MINERALS OF LOS ANGELES COUNTY

MINERALS
OF
LOS ANGELES COUNTY
CALIFORNIA

by

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Made in U.S.A.

To
The Natural History Society
of
Maryland
for encouraging my interest in
minerals when I was a boy.

PREFACE

This booklet has been written for the week end prospector, mineral collector, and geology student as a guide to mineral localities in the Los Angeles area. Each locality has a description of how it may be reached, the minerals found, and their rock association. At this point the author would like to caution the reader of the paper that many of the mines in this report have dangerous adits or shafts and extreme caution should be exercised when around them. Also, many of the localities are on private property and permission should be obtained from the owners before trespassing.

The material for this book has been gathered over the past five years. During this time, as the author learned more about geology, many of his interpretations have changed. An attempt has been made to smooth out these differences, but many of them remain. This is particularly true in the naming of the rocks and the description of the mineral occurrences. The names given to the rock types were based only on hand lens examination, and thus may be different than if a complete microscopic examination had been made. The description of the mineral occurrences has been done with varying degrees of accuracy; however, for the short time available for the examination of the occurrences, they are sufficiently accurate to give the mineral collector and student a good feeling for how the minerals occur, the associated rock types, and the associated rock structures.

Basically, the book is purely a description of mineral localities in Los Angeles County. These localities have been placed together according to the natural geographic province in which they lie. At the beginning of each geographic province, a description of the location of the province and its geologic history are given. This is followed directly by the description of the

localities. At the end of the booklet there are two indexes. The first is a list of the localities giving a description of their location by township and range, latitude and longitude, and by the U.S.G.S. 7½ minute quadrangle maps. The next index gives a list of each mineral found in the county and the location of its most important occurrences.

The author has tried to make this book as complete as possible; however, there are many interesting points which could not be covered. This includes a discussion of the geology of the Los Angeles and Ventura Basins with their tremendous importance as oil producers. In order to supplement in these areas the author suggests that the reader look at "Mines and Mineral Deposits of Los Angeles County" by Gay and Hoffman and also Bull. 170 of the California Division of Mines. These papers also include many references on the geology of the different parts of the county. The author also recommends "Minerals of California", which contains references to the early listing of many of the localities given in this paper.

The author wishes to thank Jack Rubin, Gary Alford, and Jack Schwartz for their help in locating and in collecting from many of the localities described here. The author also wishes to thank the mine owners, and others too numerous to mention for their help in making the completion of this paper possible. In addition, I would like to thank the Geology Department at the University of California, Los Angeles, for housing all of the minerals and rocks which were collected by the author during the compiling of this report.

W. Edwin Sharp
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PALOS VERDES HILLS

The Palos Verdes Hills* form a prominent peninsula which projects from the coastline of Los Angeles County toward Santa Catalina Island. This range of hills is about 10 miles long and 5 miles wide. The hills rise steeply from the ocean to a maximum elevation of 1480 feet on San Pedro Hill. The coastline along the base of the Palos Verdes Hills is characterized by a sea cliff which is usually about 100 feet in height.

The oldest rocks in the Palos Verdes Hills are a series of metamorphic schists which probably belong to the Catalina metamorphic series. Many authors have attempted to correlate these schists with the Franciscan series of the California coast ranges. The lithology of the schists of the Palos Verdes Hills is like that on Santa Catalina Island and that of the Franciscan series. The schists of the Palos Verdes Hills are composed of "green to greenish-gray-quartz sericite schist containing much hematite, and bluish schist consisting principally of quartz and glaucophane or crossite" (Woodring, et. al, 1946, p. 12). The foliation of these schists seems to parallel the strike and dip of the overlying Miocene strata. This suggests that little deformation took place prior to the Miocene. Nothing is known about the age of these rocks except that they are Pre-Miocene.

Unconformably above the basement rocks 4000 feet of Miocene strata were deposited. These rocks belong to the Monterey shale which is common throughout the Miocene of the California coast ranges. Lithologically, these strata are made of blue-schist sand, chert and porcelaneous shale, diatomaceous shale, and radiolarian mudstone with minor amounts of interbedded tuffs, limestones,

*Geology is summarized from Woodring, Bramlette, and Kew (1946).

blue-schist breccias, and phosphate shale.

Next, the lower parts of the Miocene strata were intruded by basaltic rocks, usually in the form of concordant sills. These basaltic rocks in many places have altered the surrounding rock for several feet as at the Livingston Quarry. In places, the basalt becomes distinctly diabasic.

The Pliocene Repetto siltstone was deposited disconformably over the Monterey shale. The Repetto is very thin in the Palos Verdes Hills, only 150 feet thick as compared to 4 to 5,000 feet in the Los Angeles basin. Lithologically the Repetto "consists of soft, massive, glauconitic foraminifera siltstone" (Woodring, et al, 1946, p. 41) with limestone concretions and thin tuff beds. After the deposition of the Repetto in the late Pliocene, the area was subjected to strong deformation which produced a series of folds which have a northwesterly strike.

Then, the sediments of the lower Pleistocene were deposited unconformably over the Pliocene Repetto and the Miocene Monterey shale. These sediments which are about 600 feet thick are made of sand, silt, and marl and contain numerous fossils. These sediments were then tilted and eroded during the middle Pleistocene.

Since then, the Palos Verdes Hills have gradually emerged from the sea as shown by 13 terraces, 9 of which are definitely marine. These terraces consist of marine detrital, sand, gravel and shells. They are commonly covered with soil. Today the hills are undergoing extensive erosion with the development of landslides on the southern flank of the hills.

Point Firmin

Several interesting minerals may be found along the cliff at Point Firmin Park.

The base of the cliff is a sandstone composed of glaucophane grains. Pebbles of nearly pure blue glaucophane up to 1 inch are found in the sandstone. Along fractures in the glaucophane sandstone and the overlying siliceous shales of the Monterey group are found yellow jarosite and natural asphalt. Gypsum is now being deposited as a large white crust at the base of the cliff on the glaucophane sandstone by the evaporation of ground water. Small fibrous masses of epsomite xls. are forming on the face of the cliff where it is protected from the rain.

Livingston Quarry

The Livingston quarry is located just north of Portuguese Bend. It can easily be seen from the road about 3.1 miles east of the Marineland Oceanarium. The quarry is now closed.

Geologically, the quarry is found in the siliceous shales of the Miocene Monterey group. These shales have been intruded by basalt. Curved gypsum xls., satin spar, delicate fibrous masses of epsomite, dolomite xls., quartz xls. and yellow jarosite are found along fractures in the shale. These crystals are often stained by natural petroleum. Along the contact between the intrusive basalt and the shales, nice specimens of a fibrous sepolite-like mineral, which may be spadite, are found with pyritohedrons of pyrite and crystals of aragonite and calcite stained with hematite. Cavities in the basalt are commonly filled with fibrous natrolite xls., and bluish chalcedony. In addition, barite and limonite pseudomorphs after pyrite have been found.

Long Point

Along the base of the cliff at the Marineland Oceanarium on Long Point the following minerals were found: beautiful barite xls. along fractures in the Monterey shale. Individual xls. range up to ¼ to ½ inch in size. Drusy quartz xls. and dolomite are also found here. Delicate fibrous xls. of epsomite are found in the sea caves near the Marineland Pier, just east of Long Point.

Road Cut on Crest Road

This road cut is located 0.8 miles from Palos Verdes Drive South on the Crest Road.

The rocks of the Miocene Monterey shale have been intruded here by basalts and diabase dikes. Satin spar, barite, and natural asphalt are found here along fractures in the shale. Large masses of black chert are found scattered through the shale. Small euhedral xls. of plagioclase feldspar can be found in the basalt.

Crenshaw Blvd. and Crest Road

Opalized concretions of shale are found in the Monterey shale at the northwest corner of Crenshaw and Crest Road.

Quarry on Via Subida

A very small quarry is located at the end of Via Subida, a short distance west of Palos Verdes Drive East.

Natrolite xls. form nodules of radiating xls. filling cavities in a diabase which intrudes the Monterey shale. The diabase is composed of augite with euhedral xls. of labradorite which are altering to green saussurite.

Basement Complex of the Palos Verdes Hills

The basement complex is located in George F canyon and is reached by driving south along Palos Verdes Drive East, 1.6 miles from the intersection of Narbonne and Palos Verdes Drive North; then turning west on a side road which overlooks the canyon.

The basement rocks are mostly quartz sericite schists. Small amounts of pyrite, quartz xls., and hematite are found in quartz stringers. Float of blue glaucophane schist (mostly the mineral crossite) and fractured rock containing "wad" (probably pyrolusite) were found in the stream bottom. Woodring, et. al (1946, p. 12) reports microscopic lawsonite in saussuritized basic igneous rock with unaltered augite.

Road Cut on Narbonne Avenue

This road cut is located on Narbonne Avenue 0.6 miles south of Palos Verdes Drive North.

Satin spar and jarosite occur here along fractures in the Pliocene Repetto siltstone. Delicate masses of white epsomite are found in protected parts of the road cut. Megascopic particles of green glauconite are found in sand lenses in the siltstone.

Dicalite Quarry

This quarry is located in Valmonte Canyon, 0.9 mile northeast of Palos Verdes Drive North.

The Miocene Monterey shale here contains over 50% diatoms and some radiolaria, forming in places almost pure diatomaceous earth.

Malaga Cove

Microscopic amounts of glaucophane and crossite have been reported in the shales at Malaga Cove (MC -- p. 45).

SANTA CATALINA ISLAND

Santa Catalina Island lies about 20 miles south and west of San Pedro, and is visible from Los Angeles on clear days. This rugged island is about 40 square miles in area, being 20 miles long and 8 miles wide at its maximum width. The island rises rapidly from the coast to a maximum elevation on Mt. Orizable of 2125 feet. This island is a well known resort operated by the Santa Catalina Island Company.

The geology of the island has been worked on by several investigators. Probably the most comprehensive work was done by Bailey, who mapped the island about 1940. Most of the material for this part of the paper has been summarized from his report (Bailey, 1941).

The region which the island represents, originally consisted of clastic sediments with occasional cherts in contact with volcanics and older plutonic rocks. These rocks were subjected to mild regional metamorphism that formed the unusual glaucophane-lawsonite rocks which resemble the contact metamorphosed Franciscan series in the California coast ranges. Later rocks of a higher degree of metamorphism were thrusted over the glaucophane schists. These rocks, called the Ollas series by Bailey, include green-hornblende gneiss, quartz-muscovite gneiss, and chlorite-actinolite-talc melange. Serpentine and brown hornblende occur in both the Ollas series and in the glaucophane rocks. The serpentine

may have intruded both of these rock series at about the same time. After the thrusting, the rocks were folded into a synclinorium that strikes northwest and plunges to the southeast. Next, these Catalina metamorphics were intruded by quartz diorite porphyry which did not alter the metamorphics. The island later was covered with volcanics composed of augite-hypersthene andesite with small amounts of olivine basalt, rhyolite, and vitrophyre. Bailey dates the lavas as being Miocene in age by fossils which were found in a limestone interbedded with the lavas.

Since the Miocene, the island has undergone uplift. Most of this uplift has probably taken place in the Pleistocene. Terraces are now found at the 500, 100, 25, and 10 foot elevations on the island. Today the island is undergoing erosion with extensive landslides along the steep southern coast and particularly west of Empire Landing on the north coast.

Renton Mine

The Renton Mine is located 2 miles southeast of Avalon. It lies at the 800 foot elevation in the canyon above Pebble Beach.

The mining operation is well described as follows: "The Renton vein deposit consists of five approximately parallel veins from 4 to 18 feet wide, dipping 60°N and cutting andesite. Ore minerals are sphalerite and galena with some silver." (Gay and Hoffman, 1954, p. 503).

Minerals reported from here include: sphalerite and galena (Gay and Hoffman, p. 503); Barite (MC - p. 69).

Small Hill Mine

Calcite was reported to have occurred here (MC - p. 90).

Quarry Mine

The Quarry Mine is located 1¼ miles southeast of Avalon.

Gay and Hoffman give the following description of the deposit:

> "The Quarry Mine is situated on a vein originally exposed in the face of a rock quarry. The vein dips 70°N., cutting andesite. North-trending shears bound the ore shoot which has a length of 150 feet and an average width of 4 feet."

The principal minerals found here were sphalerite and galena (Gay and Hoffman, p. 503).

Pebble Beach Quarry

The Pebble Beach Quarry is located 1 mile south of Avalon. This quarry is reported to occur in andesite (Bailey indicated quartz diorite porphyry).

Connolly Pacific Quarry

This stone quarry is located 2 miles southeast of Avalon along the shore of the island.

According to the described location of the quarry, it should be in glaucophane-lawsonite rock of Bailey.

Silver Canyon

West of the mouth of Silver Canyon, about 3/8 of a mile, apatite was found in albite pegmatite in xls. up to ¼ by 3 inches (Bailey, 1941, p. 52). Aragonite has also been reported here (MC - p. 53).

Middle Ranch Canyon

North of the mouth of Middle Ranch Canyon, about 300 yards, large quartz xls.,

calcite xls., and albite xls. were found, (Bailey, 1941, pp. 77, 64, 55), in a quartz vein.

Crossite was found 100 yards north of the mouth of the canyon in a quartz-muscovite-crossite-garnet schist with biotite (Bailey, 1941, p. 72).

Microscopic karinthine was found in an epidote-karinthine-quartz gneiss in this canyon (Bailey, 1941, p. 50) between the ranch and Eagle's Nest Rock.

Limonite pseudomorphs after pyrite up to 1 inch were also found at Eagle's Nest Rock.

Dolomite was found cutting varolite a short distance above the Ismuth Road crossing (Bailey, p. 55).

Little Harbor and Vicinity

Several minerals have been reported in the vicinity of Little Harbor. Below is a list of these minerals and their associations. Glaucophane in glaucophane schist (MC - p. 45); Gastaldite pseudomorphs after pyroxene were found ½ mile south of here (Bailey, 1941, p. 46). Anthophyllite as float (Bailey, 1941, p. 44) with actinolite; just south of Little Harbor zoisite was found in brown hornblende-zoisite rock (Bailey, 1941, p. 63); Ilmenite grains in massive chlorite rock (Bailey, 1941, p. 68); Fuchite in chlorite-actinolite schist near the beach (Bailey, 1941, p. 73); Talc in a talc-actinolite schist (Bailey, 1941, p. 81); tourmaline was found at the top of the sea cliff 1 mile north of Little Harbor in a chlorite-epidote gneiss (Bailey, 1941, p. 81).

Los Angeles City Quarry

The L.A. City Quarry is located 2 miles northwest of Empire Landing on the shore of Catalina Island.

The quarry should be located in augite-hypersthene andesite believed to be Miocene in age (Bailey, 1941, p. 178).

Empire Quarry

This quarry is located 1½ miles northwest of Empire landing along the shore.

The quarry should be located in augite-hypersthene andesite.

Empire Landing and Vicinity

Albite xls., 1 x 5 mm., occur in loose boulders along the beach, which were composed of albite-garnet-brown hornblende rock (Bailey, 1941, p. 65).

At the top of the ridge south of the landing 1 mm. grains of magnetite and spinel were found in clinozoisite-chlorite-diopside-magnetite rock (Bailey, 1941, pp. 71, 80).

Anthophyllite in chlorite-talc-melange and limonite pseudomorphs after pyrite were found in the landslide south of the landing.

North of Orizaba Peak

Garnets and sphene up to 2 inches were found in brown hornblende gneiss in the second canyon north of the peak (Bailey, 1941, pp. 67, 79).

North of Orizaba Peak in Escondido Canyon epidote was found in epidote-chlorite schist (Bailey, 1941, p. 61).

One mile north of Orizaba Peak piedmontite was found in quartz schist (Bailey, 1941, p. 62).

Old Soapstone Quarry

This old soapstone quarry is located 1 mile south of Empire Landing.

Apatite was found here in garnet-apatite rock in brown hornblende gneiss. Other microscopic minerals found in the brown hornblende gneiss are: hornblende, rutile, tremolite, talc which alters from the tremolite and graphite (Bailey, 1941, pp. 53, 78, 51, 68).

