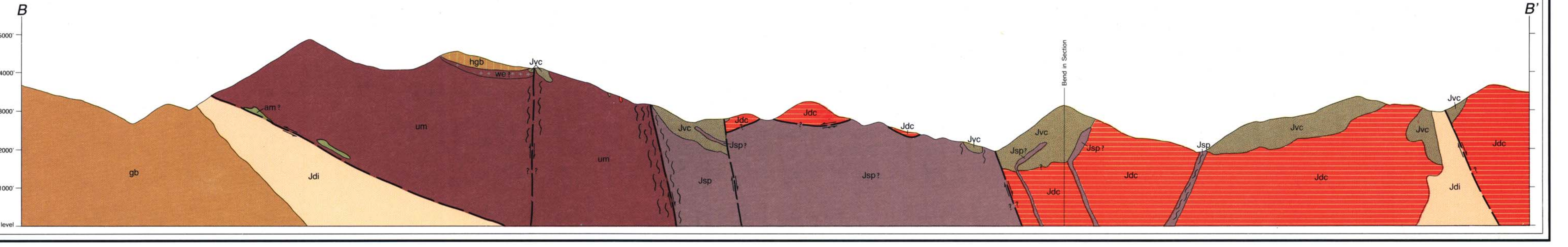
Au, Cu, Cr, Jasper — **Principal metal or mineral at mine or prospect**

Table 1. MINES AND PROSPECTS IN THE SOUTHEAST QUARTER OF THE PEARSOLL PEAK QUADRANGLE

Map no.	Mine or prospect	Commodity	Location ¼/¼	Sec.	T.(S)	R.(W)	Elevation (ft)	Geologic formation	Description	Workings	Production	References and sample no. (if sampled)
1.	Saturday Anne	Cr	SE/NW	9	37	9	2,170	um	Small body of banded-disseminated chromitite in serpentinized dunite	Shallow open cut	100 tons milled to 25 tons	5
2.	Baker Creek	Au	SE/NE	18	37	9	1,220	Jdi, um	Diorite hanging wall, serpentinite footwall, 6-ft fault gouge has minor sulfides and malachite stain	200-ft(?) adit, caved	Unknown	83PR054*
3.	Gray Buck Group	Cr	NE/SW	16	37	9	2,140	um	Zone of disseminated chromite averaging 3 ft thick in serpentinized dunite and lens of massive ore near amphibolite	Five bulldozer cuts and caved shaft	60 to 100 tons low-grade and 450 tons lump ore mined from shaft	5
4.	Sally Ann	Cr	NW/SW	16	37	9	1,600	um	Discontinuous narrow stringer of chromite in serpentinized dunite striking northeast and dipping about 40° SE.	Open cut and short drift with winze	12 tons lump	5
5.	Unnamed	Cr	NW/SE	16	37	9	2,160	um	No information	Small cut	None	None
6.	Low Ridge	Cr	SW/SW	16	37	9	1,240	um	Narrow lenses of chromitite in sheared altered dunite	Small cut	None	5
7.	Carter Creek	Cr	SW/SW	15	37	9	2,640	um	Chromitite lenses with talc matrix in sheared serpentinite	Shallow cuts	None	5
8.	Robertson (Oregon Chrome)	Cr	—	16-21	37	9	1,350	um	Several 2,000- to 5,000-ton lenticular masses lying in a north- to northeast-striking, east- to southeast-dipping plane in serpentinite	Extensive underground	32,000 long tons	1, 5
9.	Unnamed	Cr	NW/NW	22	37	9	2,700	um	Small stringers of disseminated chromite in serpentinized dunite	Shallow cut	None	82PR017*
10.	Lucky Star	Cr	NW/NW	21	37	9	950	um	Layers of crushed chromitite up to 4 ft thick in serpentinite landslide block	Short adits and large open cut	500 tons	5
11.	Unnamed	Cr	NE/NW	20	37	9	2,110	um	Small area of disseminated chromite in dunite	Small cut	None	82PR050*
12.	Jim Buss	Cr	SW/NW	21	37	9	900	um	North-striking, east-dipping lenticular layer disseminated to massive chromitite a few inches to 4 ft thick in serpentinite	Open cut and shaft	300 to 500 tons	5
13.	High View	Cr	NE/SE	24	37	10	4,240	um	Small lenticular stringer of nearly massive chromitite striking N. 15° W., dipping nearly 90°	Four small cuts	None	5
14.	Unnamed placer	Au	SE/SE	20	37	9	950	Jdi, Qal	Sand and gravel on bench about 20 ft above river with diorite bed rock and slide-debris cover	Small pit	Unknown, probably small	None
15.	Shade	Cr	SE/SE	21	37	9	2,700	um	Small segments and patches of massive and nodular chromite dissected by several high-angle faults in serpentinized dunite	About 400 ft in three levels	350 tons	1, 5
16.	Dirty Face Group	Cr	NE/NW	29	37	9	2,080	Qls (um)	Disseminated to massive float chromitite in red soil and weathered peridotite and, in part, dunite slide debris	Shallow cuts	135 tons	5
17.	Unnamed	Au	NE/NW	28	37	9	2,220	am	Iron-stained siliceous zone in amphibolite, with limonite after pyrite	Small cut	None	83PR048*
18.	Crown (Hammer)	Cr	NE/NE	28	37	9	3,040	um	Massive, nodular, and disseminated chromite was mined from offset lenses a few inches to 4 ft thick in serpentinized dunite	Open cut shaft and short drifts	Approximately 200 tons	5