Vicinity of Old Soapstone Quarry

East of the quarry in a pegmatite, allanite xls. 1 x 50 mm. were found (Bailey, 1941, p. 59).

West of the quarry, about ½ mile, corundum and kyanite were found in plagioclase-muscovite-corundum rock cutting quartz-plagioclase-muscovite gneiss (Bailey, 1941, pp. 59, 69).

Black Jack Mine

The Black Jack Mine is located on the northwest slope of Black Jack mountain at the 1600 foot elevation.

The deposit consists of a vein, 4 to 25 feet wide, which dips 60°NE in hornblende schist (Gay and Hoffman, 1954, p. 502). The following minerals have been reported to occur here: arsenopyrite, barite xls., chalcopyrite, galena in grains less than 3 mm., pyrite, scorodite as coatings on arsenopyrite-pyrite veins, sphalerite (Bailey, 1941, pp. 54, 56, 67, 76, 78, 79). Also quartz, calcite and fluorite (Gay and Hoffman, 1954, p. 502).

East of Bullrush Canyon

About 2 miles east of the mouth of Bullrush Canyon, gray-green to clear glassy prisms, 3 x 50 mm. of zoisite occur in brown hornblende gneiss (Bailey, 1941, p. 63).

East of White's Landing

About 2 miles east of White's Landing, barite has been reported at the 1540 foot elevation.

Vicinity of Buffalo Springs Weather Station

In the vicinity of Buffalo Springs Weather Station there are several masses of serpentine. In these bodies of serpentine the following minerals have been reported: antigorite, chrysotile, magnesite as irregular veins in weathered serpentine and the magnesite is often replaced by opal (Bailey, 1941, pp. 56, 75). Chromite was found as float 1 mile east of the weather station (Bailey, 1941, p. 58).

East of Avalon

About 2 miles east of Avalon, siderite was found with barite in a quartz breccia (Bailey, 1941, p. 56).

Miscellaneous

Nice albite xls. have been reported in a pegmatite near Howlands Landing and in chlorite-lawsonite schist at the western tip of the island (MC - p. 152).

Azurite has been reported at the eastern end of the island (MC - p. 66).

Tridymite has been reported in the volcanics on the island (MC - p. 333).

SANTA MONICA MOUNTAINS

The Santa Monica Mountains comrpise an important range of hills which separates the San Fernando Valley from the Los Angeles Basin and the Pacific Ocean. These hills extend westward from the Los Angeles River for a distance of 45 miles. They range in elevation from 1200 feet to 3059 feet at the highest point.

The first recorded sediments* to be deposited in the region were black shale and graywackes. By comparison with similar rocks in the Santa Ana Mountains, these rocks are believed to be Triassic in age. These sediments were highly folded and then intruded and metamorphosed by a stock of granodiorite which generally is believed to be Jurassic in age. The metamorphism of the shale produced an argillite which becomes a spotted and chiastolite slate near the granodiorite.

A period of uplift and erosion preceded the deposition of the later Cretaceous sediments. The oldest of these unmetamorphosed sediments is a clayey red continental conglomerate assigned tentatively to the Trabuco formation. These sediments were then overlain by the epiclastic marine sediments of the upper Cretaceous Chico formation, indicating encroachment by the sea. Following this, the area was uplifted with folding, faulting, and erosion.

Then, in the Paleocene and early Eocene the region was depressed below the sea and sandstone and conglomerates of the Martinez formation were deposited. The region then began to rise again and the red arkosic sandstone and conglomerate beds of the continental Sespe formation were deposited.

*The geology is summarized from Durrell (1954) and Hoots (1931).

Again, in the early Miocene the sea began to encroach on the region. The marine arkosic sandstones and conglomerates of the Vaqueros formation were confined to the western part of the range. However, the sea continued to advance eastward until it completely inundated the whole region. At this time the cobble conglomerates and arkosic sandstones of the lower Topanga formation were deposited. These beds are overlain by the interbedded sediments and submarine volcanics of the Middle Topanga formation, and these in turn are overlain unconformably by the upper Topanga formation which is mostly fine-grained arkosic sandstones with relatively large amounts of organic materials, siliceous shales, and chert. Sills and dikes of basalt and diabase with some rhyolite and trachyte are found cutting Upper Topanga beds, but do not cut later sediments. The volcanics contain most of the interesting minerals in this region.

Following the deposition of the Upper Topanga, the region was uplifted, tilted and eroded with renewed movement along many old fault zones.

Next, during the Miocene, the region was depressed below the sea and a thin bed of grit and pebble conglomerate was deposited across all of the older rocks. This basal Modelo formation is commonly silicified and is overlain conformably by the siliceous and diatomaceous shales of the Upper Modelo formation. These shales belong to the siliceous shales of the Monterey group, such as those found in the Palos Verdes Hills.

In post-Modelo time only a small section of Pliocene-Pleistocene sediments were deposited in the area just east of the mouth of Temescal Canyon. Also the region has been folded into a braod-east-west anticline which plunges to the west. Today the

mountains are an exhumed anticline which has been uplifted by block faulting. The uplift is shown by the many former stream terraces and wave terraces along the beach. Erosion is taking place today with extensive landslides forming in the Modelo formation along the northern flank of the range and particularly along the Pacific Palisades.

Above Tunnel Near Griffith Observatory

Along the riding trail which passes over the highway tunnel near the Griffith Park Observatory, nice quartz bipyramids up to 4 mm. are found in basalt (confirming MC - p. 278).

N-5*

Natrolite xls., analcite xls., and calcite occur in a basalt sill on a fire road 0.2 miles west of Mt. Hollywood Drive. The fire road is 0.2 miles south of the intersection of Vista del Valle Drive on Mt. Hollywood Drive (confirming Neuerberg, 1951, p. 157).

N-11

Flucrescent calcite xls. are reported as seams in a very fossiliferous bed of the Topanga formation about 0.1 mile south of Mt. Hollywood (reported by Neuerburg, 1951, p. 157).

N-10

Locality N-10 is in a road cut just north of the Don Lee Television tower on Mt. Lee Drive, a short distance north of Mulholland Drive.

Pyritiferous diabasic boulders in

*N refers to the localities described by Neuerburg, 1951.

various stages of alteration in the Topanga formation contain halotrichite xls., melanterite xls., and jarosite (confirming Neuerburg, 1951). Calcite is found in seams in between the cobbles in the conglomerate. Neuerburg also reports pyrite, adularia, and gypsum.

N-2

Locality N-2 is located in the old Pacific Electric quarry near the head of Brush Canyon.

Analcite xls. are found in vugs, prehnite as massive seam fillings and calcite along fractures in the basalt. Besides these Neuerburg has also reported apophyllite with the analcite, veins of apophyllite, natrolite and platy thomsonite.

B-1

Large cleavage masses of calcite occur along a shear zone in decomposed granodiorite at the top of a small hlll a few hundred feet south of Forest Lawn Park Drive, and 0.8 mile west of the north entrance to Griffith Park.

N-12

Neuerburg has reported veins of calcite occurring along shear zones in decomposed granodiorite which was used for an old Spanish lime kiln. It should be located at the top of a small ridge which follows Forest Lawn Park Dirve, about one-half mile west of the north entrance to Griffith Park (unconfirmed by author and may be same as locality B-1).

N-9

Ptolite xls., stilbite xls., and pyrite xls. which alter to hematite occur

in cavities in basalt filled with secondary quartz and calcite. Heulandite is common along fractures in these basalts (confirming Neuerburg, 1951). Neuerburg also reported natrolite xls. These minerals are found in basalt in a road cut on Cahuenga Boulevard about 0.2 mile south of the Mulholland bridge in Cahuenga Pass.

N-9A

Nice specimens of heulandite xls. were found filling cavities in a pillow basalt on Cahuenga Boulevard, 0.4 mile south of the Mulholland Bridge in Cahuenga Pass.

N-3

Laumontite xls. (confirming Neuerburg, 1951) altering to caporcionite, analcite xls., natrolite xls., and prehnite occur in cavities in the basalt at the west end of the first bridge which crosses the Hollywood Freeway at Highland Avenue (southbound).

N-1

Griffithite, laumontite xls. are found here with prehnite in basalt. Neuerburg also reports calcite scalenohedrons. This locality is found 0.1 mile south of locality N-3 and a short distance north of the entrance of the Hollywood Bowl.

N-4

Laumontite xls. (confirming Neuerburg, 1951) are found with natrolite xls. filling cavities in basalt on Mulholland Drive, 0.2 mile east of Outpost Drive.

N-31

Zoisite is reported by Neuerburg as

white, very fine-grained veinlets in the vicinity of Chelan Drive and Outpost Drive.

N-21

Thin acicular xls. of black tourmaline occur with small patches of fine-grained chlorite in quartz veins along a shear in granodiorite (confirming Neuerburg, 1951). The quartz vein is on the first fire road in Nichols Canyon, and is 0.2 mile south from the intersection of the fire road with Nichols Canyon Road on the east side of the canyon.

N-22

Black tourmaline is found in a quartz-muscovite pegmatite vein in granodiorite (confirming Neuerburg, 1951). The locality is in a road cut on a fire road directly beneath a transmission line. This fire road is the second one in Nichols Canyon and is about 200 feet above the first fire road on the east side of the canyon.

N-14

Vugs in veins of calcite contain rhombohedral calcite xls. These veins occur along shear zones in the granodiorite on Astral Drive in a road cut about 0.2 mile from Nichols Canyon Road (confirming Neuerburg, 1951).

N-29

Zoisite is reported by Neuerburg to occur in the vicinity of Astral Drive and Nichols Canyon Road as white dense, very fine-grained veinlets.

N-7

Natrolite xls., analcite xls., and calcite occur in amygdaloidal basalt on Mulholland Drive, 0.3 mile east of Laurel

Canyon Boulevard. Neuerburg reported rosettes of aragonite occurring here.

N-8

Very nice nodules of natrolite xls. occur in cavities in basalt in a road cut on Briar Summit Drive, 0.4 mile east of Mulholland Drive (confirming Neuerburg, 1951).

N-28

Calcite occurs along shear zones in granodiorite in a road cut on Mulholland Drive, about 1.3 miles east of Coldwater Canyon Drive. Neuerburg reported zoisite as small white, dense, very fine veinlets in this same area.

N-15

Calcite is found as cavity fillings in sandstone of the Topanga formation, 0.2 mile south of the water tank which is 0.5 mile east of Coldwater Canyon Drive on Mulholland Drive (confirming Neuerburg, 1951).

N-6

Analcite xls. and natrolite xls. occur in a pillow basalt on a fire road, a short distance east of Coldwater Canyon Road and 0.1 mile north of the intersection of Coldwater Canyon Drive and Mulholland Drive. Neuerburg reported stilbite here.

N-24

Nice black tourmaline is found in a quartz-muscovite pegmatite dike in granodiorite near the contact between the Santa Monica slate and the granodiorite which is at the end of Gilcrest Drive (confirming Neuerburg, 1951).

N-23

Black tourmaline is reported by Neuerburg in a quartz-muscovite feldspar pegmatite dike which cuts the Santa Monica slate. This locality may be on Cerrocrest Drive.

N-19

Nice chiastolite xls. up to 8 cm. in length and 1 cm. in diameter are found in the spotted cordierite slates of the Santa Monica slate in a road cut near the end of La Altura Road. The crystals are often altered to fine fibrous aggregates of muscovite (confirming Neuerburg, 1951).

N-18

Neuerburg reported a large single platy xl. of molybdenite with pyrite in quartz veins in the chiastolite spotted slates of the Santa Monica slate. This locality may be near Sutton Way and Coldwater Canyon Dr.

N-27

Zoisite is reported by Neuerburg in small white, dense, very fine-grained veinlets directly west of the end of Doheny Drive in West Los Angeles.

N-20

Cubic looking rhombs of calcite up to 1 cm. on a side are common with quartz and aragonite xls. in a fault breccia in the Santa Monica slate at the mouth of a small canyon a few hundred feet northwest of Robmar Drive, just off of Beverly Drive in Higgins Canyon.

N-26

Float from the calc-silicate hornfels described by Neuerburg was found along

Franklin Canyon Road, 0.1 mile north of the gap between Higgins and Franklin Canyons. The hornfels consist of diopside and altered tremolite. Also float of black tourmaline in quartz-muscovite feldspar pegmatite was found on the ridge directly north of the gap between Higgins and Franklin Canyons. Neuerburg has reported wollastonite from the calc-silicate hornfels.

Head of Higgins Canyon

Quartz pseudomorphs after fluorite have been reported at the head of Higgins Canyon (MC - p. 278).

N-16

Calcite filling fractures along a shear zone in granodiorite is common about 0.1 mile north of locality N-26 on Franklin Canyon Road (confirming Neuerburg, 1951).

N-17

Neuerburg (1951) reported veins of calcite with rhombohedral calcite xls. having an irredescent coating of limonite on the east side of Franklin Canyon directly east of locality N-26 near the 1000 foot elevation.

N-25

Neuerburg (1951) has reported black tourmaline in quartz-muscovite-feldspar pegmatite dikes in phyllite of the Santa Monica slate in Peavine Canyon.

Encino Creek

Quartz pseudomorphs after fluorite are found in sandstone in the Modelo formation (confirming MC - p. 278). This locality is found on the hillside above the end of Harclare Lane off of Basque Drive in Encino.

West of Encino Reservoir

Beautiful gypsum xls. up to 5 cm. across were found in clusters in a white clay bed of the lower shale member of the Modelo formation just above the basal sandstone of the Modelo. The bed is located 0.2 mile west of the Encino reservoir a short distance from the end of Alonzo Avenue.

Transmission Line Road
West of Encino Reservoir

Very small xls. of dolomite and goethite are found in small cavities in a fault breccia in the argillites of the Santa Monica slates about 50 feet north of the granodiorite-Santa Monica formation contact. The breccia is located north of Mulholland Drive on the transmission line road west of Encino reservoir.

Sepulveda Canyon

Cordierite occurs in the spotted slates of the Santa Monica slate in Sepulveda Canyon extending southward from the Mulholland tunnel for 2 miles (Hoots, 1931).

Lake Malibu #1

Very nice quartz xls. were found filling cavities in basalt along the road east of Malibu Lake. Geodes filled with small quartz xls. were found along the north edge of the lake in a road cut, at the base of a conglomerate which overlies a basalt flow. Large crystals of analcite have been found in these basalts near the lake (Pc - Jack Schwartz).

Lake Malibu #2

West of Lake Malibu at the junction of Cornell Drive, in a pillow basalt and conglomerate, the following minerals were found:

nice quartz xls. with goethite (?) xls., dolomite xls., and calcite xls. in the basalt with small pyrite xls. Small gypsum xls. and satin spar with dolomite xls. are found in the sandstone and conglomerate.

Arroyo Sequit

In what may have been a gravel pit on an obscure side road, 1 mile east of the junction of the west fork with the east fork of Arroyo Sequit, the following minerals were found: small nodules of quartz, calcite, and laumontite in vesicles in basalt and a porphyritic andesite containing phenocrysts of plagioclase feldspar.

In a road cut 0.5 mile east of the junction of the east and west forks of Arroyo Sequit, calcite xls., aragonite xls., chalcedony casts of calcite are found in shears in the basalts. Dolomite xls. covered with crude oil are found in shears in the basalts a short distance to the south.

Sunset Boulevard Near Beach

Gypsum xls. up to 1 cm. are found in clay lenses in sandstone in a wave cut bench about one-half mile east of the beach on the south side of Sunset Boulevard (confirming MC - p. 178). Jarosite is found along fractures in the overlying Modelo shale.

Rancho La Brea

Vivianite has been found here as blue, earthy masses, formed by the decomposition of animal bones (MC - p. 343).

SAN GABRIEL MOUNTAINS

The San Gabriel Mountains form a very rugged range which forms the northern boundary of the Los Angeles Basin. These mountains extend from Placerita Canyon on the west to San Antonio Peak on the east, which is the highest point in the range. On the north the range is bounded by the Soledad basin, and east of Palmdale by the San Jacinto fault zone. The range is lens-shaped which is the result of block faulting, lifting up the complex basement rocks of gneisses and granitics.

The oldest rocks of the region are high grade gneisses which have been assigned to the Placerita formation.* It was originally made of beds of sandstone, conglomerates, and limestones. In general, these rocks form a band across the southern part of the San Gabriels and include the Verdugo Mountains and the San Rafael Hills. The first intrusive into the Placerita formation was the Rubio diorite. This hornblende rich rock is most easily seen between Rubio and Eaton Canyons. Next, the Echo granite intruded the Placerita sediments "lit-par-lit" converting the original sediments into high grade gneisses and also converting parts of the Rubio diorite into a meta-diorite. The Echo granite is well exposed between Millard and Eaton Canyons, north of Pasadena. This granite is light colored with small amounts of biotite. The region was next intruded by a large body of anorthosite. The anorthosite is composed principally of andesine feldspar. The anorthosite body extends from Magic Mountain on the west to the Monte Cristo mine on the east and from Pacoima Canyon on the south to Soledad Canyon on the north. This intrusive body is elliptical in shape and grades

*The geologic history has been taken largely from Miller (1934).

outward into darker facies of norite and gabbro.

The anorthosite and its related facies have been cut by numerous mineralized pegmatite dikes. The main anorthosite body has been subjected to late magmatic injections of ilmenite. This is well illustrated by the ilmenite deposits at the Black Crow, and the Iron Blossom. At the Monte Cristo mine, the anorthosite has been cut by quartz veins which formed along shear zones. A fair amount of gold has been produced from these veins. In Pacoima Canyon the norites have been intruded by pegmatites which contain many interesting minerals. Radioactive zircons from one of these pegmatites have shown all of these rocks to be Pre-Cambrian in age (Neuerberg and Gottfried, 1954). Fissure veins of sidrite and quartz are in rocks which may be related to the norite, as at the Ore Hill mine. These veins have been prospected for the minor amounts of sulfides which occur there.

The next intrusion which is believed to have taken place and which is extensively exposed around Mt. Wilson, is the Wilson quartz diorite. The last extensive intrusion was the Lowe Granodiorite. This rock is easily recognized by the large phenocrysts of microcline (½ inch to 2 inches). This granodiorite is well exposed in the region north of Tie Summit on the Angeles Forest Highway. Many of the aplite and pegmatites which cut the rocks of the surrounding region may be offshoots from this intrusion. Finally, this very complex basement was cut by lamprophyre and diabase dikes. Many of these dikes may have served as feeders for the extensive Miocene lava flows which were deposited in the Soledad basin and surrounding areas.

Starting with the Miocene the San Gabriels became a slowly rising mountain range with extensive erosion and deposition

in the surrounding basins. Many of the prominent faults, like the San Gabriel and the San Andreas, are known to have become active at this time. In the early Quaternary the range probably formed a fairly low range of hills, as is shown by the low rolling upland surfaces at the tops of the mountains. But recently the area has been uplifted very rapidly with the formation of deep and rugged canyons. The eroded material is now being deposited as huge fans in the Mojave Desert and in the Los Angeles Basin.

Fiber Queen Asbestos Mine

The Fiber Queen Asbestos Mine is located in School House Canyon at the 2500 foot elevation. It may be reached by a fire road which begins behind the Olive View T. B. Sanitarium on Foothill Boulevard.

The mine is located in the basement rocks which have been thrusted over the Pliocene Pico formation. Chrysotile asbestos occurs here in a sill of serpentine in veins up to 10 cm. in thickness and with many smaller veinlets and stringers. Small bundles of secondary radiating nodules of aragonite xls. were found here in cavities.

Limekiln Canyon Dolomite Deposit

A small body of marble which is located near the head of Limekiln Canyon may be reached by a fire road that begins at the junction of Pacoima and Limekiln Canyons.

This body of impure marble contains brown phlogophite (2 mm), gray-black spinel (2 mm), olivine (2 mm) which alters to serpentine, and diopside. The marble here is in contact with an augite granodiorite. Float of garnet schist with garnets up to 2 cm. are found in the bottom of the canyon

along with large cobbles of nearly pure hornblende.

Kagel Canyon Gold Prospect

This small gold prospect is located on a fire road which begins at the head of Kagel Canyon. The prospect is 0.5 miles from the end of the paved road.

Above this old prospect hole nice large hornblende xls. (1 cm thick and 5-8 cm. long) are found in a hornblendite which is cut by pegmatite dikes which are composed mostly of soda-lime feldspar.

Kagel Canyon Graphite Deposit

The Kagel Canyon graphite deposit is located at the head of Limerock Canyon, but is reached by a fire road which begins at the head of Kagel Canyon. The mine is about 1.5 miles from the end of the paved road.

Nearly pure masses of graphite are found here in graphite-tremolite schist. The foliation here strikes N 40° W and dips 85° NE. Sillimanite has been reported here (MC - p. 299).

Lovell Mine

This old gold mine is located 0.5 mile west of the Lovell residence on Little Tujunga Road.

Gold occurred here in quartz stringers which cut chlorite, tremolite, and graphite schists. The mine is in the basement just above the thrust fault which places the basement over the Pleistocene sediments of the Saugus formation.

Little Nugget

A short distance west of the Hansen Dam quarry an old gold prospect is found in a granite pegmatite which cuts a

biotite granite gneiss.

0-19

A small prospect for gold in quartz stringers in highly weathered gneiss is located in Nehr Canyon about 0.1 mile west of Little Tujunga Road (about 0.3 mile north of the Gold Creek Road).

Lincoln Service

An old ore bin which contains chlorite schist is located on Gold Creek Road, 0.1 mile east of Little Tujunga Road.

Hansen Dam Rock Quarry

This large abandoned quarry which was used to supply rock for construction of Hansen Dam is located at the end of Gold Creek Road.

The rock here is a fine-grained biotite granite. This may correspond to the Echo granite of Miller. Parts of the granite contain a brilliant green chlorite mineral. Titaniferous-magnetite is common as float along the banks of the creek.

Haskins Group

A series of prospects here for gold, graphite, and dolomite are located in Limerock Canyon about 3.5 miles NE of Foothill Boulevard.

Gold was prospected for here in 3 small adits located in the bottom of the canyon. The short adits all occur where small stringers of quartz cut the granite gneiss. Secondary deposits of an epsomite-like mineral have formed on the walls of the adits. Graphite occurs here in graphite schist on the north side of the canyon with

small amounts of tremolite. The metamorphic rocks here are intruded by biotite granite. Two dolomite deposits also occur in the canyon. The dolomite is fairly pure, containing only small amounts of olivine which alters to serpentine, grossularite garnet, phlogophite, purple spinel and tremolite which occurs along shears.

0-18

This small prospect is located on the mountain side west of the junction of Gold Creek and Little Tujunga Canyon Roads.

Dikes of biotite granite were prospected here for gold where the granite intrudes the gneiss. The prospect lies about 100 feet above the thrust of the metamorphics over the Pleistocene Saugus formation.

Ramelli Limestone

This small prospect is in highly weathered gneiss, 0.6 mile SW of Dillon Divide on the Mt. Gleason truck trail just off of Little Tujunga Road.

A relatively pure lens of dolomite 2-5 feet thick which contains small amounts of diopside, microscopic crystals of chlorite and graphite. In contact with the marble is a body of syenite which is made of nearly pure potash feldspar which contains sphene xls. (5 mm.) and epidote xls. up to 2.5 cm. in length.

Black Lode

A series of claims for graphite are located 1.1 miles southwest of Dillon Divide and Little Tujunga Road on the Mt. Gleason truck trail.

Graphite occurs here as hair-thin

laminae in beds of graphite schist up to 10 feet in thickness.

LT #2

This locality is in a road cut on Little Tujunga Road about 0.3 mile east of the bridge over Pacoima Creek.

Graphite in masses up to 8-10 cm. are found here in a highly weathered brownish-colored graphite schist.

0-68

Dolomite float is found on a hillside on the south side of Pacoima Canyon between Little Tujunga Road and the back waters of Pacoima Dam.

The dolomite is nearly pure except for minor amounts of olivine which has altered to serpentine.

Baughman Limestone Deposited

This body of dolomite is located on the ridge north of Pacoima Canyon and west of Little Tujunga Road. The dolomite crops out on the trail between Santa Clara divide and the Pacoima reservoir. The distinctive white outcropping can be seen from Little Tujunga Road, about 0.6 - 0.7 mile after leaving the bottom of Pacoima Canyon.

Ore Hill Mine

The Ore Hill Mine is located about 2 miles northeast of Little Tujunga Canyon Road in Pacoima Canyon.

Sulfide veins are found here which strike N 50° E with a vertical dip and cut highly sheared norite. The vein is about 1 to 2 feet in width with slight silicification of the norite next to the

vein. Minerals found here include chalcopyrite which alters to malachite and covellite, pyrrhotite which alters to melanterite, siderite which alters to hematite, quartz xls. and calcite xls. in secondary fractures. Other minerals reported from here include: annabergite (MC - p. 52).

Denver-Indicator

This mine is located 0.5 mile east of the Ore Hill Mine in Pacoima Canyon.

The mineralized sulfide veins are found here cutting a phyllite. Minerals found here include chalcopyrite which alters to covellite, galena, pyrrhotite which alters to melanterite, malachite. These minerals are found in a gangue of siderite and quartz. Sphalerite has also been reported here (MC - p. 304). The vein here is 3-4 inch in thickness and strikes N 85° E with a nearly vertical dip cutting across noritic rock which has a foliation which strikes E-W and dips 22° to the north.

Alexander Prospect

This prospect occurs in norite and chlorite schist, 1½ miles east of the Denver-Indicator Mine in Pacoima Canyon near the mouth of Noel Canyon. Quartz veins were prospected here for gold. The quartz veins cut noritic rock which contains up to 25 per cent apatite as macroscopic xls.

Pacoima Canyon Pegmatite

A large pegmatite dike is found in Pacoima Canyon 0.2 mile southeast of the junction of the Pacoima Canyon truck trail on the Mt. Gleason truck trail. The pegmatite is about 200 feet above the canyon floor on the southwest side of the canyon.

The pegmatite here is found cutting noritic and gneissic rocks. Large masses of quartz, several feet across, are common here. The pegmatite has produced large xls. of zircon and allanite. The zircons fluoresce a pale yellow under the UV. Small crystals of apatite are common in the feldspar which is largely albite. On the opposite side of the ridge large biotite xls. up to 20 cm. across are found in anorthosite dikes. Other minerals reported include beryl and uranothorite (Neuerburg, 1954).

Mt. Gleason Gold Prospects

Several gold prospects are located around Mt. Gleason. The one on Mt. Gleason is no longer accessible because of the Nike station. It consisted of quartz stringers cutting noritic rock. Two of the prospects reported to occur on the north side of Mt. Gleason may still be accessible from Messenger Flats.

Grassy Canyon

Near the head of Grassy Canyon off of Pacoima Canyon nice crystalline molybdenite up to 3 cm. across was found in a granite pegmatite boulder. Associated minerals included quartz, orthoclase, muscovite and lesser amounts of garnet. The boulder was probably weathered out of one of the numerous pegmatite dikes which cut the anorthosite here. Float of titaniferous-magnetite is also common in the canyon.

Apex Silica

This silica prospect is located about 1 mile east of the Indian Creek truck trail on the Magic Mountain truck trail.

Large masses of quartz are found here in a granite pegmatite dike which cuts the

anorthosite. Parts of muscovite xls. up to several cm. in length may be found here with microcline along with quartz. The quartz commonly has a graphitic texture in the microcline. Minor amounts of garnet xls. are also common here.

Rattlesnake Canyon

Columbite xls. in a small pegmatite dike were found near the head of Rattlesnake Canyon off of Pacoima Canyon (MC - p. 125).

Dorothy Ann

A pegmatite dike was prospected for mica 0.5 mile east of the Indian Creek truck trail on the Magic Mountain truck trail.

Minerals found here include muscovite, quartz, and microcline.

Pop Shot Mine

This old gold prospect is located on the second dirt road which leaves the Magic Mountain Nike Station Road near the head of Sand Canyon.

Gold was prospected for in quartz veins which cut norite. The vein strikes N 42° E and dips 80° SE. Goethite from the alternation of pyrite is found as box works in the quartz.

Acme Mine

This old mine includes several adits which are scattered south of the Oak Grove Campground in Bear Canyon which is on the Sand Canyon-Little Tujunga Canyon Road.

Most of the adits are located on quartz veins which cut brown phyllite and norite. The most important adit is found

on the west side of the canyon and 200 feet above the floor of the canyon. A quartz vein 2 feet thick occurs here, cutting a gray phyllite and cordierite schist just above the norite contact.

Live Oak Mines

The Live Oak Mines are located 0.5 mile east of the Oak Grove Campground in Sand Canyon (just off the Sand Canyon-Little Tujunga Road).

The Live Oak Mines consist of a placer stream ilmenite deposit and an old gold mine. Gold was reportedly recovered from a blue clay zone which dipped 40° N. The entrance to the mine is in gabbro in which the foliation strikes N 10° W and dips 35° E.

Crail and Zanteson Gold Prospect

This small gold prospect is located 0.8 mile southeast of Lang in Pole Canyon.

A shear zone here in highly fractured norite and gneiss was prospected for gold by a short adit which is covered with a white epsomite-like mineral.

Iron Blossom Deposit

The Iron Blossom deposit is located at the end of a fire road which begins by crossing the Santa Clara River at the westernmost tunnel on the Southern Pacific Railroad, about 1.7 miles west of Agua Dulce Canyon Road on the Soledad Canyon Road. The mine lies near the top of the ridge between Bear and Pole Canyons.

Massive titaniferous-magnetite occurs here as a pod 2 feet by 10 feet long. This "ilmenite" occurs in chloritic rock in which the foliation strikes N 85° E and dips 63°S. The chloritic rock is found as

a lenticular shaped mass in the anorthosite. Other beds of chloritic rock containing disseminated and massive "ilmenite" are exposed on the hillside above the main outcrop. The surrounding hillsides are covered by cobbles of residual "ilmenite". The old ore bin and mill foundation are still standing. This mine constituted the only real lode operation of "ilmenite" in the county.

Eagle Claim

This claim is located 1 mile northwest of the Angeles Forest Highway on the north side of Aliso Canyon Road.

A claim is found here on quartz veins, although no attempt has been made at mining. The quartz veins occur as segregations from small pegmatite dikes cutting a highly weathered fine-grained granite.

Loomis Mine

The Loomis Mine is located 0.6 mile east of Roundtop and 0.6 mile west of the old Loomis Ranch, which is now a Girl Scout camp. This ranch is on the north fork of Alder Creek.

Free gold was mined here from quartz veins which cut the Lowe granodiorite. The granodiorite around the quartz veins has been altered to a talc-like mineral. Nice crystals of microcline are found in the granodiorite with minor amounts of garnet xls., epidote, and augite.

Falcon Mine

The Falcon Mine is located on the west side of Granite Mountain, about 1.5 miles south of Tie Summit on the Angeles Forest Highway, and about 1 mile east of

the highway.

Gold was mined here from N-S trending quartz veins which appear to be associated with the contact between a fine-grained chloritic rock and the Lowe granodiorite. The occurrence here is very similar to that at the Loomis Mine. Large phenocrysts of microcline feldspar up to 5 cm. in size are found throughout the granodiorite with small amounts of garnets, biotite, and epidote.

Three Pines Mine

This mine is located on the middle fork of Mill Creek about 1 mile north of Angeles Forest Highway.

Titaniferous-magnetite occurs here in 2 lens-shaped bodies which strike about N 40° W and dip 75° SW. The lenses are about 5-10 feet in width and extend for about 100 feet in length. The lenses are enclosed in chlorite pods in the anorthosite. Nice lath-shaped xls. of andesine up to several cm. across may be found in the surrounding anorthosite.

Black Crow

This prospect for titaniferous-magnetite is found on the south side of Monte Cristo Creek several hundred feet above the canyon floor and about 0.5 mile east of the Angeles Forest Highway.

The "ilmenite' is found here in lenses surrounded by chlorite as pods in the anorthosite. Boulders of "ilmenite" up to several feet across may be found here. In the road cuts between the Black Crow and the Black Cargo Mines, excellent small scale examples of the relations between the "ilmenite", chlorite, and anorthosite may be seen.