19.	High Ridge	Cr	NW/NW	29	37	9	2,600	um	3-ft vertical zone of banded, disseminated chromite striking N. 30° W. in serpentinized dunite	Open cut	None	5
20.	Black Diamond and Butte	Cr	SE/NW	30	37	9	3,400	um	Schlieren-banded, disseminated chromitite in dunite with one layer of massive ore to 10 in. thick. Zone trends N. 20° E. and dips steeply east	Shallow cuts	100 tons of milling ore	5
21.	Hansen	Cr	SE/NW	29	37	9	2,000	Qls (um)	One narrow zone of banded chromite (disseminated and massive) in a slide area of partly serpentinized dunite strikes east and dips 55° N.	Open cut and short drift	± 50 tons (?)	5
22.	Castle Springs and Lucky Strike	Cr	NE/SE	30	37	9	2,560	um	Faulted layers of chromitite 8 to 18 in. thick in dunite; strikes north and dips 37° W. in one pit; banded disseminated ore 4 to 8 ft thick strikes N. 30° E. and dips steeply W. in other northeast pit	Two open cuts	300 tons of mill ore; 65 tons concentrates	5
23.	Unnamed	Cu	NE/SE	28	37	9	2,450	Jsp	Thin sinuous zone of iron and copper stain with minor sulfides in serpentinite	Small pit	None	82PR012*
24.	Mockingbird	Cr	SW/SE	29	37	9	1,000	um	Massive and disseminated chromite occurs in narrow layers about 200 ft apart which strike N. 15° E. and dip 45° SE. in blocky serpentinite	Open cut, short adit, winze, and drift	100 tons	5
25.	Good Friday	Cr	NW/NE	32	37	9	1,000	um	Banded, disseminated chromite in pale-green dunite (float)	Open cut in slide area	Small but unknown	5
26.	Deep Gorge	Cr	NW/NE	32	37	9	1,150	um	Two thin parallel chromite layers about 200 ft apart strike northeast, dip southeast, and were mined where lenses reached 1 to 4 ft thickness in places	Large cut and several adits	2,000 tons	5
27.	Unnamed (Good Friday Extension)	Cr	NW/NE	32	37	9	1,110	um	Thin streaks (schlieren) of disseminated to massive chromite in dunite strike north and dip 30° E.	Small cut	None	5
28.	Dark Star	Cr	NE/SE	25	37	10	2,960	Qls (um)	Chromitite boulders to 2 ft in diameter found mixed in landslide debris	Shallow cuts	7 tons	5
29.	Berseth Copper	Cu	NW/NW	33	37	9	1,445	um	Malachite occurs in sheared serpentinite about 2 ft thick. Strike is northeast, dip is vertical	25-ft adit	None	83PR028*
30.	Chrome King	Cr	NE/NE	36	37	10	3,120	um	One or more lenticular chromite layers from few inches to maximum of 8 ft thick in blocky serpentinized dunite and harzburgite	Two shafts, 400 ft tunnel, stopes, and shallow cuts	1,400 tons	5, 1
31.	Unnamed placer	Au	SW/NW	33	37	9	1,200	Qtg, um, am	Terrace gravel and slope wash about 5 to 20 ft thick. Amphibolite-serpentinite contact exposed in pit.	Old hydraulic cuts	Unknown	None
32.	Riverview (Oregonite)	Jasper	SE/NE	33	37	9	2,450	Jvc	Main lenticular body of spherulitic jasper mined for jewelry rock was about 1 ft thick with strike of N. 50° W. and dip of 50° NE. Interpreted as interflow zone in amygdaloidal basalt	30-ft adit and shallow cuts	1½ tons	9
33.	McCaleb Ranch placer	Au	SE/NE	32	37	9	1,000	Qal, um	Illinois bar gravels worked by hydraulic methods. Stacked boulders remain on sheared serpentinite bed rock	Surface hydraulic area	Unknown	None
34.	Millers Dream	Cr	NE/SW	32	37	9	1,900	um	Thin zone of disseminated chromite in pale-green dunite	Shallow cuts	None	5
35.	Early Sunrise	Cr	SE/SE	35	37	10	3,960	um	Thin chromite schlieren produced one pod up to 3 ft thick that strikes N. 20° W. and dips 50° SW. in dunite and olivine-rich harzburgite	Open cut and short adit	4 tons	5