Black Cargo

The Black Cargo Mine is located in Monte Cristo Canyon about 1.0 mile east of Angeles Forest Highway.

Gold has been mined here from quartz veins similar to those at the Monte Cristo Mine. Other minerals reported here include small amounts of malachite and sulfur. Several prospects for titaniferous-magnetite are also found on the Black Cargo property.

Monte Cristo Mine

This old gold mine is located at the end of the road in Monte Cristo Canyon, 1.7 miles east of the Angeles Forest Highway. The gold occurred along N-S trending quartz veins which followed shear zones in banded anorthosite. Minerals found in the quartz veins include: pyrite, which alters to goethite, molybdenite, and a green mica which may be mariposite. Nice lath-shaped xls. of andesine occur in the adjacent body of anorthosite.

West Vein Lease

The West Vein Lease is located 1200 feet west of the Monte Cristo Mine. Gold was mined here in quartz veins which trend N-S along vertical shear zones cutting the anorthosite. Hornblende and biotite diorite dikes are common in the surrounding anorthosite.

Minerals found in the quartz veins include pyrite which alters to goethite. Nice crystals of andesine may be found in the surrounding anorthosite.

Mt. Lowe #1

In a road cut 0.7 mile east of Haskell Street on the Angeles Crest Highway (1st

major bend in the road), nice light gray-green corundum xls. up to 5 mm. in size are found. They occur in small gneissic inclusions in a coarse-grained biotite quartz diorite.

San Rafael Hills

Microscopic xls. of sillimanite are found in bands of dark bluish-gray steeply-dipping bands of gneiss, in a road cut 0.3 mile south of the summit of the Chevy Chase-Flintridge road (1.3 miles W-NW of Linda Vista). (Confirming MC - p. 299 and Miller 1934, p. 5).

Verdugo Mountains

Graphite has been reported in an old prospect in the Verdugo Mountains (MC - p. 175).

Lang Canyon

Molybdenite has been reported in Lang Canyon 6 miles north of Altadena (MC - p. 231).

Dawn Mine

The Dawn Mine is located in Millard Canyon about 1 mile east of the Sunset Ridge Guard Station which is reached by way of Loma Alta Drive in Altadena.

Gold was mined here from quartz veins which cut granite and granodiorite. Pyrite has been leached from the quartz-leaving goethite box works. Free gold and chalcopyrite were reported (Gay and Hoffman, 1954, p. 619).

Loris Mine

The Loris Mine is located in Millard Canyon, 0.2 mile west of the Dawn Mine. Gold

was prospected for here in quartz stringers in granite and granodiorite as at the Dawn Mine.

Winter Creek Prospect

This prospect is located 1 mile from the end of the road in Santa Anita Canyon, and 0.1 mile west of Robert's Camp on Winter Creek.

Malachite stained quartz veins which strike N 40° E and dip almost vertically cut diorite and gneiss. Small amounts of graphite are found along shears in the quartz veins. Minerals reported from here include: molybdenite, bornite (MC - pp. 231, 83), chalcopyrite, pyrite, gold, silver, and azurite (Gay and Hoffman, 1954, p. 614).

Sierra Vista

Scheelite has been reported in a calc-silicate hornfels, in the north wall of Spanish Canyon, 2 airline miles northeast of Monrovia (Gay and Hoffman, 1954, p. 648).

Felix Fluorite Mine

The Felix Fluorite Mine is located on the hill 0.5 mile east of the north end of Azusa Avenue.

Green fluorite occurs here along shear zones in decomposed granite in a small prospect pit. It is found mostly as crystalline masses, but beautiful crystals of fluorite have been reported in vugs. In addition, galena, minium, and barite have been reported here (MC - pp. 160, 229, 69).

Kelsey Mine

The Kelsey Mine (including here the Silver Mountain and South Extension of the O.K.) is located on a fire road 1.0 mile

west of Morris Reservoir in San Gabriel Canyon. This is the only fire road which takes off to the west just past the dam.

Quartz veins are found here cutting quartz diorite and granite gneiss. The rock next to the veins has been altered to clay. In the Silver Mountain claim, malachite and psilomelane are abundant. In addition, the following minerals have been reported to occur here: annabergite, erythrite, smaltite, argentite, cerargyrite, native silver, and barite (MC - pp. 52, 150, 301, 58, 95, 300, 69).

Heaton Flats

In the vicinity of Heaton Flats on the East Fork of the San Gabriel River, stream gravels and terrace deposits were extensively worked for placer gold.

Baldora Mine

The Baldora Mine is located near the head of Dry Gulch, a branch of Coldwater Canyon.

Gold was mined here from quartz veins and stringers which cut and run parallel to the layers of schistosity. This muscovite-chlorite schist is intruded by a quartz diorite porphyry about 30 feet from the mine entrance. It is interesting to note that all of the important gold mines of this area have this same peculiar intrusive rock intruding schist very close to the mines. The quartz here is pyritized and vugs are common in quartz, due to leaching of calcite from the quartz-calcite veins.

Eagle Mine

The Eagle Mine is located near the head of Coldwater Canyon about 2.5 miles

west of San Antonio Peak.

Quartz veins were mined here for gold in chloritic schist (Gay and Hoffman, 1954, p. 620).

Gold Dollar Mine

The Gold Dollar Mine is located on the ridge between Dry Gulch and Coldwater Canyon, just west of the Eagle Mine.

Gold was reportedly recovered from quartz veins which cut chloritic schist adjacent to a porphyritic diorite intrusive body (Gay and Hoffman, 1954, p. 622). This occurrence sounds exactly like the one at the Baldora.

Allison Mine

The Allison Mine is located on Allison Gulch on the south slope of Iron Mountain. It may also be reached by taking the Heaton Flat and the Highline trails.

Gold appears to have been recovered from pyritized schist along shear zones. These shear zones have very little quartz but considerable amounts of calcite occurring in veins. The schist here is of a much higher metamorphic grade than at the other mines in the region. The schist and gneiss are intruded here by a pegmatitic facies of the quartz diorite porphyry.

Stanley-Miller Mine

The Stanley-Miller Mine is located on the Highline Trail, 3 miles west of the Allison Mine and 1,000 feet above the junction of the Iron and East Forks of the San Gabriel River.

Gold was recovered from quartz veins which cut the chlorite-muscovite-albite schists along shear zones. Original sandy layers in the schist can be seen to be parallel to the foliation of the schist.

The rock surrounding the quartz veins has been pyritized. Small stilbite xls. were found as secondary fracture fillings. The quartz diorite porphyry like that at the Baldora was found here, but only as float from the hillside above the mine. It does outcrop on the trail east of the mine.

Iron Fork of San Gabriel

Stilpnomelane (1 cm. in length) was found in schist of the Pelona type on the Iron Fork of the San Gabriel, about 0.3 mile west of the junction with the East Fork (PC - Ehlig).

San Dimas Gravel Quarry

A small cut was made here in a hillside for gravel. It is located at the junction of Ham Canyon truck trail and Sycamore Canyon near the San Dimas Canyon Park.

The rock here is mostly an olivine basalt. The olivine has partly altered to iddingsite. Chlorite occurs along the fractures.

San Dimas Barite

A small deposit of barite is reported to be located on the west fork of San Dimas Canyon (MC - p. 69).

Gravel Pit North of Claremont

Montmorillonite is found as an alteration product in pegmatite dikes composed of quartz, orthoclase, and albite. The pegmatite is found cutting a quartz biotite schist in a small gravel quarry just east of the intersection of Williams Avenue and Base Line in Claremont (confirming MC - p. 235).

Cascade Canyon

Cascade Canyon is reached by a fire road

which begins in the bottom of San Antonio Canyon, about 1 mile south of Camp Baldy. This locality has been included here, even though it is located in San Bernardino County, because it can be reached only by way of San Antonio Canyon.

Float of green and white diopside with float of lilac-colored small corundum xls., and blue lazurite can be found with a little effort in the bottom of Cascade Canyon and along the fire road (conf. MC - pp. 272,131, 204).

Big Horn Mine

The Big Horn Mine is located 1.5 miles southeast of Vincent Gap which is on the Angeles Crest-Big Pines Road. The mine is at the 6800 foot elevation.

Aplite dikes have been injected here along the foliation in the Sierra Pelona schist. Gold appears to have been mined from the quartz-rich parts of the aplite and the quartz stringers in the schist. The schist next to these veins has been pyritized. Right next to the aplite dikes is found an intrusive quartz diorite porphyry which looks just like the porphyry found at the Baldora Mine.

Mine Gulch

Microscopic amounts of piedmontite and riebeckite have been reported in the schists of the Sierra Pelona on the south side of Mine Gulch, 0.2 miles northwest of the junction with the Prairie Fork of the San Gabriel River (PC - Perry Ehlig).

Prairie Fork of the San Gabriel

Microscopic amounts of piedmontite have been reported in the Prairie Fork of the San Gabriel. These include: the hillside just west of Camp Lupin (PC-Ehlig) as float in the canyon bottom east of Cabin Flat (PC-Ehlig), and in a ravine entering the Prairie Fork from the south, about 3 miles above the mouth of the fork (MC - p. 251).

SOLEDAD BASIN

The Soledad Basin comprises an area about 30 miles long and 8 miles wide. The area lies between the San Gabriel Mountains on the south and the Sierra Pelona ridge on the north. It is bounded on the east by the San Andreas fault and on the west by the San Gabriel fault.

The Sierra Pelona schist which lies along the northern edge of the basin has been called Pre-Cambrian in age, although no evidence for its age has been given. The Sierra Pelona schist forms a broad anticline* which plunges to the west. The schists are made of graywackes, volcanics, and minor amounts of orthoquartzites and limestones which have been metamorphosed to an albite-chlorite schist. The schists commonly have lenses of quartz formed along the schistose structure. These lenses have been unsuccessfully prospected for gold.

In the eastern portion of the Soledad Basin, between the sedimentary section and the Sierra Pelona schist, a series of igneous and metamorphic rocks may be found. From Bouquet Canyon to Mint Canyon the basement rocks consist mostly of granite gneiss with small bodies of granite. Where these rocks have been cut by quartz veins, gold in minor amounts has been mined as at the Governor Mine. Masses of syenite occur east of Mint Canyon. Around Parker Mountain mylonized quartz diorite outcrops. Where these rocks are sheared by faults, small amounts of copper with quartz have been deposited. Farther to the east, as we approach Vincent, small isolated bodies of granodiorite, gneiss, and diorite are found.

The sedimentary section in the basin

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* The geology was summarized from Jahns and Muehlberger (1954).

is made up mostly of continental and lacustrine sediments which cover the western part of the basin. The oldest of these sediments are the Oligocene (?) rocks of the Vasquez group. They consist of interbedded arkosic sandstone, conglomerates and lake deposited silts. These sediments were covered during the time of deposition by flows of andesite, olivine basalt, and volcanic breccia. In Tick Canyon the basalts and lacustrine sediments are associated with beds of borates which were mined at the old Sterling Borax Mine in the early 1900's.

Unconformably over the Vasquez group more siltstones, sandstones, and conglomerates were deposited during the Miocene. During the lower Miocene, the Tick Canyon formation was deposited, and over this the Mint Canyon formation, which is recognized by the resistant ridges it forms, commonly called Vasquez rocks. The Mint Canyon formation is also known for the numerous mammal bones which have been found in it.

Unconformably above these older sediments, the marine sediments of the Pliocene Towsley formation were deposited. "This is the oldest stratigraphic unit that can be recognized on both sides of the San Gabriel fault" (Jahns and Muehlberger, 1954). Above this the Pliocene-Pleistocene, non-marine fluviatile sediments of the Saugus formation were deposited.

The region has undergone continued deformation ever since the deposition of the Vasquez group, forming gentle northwesterly trending folds. Since post-Saugus time, sands and gravels have been deposited in the Santa Clara River basin. Terraces were formed at the head of Mint, Agua Dulce, and Escondido Canyons (along Highway U.S. 6). These terraces are now deeply dissected by erosion.

Free Cuba Mine

The Free Cuba Mine is located 0.6 mile south of Acton, west of the old Soledad Canyon Road on the Southern Pacific right-of-way.

Chalcocite partially oxidized to cuprite with small amounts of malachite, azurite, and goethite occur in quartz-epidote-garnet veins. Native copper has been reported at the 200 foot level (Gay and Hoffman, 1954, p. 613). The veins are found cutting a mylonized diorite. Sphene, garnet, epidote, and magnetite are found as accessory minerals in the diorite.

Emma Copper Mine

The old bin and workings are located on the south slope of Parker Mountain, northwest of Soledad Canyon Road, 0.7 mile east of Ravenna.

Chalcopyrite with minor amounts of chalcocite, bornite, goethite, and malachite occur here in quartz-garnet-epidote veins. The veins cut diorite. The diorite contains plagioclase feldspar which has altered to saussurite along with hornblende, magnetite, and sphene. The sphene is very abundant with crystals up to 5 mm. in length.

Acton Rock Quarry

The Acton quarry is located on the east side of Parker Mountain and is 0.6 mile west of Soledad Canyon Road and 4th Street in Acton.

Calcite xls., chalcedony casts of calcite, white heulandite xls., light brown stilbite xls. (up to 2 cm.) and quartz xls. are found in cavities of an old andesite flow. The andesite contains small white crystals of plagioclase and

has weathered on the surface to chlorite.

Ravenna #1

Along the north side of Hubbard Road, about 1.8 miles from Escondido Canyon Road, the following minerals were found in basalt and andesite: chalcedony, agate, quartz xls. and fine-grained natrolite filling cavities in the basalt and andesite. The basalt contains 1 mm. grains of olivine which commonly are altered to iddingsite. In places, the old lavas have altered to chlorite-like minerals.

Hi-Grade Mine

Free gold was mined here from 3 parallel quartz veins which strike N 10-20° W and dip 60° SW (Gay and Hoffman, 1954, p. 498), and cut granite gneiss. It is located on the southwest side of Escondido Canyon, 0.3 mile southeast of the Red Rover Mine Road. Associated minerals include small amounts of calcite, pyrite, stilbite, malachite, bornite, and magnetite. Large pieces of massive epidote were also found here. Gay and Hoffman also reported chalcocite and cuprite (p. 498).

Puritan Mine

The Puritan Mine is located 0.3 mile north of Escondido Canyon Road and about 1.7 miles west of the Red Rover Mine Road. The old hoist and mill are easily seen from U. S. Route 6.

Gold was taken here from quartz veins cutting syenite. The syenite is altered along the contact to chlorite schist. Goethite, pyrite, and magnetite were found with the quartz. The chlorite schist has been pyritized with the formation of aragonite along fractures. Epidote and

calcite have formed along fractures in the syenite.

Blue Goose

This small mine is located 0.4 mile north of the Puritan Mine. It may be reached from Sierra Highway (U. S. 6) by a small side road 0.2 mile west of the Shannon Valley Road. The mine is 0.8 mile south of the Sierra Highway.

An attempt was made here to mine gold from quartz veins in a quartz sericite schist.

Governor Mine

The Governor Mine is located at the end of the Governor Mine Road north of the Sierra Highway (U. S. 6).

Free gold was mined here from quartz veins which strike N 20° W and dip 75° NE (Gay and Hoffman, 1954, p. 497), and are associated with syenite dikes. The syenite consists of alkali feldspar and augite which has altered to uralite with minor amounts of magnetite. The dike occurs in a green to black phyllite which in many places has fair amounts of small-grained magnetite. Pyrite is found both in the quartz and in the phyllite. Calcite xls. occur as secondary coatings along fractures.

Mine South of Governor

This mine is located 0.3 mile north of the Sierra Highway and is reached by taking a dirt road which is 0.3 mile east of the Red Rover Mine Road.

Gold was mined from quartz masses associated with a syenite pegmatite which cuts a gabbro. The gabbro contains up to 25% magnetite in a matrix of plagioclase feldspar and biotite. The feldspar has been partly altered to saussurite. Calcite is

found along small cavities in the gabbro.

Bradshaw Lease

The Bradshaw Lease is located on the east side of Red Rover Canyon about ½ mile north of Sierra Highway (U. S. 6).

Quartz veins are found here cutting granite gneiss. Minerals found here include: quartz xls. (up to 1 cm.), malachite, goethite, chalcedony, epidote and small amounts of copper-stained opal. Halloysite is found as white masses in highly weathered wall rock.

Red Rover Mine

The Red Rover Mine which has several shafts and adits, is located 0.8 mile north of the Sierra Highway (U. S. 6) on the Red Rover Mine Rd. on the west side of the canyon.

Free gold was mined here in quartz veins which strike N 20° W and dip steeply to the west (Gay and Hoffman, p. 500) and cut a metagabbro which has been altered to a phyllite next to the veins. The phyllite has been pyritized and contains minor amounts of sphalerite and calcite xls. along the fractures. Magnetite is common in the metagabbro. Large cleavable masses of calcite and small epidote xls. are found in marble here. Gay and Hoffman (1954, p. 500) also report chalcopyrite and sylvanite.

Hilltop Mine

The Hilltop Mine is located in Agua Dulce Canyon, 0.4 mile south of Sierra Highway (U. S. 6) and 1.4 miles east of Agua Dulce Canyon Road. The mine consists of a vertical shaft at the top of the hill and an adit at the bottom.

Gold was mined here from quartz veins which cut granite gneiss, and biotite-chlorite schist. The rocks around the quartz

veins have in places been altered to a pyritized cummingtonite (?) schist. Goethite is found on quartz where the pyrite has been leached away.

Toney Mine

Gold was mined here from quartz veins which cut granite gneiss. It is located 0.1 mile west of the west end of Darling Road.

Spanish Mine

This prospect was worked for gold which occurred in quartz veins cutting granite gneiss. It is located about 0.9 mile southwest of the Toney Mine.

Champion Road #1

This prospect is located 0.5 mile west of the west end of Darling Road.

Gold was prospected for here in quartz veins cutting granite gneiss. Pyrite, goethite pseudomorphs after pyrite and chlorite are found in the quartz veins. Small amounts of calcite are found along fractures in the granite gneiss.

Champion Road #2

This prospect is located about 0.8 mile west of the west end of Darling Road.

An attempt was made here to recover gold from an aplite dike which cuts the granite gneiss. Also found here were crystalline calcite cementing brecciated rock and pyritized chlorite schist.

Champion Mine

The Champion Mine is located 1.0 mile west of the west end of Darling Road and consists of several adits, shafts, and prospect pits.

Gold was mined from quartz veins which cut granite gneiss. Graphite and epidote are found along fractures in the quartz and the granite gneiss. Very small amounts of pyrite were found in the quartz veins which along with graphic granite and diabase dikes cut the gneiss. The graphic granite consists of alkali feldspar and quartz with minor amounts of chlorite. The gneiss is composed of highly weathered, alternating layers of feldspar biotite-chlorite-actinolite schist. Chalcanthite has been found here as efflorescence on the mine wall (PC - Jack Schwartz).

Lang #1

Nice needle xls. of laumontite are found in seams of the conglomerates of the Mint Canyon formation in a road cut on Agua Dulce Canyon Road, about 0.8 mile north of the mouth of Escondido Canyon (confirming MC - p. 202).

Sterling Borax Mine

The Sterling Borax Mine is located at the junction of Tick Canyon and Davenport Road about 1.3 miles east of the Sierra Highway. This mine was operated between 1908 and 1922 by the Pacific Borax Co.

The borates occur here interbedded with sandstones, shales, and volcanics of the Vasquez group on the north limb of a prominent syncline. Minerals found here include: colemanite, massive and nodular howlite, long radiating needle shaped xls. of probertite and ulexite, veachite xls.

as coatings on fractures, and brown calcite xls. Besides these minerals xline bakerite covered by celestite xls. has been reported by Murdoch (MC - p. 68) as coating on shale. Also reported are realgar and analcite.

Basalt south of Borax Mine

In an olivine basalt flow along the north side of Davenport Road where the road crosses Tick Canyon, the following minerals may be found: small calcite, aragonite, and quartz xls. Chalcedony also occurs in cavities in the basalt. The basalt contains in places up to 40% olivine xls. These crystals are about 1 mm. in size and are commonly altered to red iddingsite which gives the basalt a reddish color. Chlorite is also common through the basalt.

Basalt north of Borax Mine

In a thin basalt flow about 0.2 mile north of the Borax Mine natrolite, analcite xls. and calcite occur in amygdaloidal cavities.

Prospect east of Borax Mine

A small adit located about 0.5 mile east of the Borax Mine in the sandstones of the Vasquez group contains large cleavage masses of colemanite. On the hillside directly above the adit in several small prospect pits, drusy calcite xls. and large masses of white opal are found.

Lang Gypsum Deposit

This open cut operation is located 0.3 mile north of Davenport Road about 0.3 mile east of Sierra Highway (U. S. 6).

Satin spar and drusy gypsum xls. occur as stringers about 1 cm. thick in gypsiferous shale interbedded with sandy shalestone in a zone about 200 feet thick. These shales belong to the Vasquez group and are in contact with granite gneiss on the north and with olivine basalt on the south.

Mint Canyon Gravel Quarry

This small quarry is located 0.2 mile north of Davenport Road on the Sierra Highway (U. S. 6).

The basement rock here is granite gneiss which contains porphyroblasts of orthoclase feldspar. Small amounts of pyrite which have altered to goethite; actinolite and caliche are found along fractures in the gneiss.

King David Mine and Vicinity

This prospect is located 0.7 mile north of the end of Wyse Road about 1.0 mile north of the Sierra Highway (U. S. 6).

Calcite xls. were found as fracture fillings in muscovite-albite schist. In the area immediately surrounding the prospect large masses of bull quartz, actinolite xls. and small amounts of magnetite are found in the schist. On the ridge just north of the mine goethite pseudomorphs after magnetite were found. Clinozoisite as pure white crystals up to 1½ cm. has been reported from here occurring with chlorite and tourmaline (MC - p. 122).

RR #1

Goethite pseudomorphs after magnetite xls. were found as float on peak 3851 just north of the King David Mine.

Katz Soapstone Quarry

This quarry is located 0.6 mile north of the Sierra Highway (U. S. 6) between Boiling Point and Summit. It is easily seen from the highway and is the only large quarry in the region.

Actinolite xls. up to 5 cm. in length, white to gray talc and small amounts of serpentine occur in a thick unit of talc schist in quartz sericite schist of the Sierra Pelona series. Small amounts of magnetite occur in stringers of chlorite schist and secondary calcite has formed along fractures in the schist.

Gladys Mine

This prospect is located on the ridge between Spring and Mint Canyons. It is reached by a truck trail which runs along the ridge about 3.3 miles from Sierra Highway (U. S. 6) via Spring Canyon.

Calciferous dolomite, in large cleavage masses, talc, quartz, picrolite serpentine, and chlorite are found in chlorite-muscovite-albite schist of the Sierra Pelona.

Prospect Near Head of Mint Canyon

In a prospect about 1 mile north of the Gladys Mine, nice actinolite xls. in soapstone and quartz occur in muscovite-albite schist of the Sierra Pelona series.

Nativity Claim

This prospect is located in Spring Canyon 1.9 miles from the Sierra Highway (U. S. 6).

Quartz, actinolite xls., talc, chlorite, and dolomite are found here in biotite,

muscovite-albite, actinolite, and chlorite schists of the Sierra Pelona.

Paloma Blanca Mine

This prospect is located on the west side of Spring Canyon, 3.5 miles north of Sierry Highway (U. S. 6).

Quartz stringers in muscovite-biotite-albite schist of the Sierra Pelona series were prospected here.

Across From the Paloma Blanca Mine

On the east side of Spring Canyon, a small prospect is found just across from the Paloma Blanca Mine.

Quartz, talc, actinolite, muscovite, and picrolite serpentine are found in biotite-albite schist of the Sierra Pelona series.

Purple Sage

A few small prospect pits have been excavated in granite gneiss about 0.1 mile beyond the end of the road in Texas Canyon.

Roselba Mine

This small mine is located on the Vasquez Canyon truck trail, 3.8 miles from the intersection of Vasquez and Bouquet Canyon Roads.

Dikes of aplite, quartz monzonite pegmatite and quartz are found cutting biotite granite gneiss with small amounts of hornblende schist. Gold, silver, and platinum were reportedly recovered from the schist and quartz.

Texas, Bouquet, San Francisquito, and Placerita Canyons

Placer gold has been found in the gravels of these canyons.

Silver King

Gold was worked from the sediments of the Vasquez group in Texas Canyon about 3 miles from Bouquet Canyon Road on the Texas Canyon truck trail.

Junction of Bouquet and Texas Canyons

Microscopic piedmontite has been reported in quartz-sericite schists near the junction of Bouquet and Texas Canyons (MC - p. 250).

Bouquet Canyon (Pyle) Quarry

This flagstone quarry is located on the west side of Bouquet Canyon Road, 8.7 miles north of San Francisquito Canyon Road.

Massive talc is found as thin lenses in the schist; epidote occurs along the schist-marble contact as small crystals; calcite is found in the marble and as secondary fracture fillings. Dark cordierite xls. occur as 1-2 mm. porphyroblasts giving the quartz-cordierite-muscovite schist a bluish hue. Small almandite xls. (½ mm.) occur as porphyroblasts in albite-chlorite-muscovite schist of the Sierra Pelona.

Desert Stone Quarry #1

This quarry is on the west side of Bouquet Canyon Road, 9.4 miles north of San Francisquito Canyon Road.

Calcite is found here as secondary

fracture fillings in gray to green chlorite-albite schist of the Sierra Pelona series.

Desert Stone Quarry #2

This flagstone quarry is located on the west side of Bouquet Canyon Road, 10.4 miles north of San Francisquito Canyon Road.

Clinozoisite is found here in quartz lenses in bundles of crystals up to 5 cm. in diameter and up to 11 cm. in length. The quartz lenses are found along the planes of schistosity of the green actinolite and chlorite-muscovite schist. Some green epidote was found with minor amounts of marble. White calcite xls. are found along fractures in these schists of the Sierra Pelona.

BR #1

In a road cut on the Bouquet Canyon Road, 0.7 mile west of Spunky Canyon Road, clinozoisite xls. in bundles 5 cm. in diameter and up to 9 cm. in length occur in the schists of the Sierra Pelona. About 0.1 mile north of here on the road epidote xls. can be found. Both the epidote and clinozoisite occur in quartz lenses in muscovite-albite schist (confirming MC - p. 122).

Hoffman Quarry

The small flagstone workings here are found on both sides of the road about 0.4 mile northeast of the Golden Rock Quarry.

Small amounts of Black tourmaline were found in quartz which occurs in lenses along the planes of schistosity in gray albite-muscovite schist of the Sierra Pelona series.

Poteet Quarry

Caliche occurs along fractures and quartz along the planes of schistosity of gray albite-muscovite schist of the Sierra Pelona series in a flagstone quarry 0.2 mile east of the Golden Rock Quarry on Del Sur Ridge.

Del Sur Ridge Serpentine

Antigorite and picrolite var. serpentine are found on a ridge 0.2 mile south of the Poteet Quarry. Microscopic amounts of chromite are found in the fine-grained serpentine. This may be the locality of Tucker MC - p. 112.

Golden Rock Quarry

This flagstone quarry is about 0.8 mile south of the junction of the Del Sur Ridge truck trail and the truck trail which ends at the chaparral camp ground in Bouquet Canyon.

Calcite xls. in rossettes are found as fracture fillings, quartz occurs along the planes of schistosity as lenses in chlorite-albite-muscovite schist of the Sierra Pelona.

Perry Quarry

Quartz is found here as small lenses along the planes of schistosity in gray albite-muscovite schist of the Sierra Pelona series. The quarry is located 0.9 mile southwest of the Golden Rock Quarry on Del Sur Ridge.

Deem Flagstone Quarry

This quarry is in Bee Canyon near

its junction with San Francisquito Canyon which is about 1.5 miles south of Power House #1. The quarry is about 200 feet above the canyon floor and midway between the transmission line and San Francisquito Canyon Road.

Mariposite and small amounts of graphite occur here in talc-sericite schist. Quartz occurs here as stringers and lenses in muscovite-albite schists of the Sierra Pelona.

Blue Goose Flagstone Quarry

Quartz occurs here as stringers and lenses in gray muscovite-albite schist of the Sierra Pelona. The quarry is located 0.3 mile southwest of Power House #2 in San Francisquito Canyon.

Silver Sheen Flagstone Quarry

Quartz occurs here as stringers and lenses in gray muscovite-albite schist of the Sierra Pelona. The quarry is located about 0.3 mile north of Power House #2 in San Francisquito Canyon.

Vicinity of the Old San Francisquito Dam

The remains of the old dam are located 1.3 miles north of Power House No. 2 in San Francisquito Canyon.

Actinolite and sericite are abundant on the east side of the canyon above the old dam. Mariposite in talc-sericite schist and quartz lenses having bundles of clinozoisite xls. up to 1 inch in diameter and 3-4 inches in length were abundant on the eastern edge of the old reservoir (MC - p. 220 and 122).

RR #4

This talc prospect is located 1 mile

directly north of the Hauser Ranch on the south slope of Mt. McDill on the Sierra Pelona Ridge.

Nice fibrous asbestos up to 8 cm. long were found with actinolite xls. and talc in lenses. Cordierite grains up to 2 mm. are found here in muscovite-cordierite schist of the Sierra Pelona series.

RR #5

This talc prospect is located on the Sierra Pelona Ridge, 1.3 miles east of Mt. McDill.

This area was extensively prospected for talc during the last war, but proved of little value. Talc and actinolite are found here as lenticular beds in muscovite-albite schist of the Sierra Pelona series.

Towsley Canyon

This locality is in Towsley Canyon, 1.6 miles west of the Ridge Route (U. S. 99). It is in a road cut in the first small anticline on the Pico anticline just east of the Sec. Bank Lease.

Yellow jarosite is found here as fracture fillings in gray shale with small amounts of gypsum.

Charlie Canyon Gypsum Deposit

This small gypsum prospect occurs 0.4 mile north of the Charlie Canyon truck trail in Charlie Canyon.

The gypsum occurs here in seams of satin spar up to 5 cm. thick and as weathered masses in a gray siltstone bed which is about 20 feet thick. These beds have been assigned to the Oligocene (?) Vasquez group.

LIEBRE MOUNTAIN

The Liebre Mountain Region is a rugged inaccessible area found just north of the Sierra Pelona Schist described in the section on the Soledad Basin. Its only distinct boundary is on the north, where it is marked by the San Andreas Rift Zone. On the south it is bordered by the Coldwater Canyon Fault and on the west by the sediments of the Ridge Basin Province. Little is known about this area perhaps because it is crossed by only one paved road.

The geology of the area has never been worked out in detail. Basically, however, it is a region of steeply dipping high-grade gneisses and schists which have been extensively intruded by quartz diorite and quartz monzonite. Few mineral deposits have been reported from this district. Those that have are almost all graphite deposits which, in some ways, resemble those of the Kagel and Pacoima Canyons. The only other point of interest in the area is the contact metamorphic limestones which have produced skarn zones. These skarn zones may prove to have many interesting minerals.

Gillette Mine

This old gold-silver mine is located 14 airline miles north of Castaic in Bear Canyon, 1.5 miles northeast of the junction of Bear and Cienega Canyons.

Gold was mined here from quartz veins which cut chlorite schist, The zeolite minerals: natrolite, laumontite, analcite, and also calcite are found along fractures in the schists. Small crystals of epidote and garnet may also be found in the schist.

Prospect East of the Gillette Mine

This small prospect is 0.15 mile east of the Gillette Mine. Quartz veins which cut chlorite schist were prospected for gold. Small epidote xls. were found here along fractures. A micromount specimen of turgite pseudomorph after pyrite was found here on laumontite (PC - Murdoch).

Piano Box Prospect

This prospect is located at the end of the road in Fish Canyon which is reached by way of Castaic Canyon.

Uranothorite is found here as black disseminated grains in a silica cemented alkali feldspar breccia. The rock is stained yellow and red and fluoresces a strong yellow-green under the short wave ultraviolet. This suggests the possibility that the uranothorite has altered to uranophane (?). This breccia is found in the basement next to a fault between the basement and the conglomerates of the Paleocene Martinez formation.