36.	February	Cr	SE/SE	33	37	9	1,560	Jsp	Minor disseminated to massive chromite in bleached serpentinized dunite seen on dump	Shallow cuts	None	5, 83PR004*
37.	Unnamed	Au	SE/SW	32	37	9	1,620, 1,540	Jvc, um	Vein quartz in volcaniclastic rock near serpentinite contact; lower cut in narrow sheared serpentinite body about 800 ft to northeast	Small cuts	None	83PR040*
38.	Lucky Hunch	Cr	SE/SE	33	37	9	1,250	Jsp	Minor float; massive chromite in sheared and landslide serpentinite produced one large elliptical pod of ore 6 × 8 × 10 ft weighing 46 tons	Shallow cuts	150 tons	5
39.	Pearsoll	Cr	NW/NE	2	38	10	4,700	um	Displaced segments of disseminated to massive chromite in serpentinized dunite	Shallow cuts and two adits	250 tons mill ore	5
40.	Youngs Dailey Dozen	Cr	NW	6	38	9	2,800 to 3,200	um	Disseminated chromite in dunite occurs in zone up to 12 ft thick	Several open cuts	800 tons mill ore	5
41.	Saddle	Cr	NE/NW	6	38	9	2,970	um	Several small lenticular pods of disseminated to massive chromite in north-trending shear zone	Shallow cuts, short drifts	240 tons mill ore	5
42.	Fall Creek Group	Cu	W½/NE¼	4	38	9	1,200 to 1,580	Jsp	Pods or lenses of massive sulfides; pyrrhotite with chalcopyrite and some chalcocite in sheared serpentinite	Several cuts and caved adits	425 tons	8, 3, 81PR005*, 81PR012*, 82PR024*, 82PR025*
43.	Rancherie Prospect (part of Calumet Group)	Au	SW/NE	5	38	9	1,120	Jvc	Minor sulfide mineralization in volcaniclastic rocks near serpentinite contact	Caved adit	Unknown	3
44.	Old Casey	Cr	SW/NE	6	38	9	2,020, 2,500	um	Small pods of massive chromite with intergranular talc and some chrome chlorite and uvarovite in sheared serpentinite	Small cuts and shallow inclined adit	None	5
45.	Unnamed (part of Youngs Dailey Dozen)?	Cr	NE/SE	1	38	10	3,520	um	Small schlieren of disseminated, in part massive, chromite in dunite	Shallow cuts	None	None
46.	Unnamed prospect (part of Youngs Dailey Dozen)?	Cr	NW/SW	6	38	9	3,280	um	Small chromite schlieren in dunite	Shallow cut	None	None
47.	Mohawk	Cr	NE/SW	5	38	9	1,650	Jsp	Pods of sheared massive chromite in sheared serpentinite	Shallow cuts and two adits	180 tons	5, 82PR027*
48.	Pearsoll Group	Cr	SE	2	38	10	4,230	um	Several offset segments of small disseminated to massive chromite schlieren in dunite	Three shallow cuts	None	5, 82PR072*
49.	Twin Cedars	Cr	NE/SW	6	38	9	2,440 to 2,500	um	Sheared massive chromite pods with talc chrome and conspicuous uvarovite	Three open cuts	Very small	5, 83PR005*
50.	Calumet Mine	Au	S½	5	38	9	1,580 to 2,100	Jvc	Quartz fissure veins with minor sulfides in volcaniclastic rocks	Several adits, shaft cuts	Unknown	3, 82PR075* to 82PR078*
51.	Unnamed	Cu	SW/SE	6	38	9	2,100	Jsp	Minor sulfides and malachite in sheared serpentinite	Small cut	None	None
52.	Unnamed	Cu	SE/SE	5	38	9	1,540	Jsp	Small stringers of sulfides, limonite gossan, and malachite in sheared serpentinite	Small cut	None	82PR046*
53.	White Water lode	Cr	SE/SE	5	38	9	1,500	Jsp	Small lenses of massive chromite in sheared serpentinite	Small cut and adit caved	5 tons	5
54.	Eagles Nest	Cr	NW/NE	11	38	10	3,910	um	Thin lenticular layer of chromitite in serpentinized dunite has been offset by small faults	Open cut	Small	5, 82PR073*
55.	Unnamed	Au(?)	NW	10	38	9	2,720 to 2,820	Jvc	Shallow pits on ridge in deeply weathered volcaniclastic rock	Hand-dug pits	Unknown	None