Burro Canyon #1

Mountain leather asbestos was found in a small marble lens, which is located about 50 feet above the bottom of a small canyon which branches off the west side of Burro Canyon. This lens is on the north side of this canyon at the 2850 foot elevation.

Burro Canyon #2

Tremolite xls., muscovite, chlorite, serpentine, and serpentine pseudomorphs after olivine are found here in a marble

lens which is on a ridge on the south side of the side canyon described in Burro Canyon #1. This lens is at the 3250 foot elevation.

Burro Canyon #3

Cobbles of solid tremolite xls. were found on the ridge above Burro Canyon #2 and 0.5 mile east of peak 3989 at the 3600 foot elevation.

Black Diamond Mine

The Black Diamond graphite mine is located in a side canyon on the north side of Elizabeth Lake Canyon, 3.3 miles south of the junction of Pine and Elizabeth Canyon Road.

Graphite is found here as flakes and masses in graphite schist. The schist is intruded here by aplite dikes and biotite diorite. An epsomite-like mineral is found on the walls of the small adits.

Hughes Lake #1

A contact between marble and quartz diorite is found on a ridge about 1 mile north of the Black Diamond Mine and below peak 4638. Float from this marble bed is common in the stream bed.

Minerals found along the marble-quartz diorite contact include: tremolite xls., nice epidote xls., grossularite garnet xls., serpentine, diopside, scapolite xls., var. dipyre, and microscopic amounts of graphite.

Western Graphite Mine

The Western Graphite Mine is located

on a short dirt side road on the north side of Elizabeth Lake Canyon, 1.5 miles south of the junction of Pine and Elizabeth Lake Canyon Roads.

Graphite occurs here as flakes and masses in graphite schist which has been intruded by aplite dikes and quartz diorite. The quartz diorite is composed mostly of soda-lime feldspar and quartz. Hornblende and sphene xls. are present here as accessory minerals. Beidellite has been reported near here (MC - p. 72).

Prince Mines

This mine consists of a series of prospect pits located in South Portal Canyon, 0.5 mile west of San Francisquito Canyon Road.

Graphite is found here as flakes and masses in graphite schist. Muscovite and mariposite occur here in a thin bed of talc-sericite schist. Tremolite xls. were found along the contact between the aplite dikes and the schist. Sillimanite has been reported in these schists (MC - p. 299). Magnesite has been reported to occur here in a 3 foot seam in serpentine (MC - p. 212).

South Portal of the LA Aqueduct Tunnel

The south portal of the Los Angeles Aqueduct Tunnel is located in South Portal Canyon west of San Francisquito Canyon Road.

The rock taken from the tunnel consists mostly of quartz diorite. The usual accessory minerals are hornblende, biotite and sphene xls. (up to 6 mm.).

Massive epidote is common here as a result of saussuritization.

San Francisquito Pass

Sapphire-blue pebbles of corundum have been reported as float from San Francisquito Pass (MC - p. 131).

Double Eagle Mine

The Double Eagle Mine is located on the north side of Bouquet Reservoir about 0.1 mile north of the Spunky Canyon Road. The old dump is readily seen from the road.

Gold occurred here in quartz-calcite veins which cut gneiss. This gneiss has been invaded by quartz diorite. The augite in the quartz diorite has been altered to uralite. The wall rock next to the quartz veins has been altered to a talc-like mineral. In addition, pyrite has been introduced from the veins into the surrounding rocks, forming megascopic cubes in the gneiss and quartz diorite.

REGION NORTH OF THE SAN ANDREAS FAULT

The region north of the San Andreas fault can be divided roughly into 3 areas: Portal Ridge, Table Mountain-Blue Ridge, and the Mojave Desert.

Portal Ridge is a narrow ridge which is bordered by the San Andreas fault on the south and by the Antelope Valley on the north, and extends westward from Palmdale almost to Gorman. Actually Portal Ridge is the name for only a small segment of this range of hills, but is used here for lack of a better name.

The geology of the Portal Ridge can be divided into 2 types. The Sierra Pelona schist and a stock of quartz monzonite. These two rock types are separated by the Hitchbrook Ranch fault (Wallace, 1949). The Sierra Pelona schist has already been described in the section on the Soledad Basin. In this area the Sierra Pelona has been prospected for gold, steatite, and manganese. The quartz monzonite stock extends northwest from the Hitchbrook Ranch fault. Within the quartz monzonite there are numerous roof pendents of marble, gneiss, and schist. These roof pendents later were invaded by numerous dikes of aplite and pegmatite with quartz veins. The gold mines of the Neenach district are associated with the quartz veins and pegmatite dikes in the roof pendants. The western edge of this region is covered by Tertiary and Quarternary sediments belonging to the Ridge Basin area which has been described by Crowell (1954).

Table Mountain is a high ridge which runs northwest. It is bounded on the north by the Mojave Desert, and is bounded on the south by the San Andreas fault which runs through the ski resort of Big Pines. To the northwest, Table Mountain becomes a

low ridge known as Holcomb Ridge. This region is essentially a large granite stock with numerous roof pendants of marble, dioritic gneisses, and mica schists (Noble, 1954, p. 39).* The only real production of limestone in the county has come from this area. Blue Ridge, which lies just to the south of Table Mountain, lies between the San Andreas and the San Jacinto fault zones. This ridge is a fault sliver of the Sierra Pelona schist. Also lying between these two major fault zones but to the northwest are Pinyon Ridge and the Punchbowl. Pinyon Ridge is a granitic stock, while the Punchbowl is a down-dropped fault block containing portions of the marine Martinez (Paleocene) formation and it is overlain by the Punchbowl (Miocene) formation. As we move in this zone to the northwest, these formations give way to the Vasquez (Oligocene) group and near Palmdale to the Anaverde (Pliocene) formation. The latter contains gypsiferous beds which were mined west of Palmdale.

The Mojave Desert occupies most of the region north of the San Andreas fault, and is bounded on the south by Portal Ridge and Table Mountain. It is essentially an intermountain basin which is being filled with continental sediments. In the center of this basin, typical desert playa lakes are being formed like Rosemond and Rodger's dry lakes. A few erosional remnants stick out above the alluvium. These are either masses of volcanics or remnants of the Jurassic (?) quartz monzonites stocks. The latter are well-developed in the northeastern part of the county and contain numerous roof pendants of gneiss, and other metamorphics. Farther to the east in San Bernardino County, these roof pendants have

* Geology summarized from Noble (1954)

produced many deposits of scheelite.

The geologic history of the region probably began in the Pre-Cambrian with the deposition of extensive amounts of marine sediments. These sediments were intruded by stocks of granite and quartz monzonite in the Jurassic (?) which metamorphosed the sediments into schists, gneisses and marbles. Since then, the region has been deeply eroded, leaving numerous roof pendants of the metamorphosed sediments set in the granitics. During the Tertiary, extensive deposition of sediments again occurred in the region. First, the marine beds of the Martinez (Paleocene) formation were deposited. Unconformably above these the non-marine beds and volcanics of the Vasquez (Oligocene) group, and the non-marine beds of the Punchbowl (Miocene) formation were deposited. Later these sediments were covered by the continental sediments of the Anaverde (Pliocene) formation.

Since the deposition of all these sediments, the area has been uplifted along the north side of the San Andreas to form a series of ridges. These ridges have been extensively eroded, leaving only the more resistant basement rocks. However, some of the original sediments which covered the area may be seen where they have been down-dropped between the San Andreas and San Jacinto faults, and protected. Today these ridges are undergoing extensive erosion with deposition of the materials in the Mojave basin.

Big Chief Mine

The Big Chief Mine is located at the end of the road in Adams Canyon. The Adams Canyon Road starts 0.2 mile east of 224th Street West on the Los Angeles

Aqueduct Road.

Gold was mined here from quartz veins associated with a quartz-monzonite pegmatite which intrudes quartz monzonite. The quartz-monzonite pegmatite is composed of pink microcline xls., white albite-andesine, biotite xls. which alter to chlorite, quartz, and small amounts of magnetite, garnet and sphene xls. The surrounding rock has been pyritized with very small crystals of pyrite.

Newa Mines

The Newa Mines are located 0.3 mile east of 224th Street West and 0.2 mile south of the Los Angeles Aqueduct.

Free gold and silver were found in quartz veins which strike N 25-50° W and dip from vertical to 45° SW (Gay and Hoffman, 1954, p. 500). These veins cut decomposed Jurassic (?) quartz monzonite. The quartz veins have altered the wall rocks to sericite (?) and introduced pyrite as megascopic crystals, some of which has altered, forming hematite stains.

Brite Lease

The old Brite lease is located 0.3 mile west of the Rivera and is located on the south edge of the Newa porperty.

Free gold was found here in quartz veins which cut marble and biotite-quartz-muscovite schist. These veins can be traced from those of the Newa Mines (Gay and Hoffman, 1954, p. 500). The veins have altered the wall rocks along the contact to sericite (?). Hornblende xls. and small pyrite xls. have been found along this contact. The quartz veins contain small amounts of hematite, free gold, and pyrite. The veins are associated here

with alkali-granite pegmatite which contain biotite xls. and occasional garnets. It resembles texturally the intrusives at the Big Horn Mine.

Rivera Mines

Free gold was found here in quartz veins which cut quartz-feldspar-biotite schist, syenite and marble. The schist and marble have been pyritized and the wall rock has been converted to sericite (?). A small amount of graphite was found with the quartz, and epidote with the syenite.

The Rivera Mines are located 0.2 mile west of the Gold Dyke in the main canyon, and on both sides of the road.

Gold Dyke

The Gold Dyke, which is part of the Rivera Mines, is located about 0.3 mile south of the Los Angeles Aqueduct and about 0.8 mile east of 224th Street West.

Small specks of free gold were found here in a syenite pegmatite which has intruded quartz-feldspar-biotite schist. The syenite pegmatite is composed almost entirely of alkali feldspar with minor amounts of soda-lime feldspar, biotite which alters to chlorite, magnetite, and manganese stains.

Amargosa #1

This manganese prospect is located on Ritter Ridge north of Elizabeth Lake Canyon Road and 0.5 mile west of 25th Street West, Palmdale.

A lens of manganese-bearing silicate rocks are found here in the Sierra Pelona

schist. Minerals found here include spessertite garnet xls. (up to 3 mm.), fine fibrous amphibole asbestos and psilomelane which has altered from rhodonite.

Ritter Ridge Gold Prospect

This prospect is located in a small canyon 2.9 miles west of 25th Street West, Palmdale and 0.7 mile east of a transmission line and 0.5 mile north of Elizabeth Lake-Pine Canyon Road on Ritter Ridge.

Quartz xls. were found here in cavities in quartz lenses in the albite-chlorite schists of the Sierra Pelona series. Graphite and actinolite xls. were found in the nearby rocks. Very small amounts of pyrite and limonite pseudomorphs after pyrite were found here in gneiss.

Ritter Ridge Talc Prospect

This prospect is located in a valley on Ritter Ridge, 1.4 miles west of 25th Street West, Palmdale and 0.4 mile north of Elizabeth Lake-Pine Canyon Road. The valley lies over the ridge which lies along the north side of the highway.

Nice foliated talc and actinolite xls. are found here in the schists of the Sierra Pelona series.

Amargosa #2

These manganese prospects are located on Ritter Ridge north of Elizabeth Lake Canyon Road and 4.0 miles west of 25th Street West, Palmdale. It is also 1.1 miles NE of the intersection of the transmission line and Elizabeth Lake Canyon Road.

Manganese minerals are found here in

silicate-rich lenses in the schists of the Sierra Pelona series. Minerals found here include nice rhodonite, psilomelane which has altered from the rhodonite, quartz, and talc.

Quartz Hill

Several lenses of bull quartz are found in albite-chlorite-muscovite schist of the Sierra Pelona series near the top of Quartz Hill (west of Palmdale) by the water tank. The hill is covered extensively by quartz float.

Alpine Gypsum Deposit

These workings are scattered along the ridge north of the Palmdale Reservoir and 1 mile west of the Sierra Highway (U. S. 6).

The gypsum found here is mostly massive and is commonly mixed and interbedded with fine sandstone. The gypsiferous beds were mined from open cuts made in the Pliocene Anaverde formation (Wallace, 1949).

Nickle Greenstone Quarry

This rock quarry is located 0.5 mile off the road to Little Rock Dam and 0.1 mile north of the transmission line. The dirt road to the quarry is located 0.4 mile north of the transmission line on the Little Rock Dam Road.

A bed of basalt is found here which has altered on the surface to a green chlorite. Fractures in these volcanics are filled with small amounts of silica. Stone from this quarry has been used for roofing granules.

Palm Copper Mine

This small copper prospect is located about 2 miles SE of the intersection of Pearblossom Highway and 82nd Street East, Palmdale in Little Rock.

Chalcopyrite, chalcocite, cuprite, and malachite are found along veins in shears in a biotite diorite.

Amercal Limestone Quarry

This quarry is located in Grandview Canyon 0.5 mile SE of Largo Vista Boulevard, north of the Pearblossom Highway. The marble was mined for roofing granules; the marble was ground at a mill just south of the workings on Largo Vista Boulevard. Pits in the bed of marble are scattered for 0.5 mile up the canyon.

Minerals found in the marble include: tremolite asbestos, serpentine which has altered from olivine, and quartz.

Big Pines #1

This locality is found on a ridge about 0.2 mile east of the Smithsonian Observatory at the 7300 foot elevation and above the road which follows the ridge on Table Mountain.

At this point a biotite granite has intruded the marble producing a contact zone. Epidote, sphene and augite can be found in the granite. Phlogophite, serpentine pseudomorphs after olivine (3 mm.) and deep green spinel (2 mm.), which appear black in the hand specimen, are found in the marble.

Big Pines #2

This locality is on the ridge forming Table Mountain. 0.9 mile east of the Smithsonian Observatory at the 7200 foot elevation near the head of Le Montaine Creek.

Minerals found in the marble include: diopside, epidote, and small specks of graphite (½ mm.).

Muroc Silica Quarry

The Muroc Silica Quarry is located on Ave. J east of 170th St. East in Lancaster.

Bull quartz is reported to have occurred here in quartz diorite, which is in contact with gneiss. The rock-forming minerals here are: soda-lime and alkali feldspars, quartz, with the accessory minerals biotite and sphene xls.

Rafferty Prospect

This prospect is located near a dirt road which is 1 mile north of Avenue M on a road 6.5 miles east of 180th Street East in Lancaster.

Autunite with hydrothermal clay and quartz is found disseminated in granite and aplite dikes (Walker, et. al, 1956, p. 12).

Avenue C Mine

This mine is reached by a dirt road which leads SE from the intersection of Avenue B and 200th Street East in Lancaster. This road goes 2 miles, then turn north on a road which winds over a ridge and onto a plain that dips gently to the north. Take this road for 1.4 miles and turn east on a side road for 0.2 mile to the mine.

This may have been an old gold mine along quartz veins which cut granite. Minerals found here include goethite pseudomorphs after pyrite in quartz, and malachite. Manganese staining is common and chlorite forms along shear planes. This may be the Lookout Lode (Walker, et. al, 1956, p. 12), in which chalcopyrite was reported.

Avenue B Mine

The Avenue B Mine is located 0.9 mile NE of the intersection of Avenue B and 200th Street East in Lancaster.

Gold was prospected for here in quartz veins in the quartz diorite. The area here seems to be composed of a series of composite dikes ranging from quartz monzonite and quartz diorite to granite in composition. Goethite pseudomorphs after pyrite, calcite xls., and malachite were found here. Epidote is common as a result of saussuritization. Dendritic wad is associated with the malachite.

PUENTE HILLS

Pomona Incinerator

This locality is located on the west side of Pomona where Fifth Street enters the Puente Hills (east side of Elephant Hill) at Roselawn Avenue.

Red ocherous hematite is found in chert filled seams in a volcanic breccia. In a road cut a short distance west of here on Fifth Street, jarosite is found as fracture fillings in an arkosic sandstone which is characterized by dark sand grains.

Puente Hills Near Pomona Boulevard

On the hillside where the railroad passes closest to Elephant Hill between Pomona and Spadra, sanidine occurs here as white megascopic xls. in a rhyolite flow. Tridymite has been reported as a microscopic constituent of these lavas (MC - p. 333).

Kellogg Hill

Corundum xls. have been reported on Kellogg Hill (PC - Jack Schwartz).

Featherstone Insulation Quarry

Nearly pure diatomaceous earth in shales belonging to the Monterey type is found just north of the Covina Hills Road, 1.5 miles east of Grant above the intersection of Rancho El Encino Drive and Rancho Los Cerritos Road.

Mineral Index

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
	PALOS VERDES HILLS				
1	Point Firmin	San Pedro	3	33° 42' 19" 118° 19' 30"	
2	Livingston Quarry	San Pedro	3	33° 44' 32" 118° 21' 50"	
3	Long Point	Redondo Beach	4	33° 44' 20" 118° 23' 37"	
4	Road Cut on Crest Road	Redondo Beach	4	33° 44' 47" 118° 23' 49"	
5	Crenshaw Boulevard and Crest Road	Torrance	4	33° 45' 41" 118° 21' 41"	
6	Quarry on Via Subida	San Pedro	4	33° 44' 35" 118° 19' 31"	
7	Basement Complex of the Palos Verdes Hills	Torrance	5	33° 45' 55" 118° 20' 18"	
8	Road Cut on Narbonne Avenue	Torrance	5	33° 46' 50" 118° 19' 15"	
9	Dicalite Quarry	Torrance	5	33° 47' 38" 118° 21' 00"	
10	Malaga Cove	Torrance	6		
	SANTA CATALINA ISLAND				
11	Renton Mine	Santa Catalina East	7	33° 19' 23" 118° 18' 47"	
12	Small Hill Mine	Santa Catalina East	7	33° 19' 38" 118° 18' 51"	
13	Quarry Mine	Santa Catalina East	8	33° 19' 46" 118° 18' 28"	

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
14	Pebble Beach Quarry	Santa Catalina East	8	33° 20' 10" ? 118° 18' 30" ?	
15	Connolly Pacific Quarry	Santa Catalina East	8	33° 19' 40" 118° 18' 12"	
16	Silver Canyon	Santa Catalina South	8		
17	Middle Ranch Canyon	Santa Catalina South	8		
18	Little Harbor and Vicinity	Santa Catalina North	9		
19	Los Angeles City Quarry	Santa Catalina North	9	33° 26' 24" 118° 27' 54"	
20	Empire Quarry	Santa Catalina North	10		
21	Empire Landing and Vicinity	Santa Catalina North	10		
22	North of Orizaba Peak	Santa Catalina North	10		
23	Old Soapstone Quarry	Santa Catalina North	10		
24	Vicinity of Old Soapstone Quarry	Santa Catalina North	11		
25	Black Jack Mine	Santa Catalina North	11	33° 23' 20" 118° 24' 06"	
26	East of Bullrush Canyon		11		
27	East of White's Landing	Santa Catalina East	12		

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
28	Vicinity of Buffalo Springs Weather Station	Santa Catalina North	12		
29	East of Avalon	Santa Catalina East	12		
30	Miscellaneous		12		
	SANTA MONICA MOUNTAINS				
31	Above Tunnel Near Griffith Observatory	Hollywood	15	34° 07' 26" 118° 17' 59"	Center S½ Sec. 36, T 1N, R 14W.
32	N-5	Burbank	15	34° 08' 06" 118° 18' 19"	
33	N-11	Burbank	15	34° 07' 37" 118° 17' 58"	
34	N-10	Burbank	15	34° 08' 08" 118° 19' 02-07"	Center S½ S½ Sec. 26, T 1N, R 14W.
35	N-2	Hollywood	16	34° 07' 18" 118° 17' 42"	
36	B-1	Burbank	16	34° 09' 05" 118° 19' 20"	
37	N-12	Burbank	16	34° 09' 06" 118° 18' 56"	
38	N-9	Hollywood	16	34° 07' 04" 118° 20' 17"	Center W½ W½ NE¼ NW¼ Sec. 3, T 1S, R 14W.
39	N-9A	Hollywood	17	34° 07' 15" 118° 20' 25"	SW¼ SW¼ Sec. 34, T 1N, R 14W.
40	N-3	Hollywood	17	34° 06' 52" 118° 20' 11"	Center SE¼ NW¼ Sec. 3, T 1S, R 14W.

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
41	N-1	Hollywood	17	34° 06' 44" 118° 20' 09"	Center of southern boundary SE¼ NW¼ Sec. 3, T 1S, R 14W.
42	N-4	Hollywood	17	34° 07' 00" 118° 20' 31"	W½ S½ NW¼ NW¼ Sec. 3, T 1S, R 14W.
43	N-31	Hollywood	17	34° 06' 43" 118° 20' 43"	Center W½ W½ Sec. 4, T 1S, R 14W.
44	N-21	Hollywood	18	34° 06' 37" 118° 21' 33"	Center W½ S½ NW¼ SW¼ Sec. 4, T 1S, R 14W.
45	N-22	Hollywood	18	34° 06' 34" 118° 21' 26"	South. boundary E½ S½ NW¼ SW¼ Sec. 4, T 1S, R14W
46	N-14	Hollywood	18	34° 06' 53" 118° 21' 24"	Bound. between SE¼ and SW¼ of NW¼ Sec.4,T1S,R14W
47	N-29	Hollywood	18	34° 07' 02" 118° 21' 30"	Near center NW¼ NW¼ Sec. 4, T 1S, R 14W.
48	N-7	Burbank	18	34° 07' 34" 118° 22' 13-15"	Edge of north. bound. Sec. 32, T 1N, R 14W.
49	N-8	Burbank	19	34° 07' 32" 118° 22' 03"	Northern edge Sec. 32 T 1N, R 14W.
50	N-28	Beverly Hills	19	34° 08' 11" 118° 22' 22"	Center S½ Sec. 31 T 1N, R 14W.
51	N-15	Beverly Hills	19	34° 06' 59" 118° 23' 53"	Center S½ NE¼ NE¼ Sec. 1 T 1S, R 15W.
52	N-6	Van Nuys	19	34° 07' 38" 118° 24' 04"	Near center N boundary NE¼ Sec. 36, T 1N, R 15W.
53	N-24	Beverly Hills	19	34° 06' 08" 118° 24' 03"	Near center NE¼ Sec. 12 T 1S, R 15W.
54	N-23	Beverly Hills	20	34° 05' 41" 118° 24' 03"	Near center SE¼ Sec. 12 T 1S R 15W.

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
55	N-19	Beverly Hills	20	34° 05' 28" 118° 24' 17"	Center W½ S½ SW¼ SW¼ SE¼ Sec. 12, T 1S, R 15W.
56	N-18	Beverly Hills	20	34° 05' 33" 118° 24' 34"	Center S½ S½ Sec. 12 T 1S, R 15W.
57	N-27	Beverly Hills	20	34° 05' 09" 118° 23' 24"	Near center NW¼ Sec. 7 T 1S, R 14W.
58	N-20	Beverly Hills	20	34° 05' 53" 118° 24' 54"	Center E½ E½ Sec. 11 T 1S, R 15W.
59	N-26	Beverly Hills	20	34° 06' 35" 118° 24' 58"	NW¼ SW¼ Sec. 1 T 1S, R 15W.
60	Head of Higgins Canyon	Beverly Hills	21		
61	N-16	Beverly Hills	21	34° 06' 42" 118° 24' 54"	NW¼ SW¼ Sec. 1 T 1S, R 15W.
62	N-17	Beverly Hills	21	34° 06' 33" 118° 24' 33"	Center SW¼ Sec. 1 T 1S, R 15W.
63	N-25	Beverly Hills	21	34° 06' 38" 118° 25' 23"	SW¼ Sec. 2 T 1S, R 15W.
64	Encino Creek	Van Nuys	21	34° 08' 38" 118° 29' 32"	
65	West of Encino Reservoir	Canoga Park	22	34° 09' 00" 118° 31' 06"	
66	Transmission Line Road West of Encino Reservoir	Canoga Park	22	34° 08' 11" 118° 31' 33"	
67	Sepulveda Canyon	Beverly Hills	22		
68	Lake Malibu #1	Point Dume	22	34° 06' 28" 118° 45' 31"	Center SW¼ Sec. 3 T 1S, R 18W.

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
69	Lake Malibu #2	Point Dume	22	34° 06' 42" 118° 46' 04"	Center E½ Sec. 4 T 1S, R 18W.
70	Arroyo Sequit	Triunfo Pass	23	34° 05' 14" 118° 54' 21-43"	Center N½ NE¼ Sec. 18 T 1S, R 19W.
71	Sunset Boulevard Near Beach	Topanga	23	34° 02' 24" 118° 33' 09"	
72	Rancho La Brea	Hollywood	23		

SAN GABRIEL MOUNTAINS

73	Fiber Queen Asbestos Mine	San Fernando	26	34° 20' 32" 118° 27' 29"	Center S½ Sec. 16 T 3N, R 15W.
74	Limekiln Canyon Dolomite Deposit	San Fernando	26	34° 19' 41" 118° 23' 10"	Center N½ S½ Sec. 19 T 3N, R 14W.
75	Kagel Canyon Gold Prospect	Sunland	27	34° 19' 20" 118° 22' 03"	Near center N½ N½ N½ Sec. 29, T 3N, R 14W.
76	Kagel Canyon Graphite Deposit	Sunland	27	34° 19' 17" 118° 21' 18"	Center N½ NW¼ Sec. 28 T 3N, R 14W.
77	Lovell Mine	Sunland	27	34° 18' 46" 118° 21' 19"	Center SW¼ Sec. 28 T 3N, R 14W.
78	Little Nugget	Sunland	27	34° 19' 05" 118° 19' 45"	Center NE¼ Sec. 27 T 3N, R 14W.
79	O-19	Sunland	28	34° 19' 25" 118° 20' 24"	Center S½ SW¼ SW¼ Sec. 22, T 3N, R 14W.
80	Lincoln Service	Sunland	28	34° 19' 07" 118° 20' 17"	Center NW¼ Sec. 27 T 3N, R 14W.
81	Hansen Dam Rock Quarry	Sunland	28	34° 19' 00" 118° 19' 24"	S½ NW¼ Sec. 26 T 3N, R 14W.

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
82	Haskins Group	Sunland	28	34° 18' 56" 118° 20' 48"	SW¼ NE¼ Sec. 28 T 3N, R 14W.
83	O-18	Sunland	29	39° 19' 11" 118° 20' 37"	Center of boundary between NW¼ Sec. 27 & NE¼ Sec. 28, T 3N, R 14W.
84	Ramelli Limestone	Sunland	29	34° 20' 25" 118° 21' 21"	Center SW¼ Sec. 16 T 3N, R 14W.
85	Black Lode	Sunland	29	34° 20' 22-24" 118° 21" 30-42"	Center SE¼ Sec. 17 T 3N, R 14W.
86	LT #2	Sunland	30	34° 20' 38" 118° 21' 40"	Center N½ NE¼ NE¼ SE¼ Sec. 17, T 3N, R 14W.
87	O-68	San Fernando	30	34° 21' 00" 118° 22' 48"	Center NE¼ NE¼ Sec. 18 T 3N, R 14W.
88	Baughman Limestone Deposit	San Fernando	30	34° 21' 10" 118° 23' 12"	Center S½ S½ Sec. 7 T 3N, R 14W.
89	Ore Hill Mine	Sunland	30	34° 21' 40" 118° 19' 54"	Center SW¼ NE¼ Sec. 10 T 3N, R 14W.
90	Denver-Indicator	Sunland	31	34° 21' 42" 118° 19' 34"	NW¼ SE¼ NE¼ Sec. 10 T 3N, R 14W.
91	Alexander Prospect	Sunland	31	34° 21' 48" 118° 18' 14"	Near center NW¼ Sec. 12 T 3N, R 14W.
92	Pacoima Canyon Pegmatite	Sunland	31	34° 22' 20" 118° 16' 14"	Center W½ W½ Sec. 5 T 3N, R 13W.
93	Mt. Gleason Gold Prospects	Mt Gleason	32	34° 22' 36" 118° 10' 36"	Sec. 31, 4N, R 12W.
94	Grassy Canyon	Trail Canyon	32	34° 23' 28" 118° 16' 36"	NE¼ Sec. 31, T 4N, R 13W.
95	Apex Silica	Trail Canyon	32	34° 23' 44" 118° 16' 18"	Center SW¼ SW¼ Sec. 29 T 4N, R 13W.

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
96	Rattlesnake Canyon	Little Tujunga	33		SW¼ Sec. 36 T 4N, R 14W.
97	Dorothy Ann	Trail Canyon	33	34° 23' 40" 118° 16' 45"	Center boundary, Sec. 30-31, T 4N, R 13W.
98	Pop Shot Mine	Sunland	33	34° 22' 19" 118° 21' 06"	Center S½ Sec. 4 T 3N, R 14W.
99	Acme Mine	San Fernando	33	34° 22' 27" 118° 23' 59"	Center E½ E½ Sec. 1 T 3N, R 15W.
100	Live Oak Mines	Little Tujunga	34	34° 22' 47" 118° 23' 47"	Center W½ NW¼ NW¼ Sec. 6, T 3N, R 14W.
101	Crail and Zanteson Gold Prospect	Lang	34	34° 25' 17" 118° 21' 53"	Near center NE¼ Sec. 20 T 4N, R 14W.
102	Iron Blossom Deposit	Lang	34	34° 24' 36" 118° 20' 38"	SE¼ SE¼ SE¼ Sec. 21 T 4N, R 14W.
103	Eagle Claim	Mt. Emma	35	34° 25' 18" 118° 05' 38"	Center NW¼ NW¼ Sec. 24 T 4N, R 12W.
104	Loomis Mine	Alder Creek	35	34° 20' 59" 118° 03' 33"	Center NW¼ Sec. 17 T 3N, R 11W.
105	Falcon Mine	Alder Creek	35	34° 22' 26" 118° 04' 59"	Sec. 1, T 3N, R 12W.
106	Three Pines Mine	Mt. Gleason	36	34° 20' 38" 118° 07' 20"	T 3N, R 12W.
107	Black Crow	Alder Creek	36	34° 20' 28" 118° 05' 57"	Sec. 14, T 3N, R 12W.
108	Black Cargo	Alder Creek	37	34° 20' 50" 118° 05' 37"	Sec. 15, T 3N, R 12W.
109	Monte Cristo Mine	Alder Creek	37	34° 21' 12" 118° 05' 12"	Sec. 15, T 3N, R 12W.

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
110	West Vein Lease	Alder Creek	37	34° 21' 14" 118° 05' 25"	Sec. 15, T 3N, R 12W.
111	Mt. Lowe #1	Pasadena	37	34° 13' 07" 118° 11' 20"	Center SE¼ NE¼ Sec. 36 T 2N, R 13W.
112	San Rafael Hills	Pasadena	38	34° 10' 43" 118° 11' 48"	
113	Verdugo Mtns.		38		
114	Lang Canyon		38		
115	Dawn Mine	Pasadena	38	34° 13' 30" 118° 07' 48"	Sec. 27, T 2N, R 12W.
116	Loris Mine	Pasadena	38	34° 13' 12" 118° 07' 56"	Center NW¼ NW¼ Sec. 34 T 2N, R 12W.
117	Winter Creek Prospect	Mt. Wilson (7½)	39	34° 12' 04" 118° 01' 17"	Near center Sec. 3 T 1N, R 11W.
118	Sierra Vista	Azusa	39		Sec. 18, T 1N, R 10W.
119	Felix Fluorite Mine	Azusa	39	34° 09' 02" 117° 54' 02"	Center S. boundary SW¼ Sec. 23, T 1N, R 10W.
120	Kelsey Mine	Azusa	39	34° 11' 27" 117° 53' 10-15"	NE¼ Sec. 12 T 1N, R 10W.
121	Heaton Flats	Glendora	40	34° 14' 30" 117° 45' 40"	
122	Baldora Mine	Mt. San Antonio	40	34° 16' 38" 117° 42' 06"	Sec. 10, T 2N, R 8W.
123	Eagle Mine	Mt. San Antonio	40	34° 16' 56" 117° 41' 44"	Sec. 2, T 2N, R 8W.