56.	Sourdough 1	Cr	SW/NW	12	38	10	3,640	um	3-ft thick band of disseminated chromite in dunite strikes N. 35° E. and dips nearly vertically	Small cut	None	5
57.	Becca and Morning (Casey)	Au	SW/NW SE/NE	7 12	38 38	9 10	3,130 to 3,050	Jvc, Jdc, Jsp	Sulfide mineralization occurs in diabasic dikes, pillow basalt, and serpentinite mainly along a northeasterly-trending fault zone	Three short adits (two caved) and shallow cuts	Unknown (small)	3, 4
58.	Unnamed laterite	Ni	SW/NE	10	38	10	2,880	Qlat	About 25 acres of poorly developed lateritic soil similar to the Sourdough Flat deposit (68)	None	None	7
59.	Prospectors Dream	Cr	NW/SW	11	38	10	3,500	um	Stretched offset chromitite layer ½ to 45 in. thick in dunite strikes about N. 30° W. and dips 55° NE.	Shallow cuts	Small	5
60.	McCaleb's Sourdough 2	Cr	NE/SE	11	38	10	3,280	um	Banded disseminated chromite in serpentinized dunite 5 to 12 ft thick strikes about north to northeast and dips steeply west but has been offset by faulting and possibly sliding	Large open cut and short adit	1,200 long tons of mill concentrates	5
61.	Golden Dream (Higgins Group)	Au	NW/SW	12	38	10	3,300	Jvc, Jsp	Minor sulfides and gold occur in sheared serpentinite and volcaniclastic rocks	Short adits and sluiced open cuts	Unreported	3
62.	Uncle Sam	Cr	NE/SE	11	38	10	3,370	Qls, (um)	Small lenses of chromitite rake to southwest. Ore is disseminated to nearly massive with talc matrix	Open cut	Approximately 100 tons	5
63.	Little Siberia	Cr	NE/SW	11	38	10	3,400	um	Faulted irregular patches of disseminated to massive chromite in dunite	Open cuts and short adit	About 200 tons mill ore	5
64.	Lost is Found	Cr	NE/SE	11	38	10	3,300	Qls, (um)	Narrow stringer of low-grade chromitite reported in open cut	Open cuts and short adit	Unreported	5
65.	Stone	Cu	NE/SW	12	38	10	3,600	Jsp, Jvc	Massive sulfides, pyrrhotite, chalcopyrite, and pyrite in limonite gossan. Lenticular zone strikes about N. 30° E., dips 70° SE. and is as much as 3½ ft thick in sheared serpentinite surrounded by volcaniclastic rock	Small cuts, short adits	None	6, 82PR040*
66.	Big Four	Cr	SW/SE	7	38	9	2,800 to 3,040	Jsp	Small pods of massive chromite in sheared serpentinite and recovered from float	Small cuts, two short adits	15 tons lump ore	5
67.	Wonder	Cr	SE/SW, SW/SE	11	38	10	3,000	Qls, (um)	Lenses of thickly disseminated to massive chromite with talc matrix occur in large broken serpentinite slide block	Several surface cuts	Small	5
68.	Sourdough Flat laterite	Ni	SW NW	11 14	38	10	2,960	Qlat	Red lateritic soil has developed in a landslide area of about 45 acres. The parent rock is coarse-grained dunite	Few shallow cuts	None	7
69.	Eagle Mountain	Cr	NE/NW	13	38	10	4,000	Jsp	Small lenses or pods of disseminated to massive chromite in serpentinized dunite and wehrlite	Shallow cuts	None	6
70.	Unnamed prospects (several)	Au	NW, NE	13	38	10	3,800 to 4,200	Jvc, Jdc	Siliceous breccia with small limonite gossan areas in volcaniclastic and dike complex rocks	Shallow cuts	None	83PR013*, 83PR014*
71.	Fall Creek placers	Au	NW	16	38	9	1,800	Qal, Jsp, Jdc	Small-scale placer operations along Fall Creek	Stacked boulders	Unknown	None
72.	Hustis (in part Higgins?)	Au, Cu	Center	14	38	10	2,480 to 2,640	Jvc, Jdc, Jsp	Minor sulfides, malachite, and gold in sheared serpentinite fault zone contact between diabasic dike complex and volcaniclastic rocks	Placer pits and caved adits	Unknown	3, 6, 82PR066*, 83PR051*