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
124	Gold Dollar Mine	Mt. San Antonio	41	34° 17' 07" 117° 41' 56"	Sec. 2, T 2N, R 8W.
125	Allison Mine	Mt. San Antonio	41	34° 16' 18" 117° 43' 40"	Sec. 8, T 2N, R 8W.
126	Stanley-Miller	Mt. San Antonio	41	34° 17' 39" 117° 44' 17"	Sec. 5, T 2N, 8W.
127	Iron Fork of San Gabriel	Mt. San Antonio	42	34° 17' 58" 117° 44' 38"	
128	San Dimas Gravel Quarry	Glendora	42	34° 08' 05" 117° 47' 51"	Center N½ NW¼ Sec. 35 T 1N, R 9W.
129	San Dimas Barite	Glendora (?)	42		
130	Gravel Pit North of Claremont	Ontario	42	34° 07' 16" 117° 44' 51"	N½ N½ NW¼ Sec. 5 T 1S, R 8W.
131	Cascade Canyon	Mt. Baldy	42	34° 12' 43" 117° 39' 36"	SW¼ Sec. 31 T 2N, R 8W.
132	Big Horn Mine	Mt. San Antonio	43	34° 21' 24" 117° 44' 38"	Sec. 7, 8, T 3N, R 8W.
133	Mine Gulch	Mt. San Antonio	43	34° 20' 43" 117° 43' 46"	
134	Prairie Fork of the San Gabriel	Mt. San Antonio	43	34° 20' 21" 117° 40' 42"	Sec. 15, 23 T 3N, R 8W.
	SOLEDAD BASIN				
135	Free Cuba Mine	Acton	46	34° 27' 28" 118° 11' 50"	Center SW¼ Sec. 1 T 4N, R 13W.
136	Emma Copper Mine	Ravenna	46	34° 26' 44" 118° 12'57"	Center W½ Sec. 11 T 4N, R 13W.

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
137	Acton Rock Quarry	Ravenna	46	34° 27' 46" 118° 12' 25"	Center NE¼ Sec. 2, T 4N, R 13W.
138	Ravenna #1	Ravenna	47	34° 28' 48" 118° 13' 32"	Center N. Bound. W½ NE¼ Sec. 34, T 5N, R 13W.
139	Hi-Grade Mine	Ravenna	47	34° 29' 19" 118° 13' 10"	Center bound. bet. Sec. 26 & 27 T 5N, R 13W.
140	Puritan Mine	Red Rover	47	34° 30' 29" 118° 14' 48"	Center N½ N½ Sec. 21 T 5N, R 13W.
141	Blue Goose	Red Rover	48	34° 30' 49" 118° 14' 59"	Center SW¼ Sec. 16 T 5N, R 13W.
142	Governor Mine	Red Rover	48	34° 30' 26" 118° 12' 22"	Center NE¼ Sec. 23 T 5N, R 13W.
143	Mine South of Governor	Red Rover	48	34° 30' 02" 118° 12' 32"	Center W½ SE¼ Sec. 23 T 5N, R 13W.
144	Bradshaw Lease	Red Rover	49	34° 30' 06" 118° 12' 51"	Center N½ SW¼ Sec. 23 T 5N, R 13W.
145	Red Rover Mine	Red Rover	49	34° 30' 20-30" 118° 13' 12-17"	E½ NE¼ Sec. 22 T 5N, R 13W.
146	Hilltop Mine	Red Rover	49	34° 30' 55" 118° 17' 41"	Center SE¼ Sec. 13 T 5N, R 14W.
147	Toney Mine	Lang	50	34° 29' 43" 118° 20' 48"	Center NE¼ NE¼ Sec. 28 T 5N, R 14W.
148	Spanish Mine	Lang	50	34° 29' 43" 118° 21' 26"	Center W½ Sec. 28 T 5N, R 14W.
149	Champion Road #1	Lang	50	34° 29' 46" 118° 21' 06"	Center N½ N½ N½ Sec. 28 T 5N, R 14W.
150	Champion Road #2	Lang	50	34° 29' 45" 118° 21' 18"	Center N½ N½ NW¼ Sec. 28 T 5N, R 14W.

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
151	Champion Mine	Lang	51	34° 29' 39" 118° 21' 37"	Center W½ W½ NW¼ Sec. 28 T 5N, R 14W.
152	Lang #1	Lang	51	34° 28' 31" 118° 19' 47"	Center S½ S½ NE¼ Sec. 34 T 5N, R 14W.
153	Sterling Borax Mine	Lang	51	34° 28' 54" 118° 21' 55"	N½ NE¼ NE¼ Sec. 32 T 5N, R 14W.
154	Basalt South of Borax Mine	Lang	52	34° 28' 47" 118° 21' 53"	Center N½ NE¼ Sec. 32 T 5N, R 14W.
155	Basalt North of Borax Mine	Lang	52	34° 29' 03" 118° 21' 55"	Center W½ SE¼ SE¼ Sec. 29, T 5N, R 14W.
156	Prospect West of Borax Mine	Lang	52	34° 28' 59" 118° 21' 28"	E½ SW¼ SW¼ Sec. 28 T 5N, R 14W.
157	Lang Gypsum Deposit	Lang	52	34° 29' 12" 118° 22' 48"	NE¼ SE¼ Sec. 30 T 5N, R 14W.
158	Mint Canyon Gravel Quarry	Lang	53	34° 29' 08" 118° 23' 21"	Center E½ SW¼ Sec. 30 T 5N, R 14W.
159	King David Mine and Vicinity	Red Rover	53	34° 32' 03" 118° 17' 41"	Center S½ NE¼ Sec. 12 T 5N, R 14W.
160	RR #1	Red Rover	53	34° 32' 18" 118° 17' 25"	Center E½ E½ NE¼ NE¼ Sec. 12, T 5N, R 14W.
161	Katz Soapstone Quarry	Red Rover	54	34° 31' 52" 118° 15' 32"	Center N½ SE¼ Sec. 8 T 5N, R 13W.
162	Gladys Mine	Bouquet Reservoir	54	34° 32' 35" 118° 18' 49"	Center SW¼ NE¼ SW¼ SE¼ Sec. 2, T 5N, R 14W.
163	Prospect Near Head of Mint Canyon	Bouquet Reservoir	54	34° 33' 19" 118° 18' 20"	Center W½ SW¼ NW¼ NW¼ Sec. 1, T 5N, R 14W.
164	Nativity Claim	Bouquet Reservoir	54	34° 31' 44" 118° 20' 03"	S½ NW¼ SW¼ SE¼ Sec. 10 T 5N, R 14W.

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
165	Paloma Blanca Mine	Bouquet Reservoir	55	34° 32' 56" 118° 19' 42"	Center E½ Sec. 3 T 5N, R 14W.
166	Across From Paloma Blanca Mine	Bouquet Reservoir	55	34° 32' 34" 118° 19' 01"	Near center S½ S½ Sec. 2 T 5N, R 14W.
167	Purple Sage	Bouquet Reservoir	55	34° 32' 05" 118° 22' 36"	Center SW¼ NW¼ Sec. 8 T 5N, R 14W.
168	Roselba Mine	Humphreys	55	34° 29' 32" 118° 24' 54"	Center E½ E½ NE¼ Sec. 26 T 5N, R 15W.
169	Texas, Bouquet, San Francisquito and Placerita Canyons	Newhall	56		
170	Silver King	Bouquet Reservoir	56	34° 31' 15" 118° 23' 25"	Center NW¼ Sec. 18 T 5N, R 14W.
171	Junction of Bouquet and Texas Canyons		56		
172	Bouquet Canyon (Pyle) Quarry	San Francis-quito	56	34° 31' 12" 118° 26' 46"	Center W½ SW¼ NW¼ Sec. 15, T 5N, R 15W.
173	Desert Stone Quarry #1	San Francisquito	56	34° 31' 32" 118° 26' 34"	Center S½ SE¼ SW¼ Sec. 10, T 5N, R 15W.
174	Desert Stone Quarry #2	San Francisquito	57	34° 32' 28" 118° 26' 21"	SW¼ SW¼ SE¼ Sec. 3 T 5N, R 15W.
175	BR #1	Bouquet Reservoir	57	34° 34' 52" 118° 22' 04"	SE¼ SE¼ NW¼ Sec. 28 T 6N, R 14W.
176	Hoffman Quarry	San Francisquito	57	34° 33' 37" 118° 27' 58"	SE¼ SE¼ Sec. 35 T 6N, R 15W.
177	Poteet Quarry	San Francisquito	58	34° 33' 29" 118° 26' 03"	Center NE¼ NE¼ Sec. 3 T 5N, R 15W.

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
178	Del Sur Ridge Serpentine	San Francisquito	58	34° 33' 48" 118° 26' 00"	Center NE¼ Sec. 3 T 5N, R 15W.
179	Golden Rock Quarry	San Francisquito	58	34° 33' 29" 118° 26' 14"	Center NW¼ NW¼ NE¼ Sec. 3, T 5N, R 15W.
180	Perry Quarry	San Francisquito	58	34° 33' 07" 118° 26' 45"	Center SW¼ SW¼ Sec. 3 T 5N, R 15W.
181	Deem Flagstone Quarry	San Francisquito	58	34° 34' 04" 118° 27' 38"	Sec. 34, T 6N, R 15W.
182	Blue Goose Flagstone Quarry	Red Mountain	59	34° 31' 56" 118° 31' 45"	Center NE¼ SW¼ Sec. 11 T 5N, R 16 W.
183	Silver Sheen Flagstone Quarry	Red Mountain	59	34° 32' 15" 118° 31' 23"	Center NE¼ Sec. 11 T 5N, R 16W.
184	Vicinity of the old San Francis-quito Dam	Red Mountain	59	34° 32' 49" 118° 30' 37"	Center NE¼ SW¼ Sec. 1 T 5N, R 16W.
185	RR #4	Red Rover	59	34° 33' 36" 118° 16' 12"	SE¼ SE¼ SE¼ Sec. 32 T 6N, R 13W.
186	RR #5	Red Rover	60	34° 33' 56" 118° 15' 08"	Center bound. bet. sec. 33 & 34, T 6N, R 13W.
187	Towsley Canyon	Oat Mountain	60	34° 21' 11" 118° 34' 41"	Center S. Bound. W½ SE¼ Sec. 8, T 3N, R 16W.
188	Charlie Canyon Gypsum Deposit	Red Mountain	60	34° 33' 34" 118° 32' 05"	Sec. 35, T 6N, R 16W.
	LIEBRE			MOUNTAIN	
189	Gillette Mine	Redrock Mountain	61	34° 40' 33-37" 118° 39' 03-07"	Sec. 26, T 7N, R 17W.
190	Prospect Near Gillette Mine	Redrock Mountain	62	34° 40' 37" 118° 38' 55"	Sec. 26, T 7N, R 17W.

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
191	Piano Box Prospect	Redrock Mountain	62	34° 37' 54" 118° 38' 16"	T 6N, R 16W.
192	Burro Canyon #1	Redrock Mountain	62	34° 38' 45" 118° 37' 31"	
193	Burro Canyon #2	Redrock Mountain	62	34° 38' 41" 118° 37' 42"	
194	Burro Canyon #3	Redrock Mountain	63	34° 38' 38" 118° 37' 09-11"	
195	Black Diamond Mine	Hughes Lake	63	34° 39' 15" 118° 29' 20"	Near center SW¼ NE¼ Sec. 32, T 7N, R 15W.
196	Hughes Lake #1	Hughes Lake	63	34° 40' 04" 118° 28' 53"	SW¼ SW¼ NW¼ Sec. 28 T 7N, R 15W.
197	Western Graphite Mine	Hughes Lake	63	34° 39' 47" 118° 27' 42"	Center SW¼ Sec. 27 T 7N, R 15W.
198	Prince Mines	Hughes Lake	64	34° 37' 07" 118° 26' 31"	Sec. 11, T 6N, R 15W.
199	South Portal of L.A. Aqueduct Tunnel	Hughes Lake	64	34° 37' 56" 118° 26' 28"	NW¼ of Sec. 11 T 6N, R 15W.
200	San Francisquito Pass		65		
201	Double Eagle Mine	Bouquet Reservoir	65	34° 35' 26" 118° 21' 56"	Boundary between SE¼ and SW¼ Sec. 21 T 6N, R 14W.

REGION NORTH OF THE SAN ANDREAS FAULT

202	Big Chief Mine	Manzana	68	34° 44' 38" 118° 33' 36"	N½ NE¼ Sec. 34 T 8N, R 16W.
203	Newa Mines	Manzana	69	34° 45' 16-22" 118° 33' 20-22"	SE¼ NE¼ Sec. 27 T 8N, R 16W.

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
204	Brite Lease	Manzana	69	34° 45' 11" 118° 33' 17"	NE¼ NE¼ SE¼ Sec. 27 T 8N, R 16W.
205	Rivera Mines	Manzana	70	34° 45' 10" 118° 33' 04"	NW¼ SW¼ Sec. 26 T 8N, R 16W.
206	Gold Dyke	Manzana	70	34° 45' 06" 118° 32' 53"	NE¼ SW¼ Sec. 26 T 8N, R 16W.
207	Amargosa #1	Palmdale	70	34° 35' 41" 118° 11' 56"	W½ NW¼ NW¼ Sec. 29 T 6N, R 12W.
208	Ritter Ridge Gold Prospect	Red Rover	71	34° 35' 57" 118° 36' 47"	N½ NW¼ Sec. 24 T 6N, R 13W.
209	Ritter Ridge Talc Prospect	Palmdale	71	34° 35' 41" 118° 11' 56"	SW¼ NW¼ Sec. 19 T 6N, R 12W.
210	Amargosa #2	Del Sur	71	34° 36' 01" 118° 13' 09"	SW¼ NE¼ NE¼ NE¼ Sec. 23 T 6N, R 13W.
211	Quartz Hill	Del Sur	72	34° 38' 44" 118° 12' 06"	Center N. bound. N½ NE¼ NE¼ NE¼ Sec. 1 T6N,R13W.
212	Alpine Gypsum Deposit	Palmdale	72	34° 33' 50" 118° 07' 58"	Center SE¼ Sec. 34 T 6N, R 12W.
213	Nickle Greenstone Quarry	Pearland	72	34° 30' 01" 118° 02' 16"	Center S½ S½ S½ Sec. 21 T 5N, R 11W.
214	Palm Copper Mine	Cima Mesa (6')	72	34° 29' 50" 117° 57' 50"	NW¼ NE¼ Sec. 30 T 5N, R 10W.
215	Amercal Limestone Quarry	Mescal Creek (6')	73	34° 25' 00-06" 117° 45' 13-42"	SE¼ Sec. 19 T 4N, R 8W.
216	Big Pines #1	Mescal Creek (7½)	73	34° 22' 54" 117° 40' 40"	Center NE¼ NE¼ Sec. 2 T 3N, R 8W.
217	Big Pines #2	Mescal Creek (7½)	73	34° 22' 44" 117° 40' 01"	Center W½ SW¼ NE¼ Sec.1 T 3N, R 8W.
218	Muroc Silica Quarry	Hi Vista	73	34° 41' 30" 117° 49' 09"	S½ S½ Sec. 15 T 7N, R 9W.

No.	Locality	Quadrangle	Page	Lat. and Long.	Public Land Description
219	Rafferty Property	Adobe Mtn.	74	34° 40' 28" 117° 41' 00-22"	Sec. 26, T 7N, R 8W.
220	Ave. C Mine	Kramer SW	74	34° 49' 06" 117° 43' 06"	NW¼ Sec. 3 T 8N, R 8W.
221	Ave. B Mine	Mt. Mesa	74	34° 49' 00" 117° 45' 40"	Center Sec. 6 T 8N, R 8W.
	PUENTE HILLS				
222	Pomona Incinerator	San Dimas	75	34° 03' 08" 117° 47' 28"	Sec. 26 (?) T 1S, R 9W.
223	Puente Hills Near Pomona Boulevard	San Dimas	75	34° 03' 18" 117° 47' 42"	Sec. 26 (?) T 1S, R 9W.
224	Kellogg Hill		75		
225	Featherstone Insulation Quarry	San Dimas	75	34° 04' 37" 117° 50' 50"	Sec. 17, 20(?) T 1S, R 9W.

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