73.	Miller Creek chrome	Cr	NW/SW	14	38	10	1,945	um	Small pods of massive chromite with minor chrome chlorite in blocky serpentinite landslide area	Small cut	Unknown	82PR065*
74.	Miller Creek	Au, Cu	NW/SW	13	38	10	2,880	Jvc	Layers of disseminated to massive pyrite with quartz matrix about 15 ft thick strike north and dip 15° W. in volcaniclastic rocks. Includes larger area of disseminated pyrite and gossan	Small cuts	None	6, 82PR062*
75.	Robert E. (Miller)	Au	NW/NE	23	38	10	2,490	Jvc, Jsp	Workings on contact of sheared serpentinite and volcanic wacke and small quartz veins in the volcaniclastic rock	Two tunnels with stopes and sluice pits	Unknown; some ore milled at Peck Mine	3, 6, 10, 82PR061*
76.	Bowser	Cr	NE/NE NW/NW	22 23	38	10	2,550	um	Small stringer of banded disseminated chromite in dunite	Open cut	Small amount milled at Peck	5, 6, 82PR064*
77.	Eagle Creek Group	Cu, Au	NW, NE	24	38	10	700 to 2,975	Jsp, Jvc, Jdc	Several occurrences of massive to disseminated sulfides in and along contacts of serpentinite with volcaniclastic and dike complex rocks	Small cuts	None (?)	3, 6, 82PR053-56*, 83PR016-17*
78.	Peck (Bacon)	Au	NE/SW	23	38	10	2,100	Jvc, Jsp	Rich ore occurs in northeast-striking, southeast-dipping, small quartz fissure vein in volcaniclastic rock. Small bodies of sheared serpentinite impregnate faults	2,000 ft in four levels with raises and stopes	At least $120,000 by 1952	2, 3, 6, 10
79.	Golden Eagle	Au	SW/NE	24	38	10	3,120	Qls, Jvc	Blanket of fractured iron-stained vein quartz in slide debris of sediments and volcanic rocks	Ground sluiced pit	Small, $1,000(?)	6

* Sample numbers (see Plate 2 for sample-location sites and chemical analyses).

REFERENCES

1. Allen, J.E., 1941, Chromite deposits in Oregon (revised ed.): Oregon Department of Geology and Mineral Industries Bulletin 9, 71 p.
2. Brooks, H.C., and Ramp, L., 1968, Gold and silver in Oregon: Oregon Department of Geology and Mineral Industries Bulletin 61, 338 p.
3. Diller, J.S., 1914, Mineral resources of southwestern Oregon: U.S. Geological Survey Bulletin 546, 147 p.
4. Oregon Department of Geology and Mineral Industries, 1952, Oregon metal mines handbook (Josephine County) (2nd ed.): Oregon Department of Geology and Mineral Industries Bulletin 14-C, v. 2, sec. 1, 238 p.
4a. Parks, H.M., and Swartley, A.M., 1916, Handbook of the mining industry of Oregon: Oregon Bureau of Mines and Geology, The Mineral Resources of Oregon, v. 2, no. 4, 306 p.
5. Ramp, L., 1961, Chromite in southwestern Oregon: Oregon Department of Geology and Mineral Industries Bulletin 52, 169 p.
6. ——— 1975, Geology and mineral resources of the upper Chetco drainage area, Oregon: Oregon Department of Geology and Mineral Industries Bulletin 88, 47 p.
7. ——— 1978, Investigations of nickel in Oregon: Oregon Department of Geology and Mineral Industries Miscellaneous Paper 20, 68 p.
8. Ramp, L., and Peterson, N.V., 1979, Geology and mineral resources of Josephine County, Oregon: Oregon Department of Geology and Mineral Industries Bulletin 100, 45 p.
9. Ramp, L., 1962, Occurrence, description, and origin of "Oregonite" [abs.]: Oregon Department of Geology and Mineral Industries, Ore Bin, v. 24, no. 2, p. 21.
10. Shenon, P.J., 1933, Geology of the Robertson, Humdinger, and Robert E. gold mines, southwestern Oregon: U.S. Geological Survey Bulletin 830-B, p. 33-55.

Geologic Cross Sections