

NEVADA BUREAU OF MINES

VERNON E. SCHEID, DIRECTOR

REPORT 1

AN INVENTORY OF FLUORSPAR OCCURRENCES IN NEVADA

BY ROBERT C. HORTON

MACKAY SCHOOL OF MINES
UNIVERSITY OF NEVADA

1961

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by

Robert C. Horton

50 Cents

Mackay School of Mines
University of Nevada
Reno, Nevada
1961

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NEVADA BUREAU OF MINES

NEVADA MINING ANALYTICAL LABORATORY

Vernon E. Scheid, Director

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NEVADA BUREAU OF MINES REPORT

As with other technical organizations, the Nevada Bureau of Mines has been faced with rising costs in the preparation and printing of its publications by the letter-press process. The Bureau, for some time, has been studying less expensive ways of quickly publishing some of its studies; particularly the shorter and less complex ones. As an answer to this problem, the Bureau will publish by photo offset a companion series to its established Bulletin. The new series is named the NEVADA BUREAU OF MINES REPORT series. This publication is the first of the REPORT series.

The NEVADA BUREAU OF MINES REPORT series will include studies covering a wide range of subject matter concerning the mineral resources, geology, and mineral industry of Nevada. It is planned that papers published in the REPORT series shall be relatively short, as well as free from publishing complexities presented by some of the studies published in the Bureau's Bulletin series. The plain format, in which the REPORT series is published, was adopted in order to make timely information available to the mineral industry at the earliest possible date.

It is hoped that the savings to be realized, by the simplified preparation, processing, and printing methods used for the REPORT series, will enable the Nevada Bureau of Mines to publish a wider range of technical material and to increase the number of its publications, and thus improve its service to Nevada and the mineral industry.

Vernon E. Scheid, Director
Nevada Bureau of Mines

November 1961

Mackay School of Mines

University of Nevada

CONTENTS

Abstract.	1
Introduction.	2
Purpose and Scope.	2
Acknowledgements	2
Origin and Occurrence of fluorspar.	2
Marketing and Economics	3
Mining Activity	4
Classification of Nevada Fluorspar Deposits	6
Mesothermal Deposits	6
Union district, Nye County.	6
Fluorine district, Nye County	7
Wells Cargo mine, Lincoln County.	7
Miscellaneous	7
Epithermal Deposits.	8
Western Epithermal Fluorspar Belt	8
Quinn Canyon Range district	8
Fluorspar Occurrences by County	8
Churchill County	9
Clark County	10
Douglas County	11
Esmeralda County	11
Humboldt County.	11
Lander County.	12
Lincoln County	12
Mineral County	13
Nye County	16
Pershing County.	21
Washoe County.	24
White Pine County.	24
Fluorspar Occurrences as Gangue	25
References.	25
Index	28

ILLUSTRATIONS

Plate 1. Map showing location of Nevada fluorspar occurrences.	
.foldout inside rear cover.
Figure 1. Graph showing fluorspar production, imports, and consumption for Nevada and the United States	5

TABLES

Table 1. Comparison of the frequency and total production of Nevada fluorspar deposits with type of wall rock.	3
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ABSTRACT

Deposits of fluorite are found throughout Nevada in association with a wide variety of rocks. Fluorite is also a common gangue mineral in pyrometamorphic deposits and in Tertiary epithermal gold deposits.

Fluorspar deposits are concentrated in western Nevada in a north-south trending belt some 40 miles wide by 220 miles long. Within this belt are similar concentrations of mercury, antimony, iron, tungsten, and molybdenum. Commercial deposits of fluorspar are not restricted to western Nevada as some occur in the southern portion of the State.

Available evidence suggests that the most productive fluorspar deposits will be those associated with calcareous sedimentary rocks and having a genetic relationship with granitic intrusive rocks. Such deposits are classed as mesothermal deposits; those associated with Tertiary volcanic and intrusive rocks are classed as epithermal deposits.

The location, production, development, and geology of the individual fluorspar mines, prospects, and occurrences in Nevada are given in list form.

INTRODUCTION

Purpose and Scope

This report provides a short summary of the fluorspar occurrences in Nevada. The report briefly describes each known occurrence of fluorspar in Nevada and provides a summary of present knowledge based on all available information, published and unpublished, some of which has not been verified by field examination.

It is hoped that the report will serve as a stimulus toward further exploration for additional fluorspar deposits in the State. Any information on fluorspar occurrences acquired after publication of this report will be placed on file at the Nevada Bureau of Mines, where it will be available for examination. The author and the Bureau will appreciate receiving information about other occurrences of fluorspar in Nevada, as well as additional data or corrections for the occurrences described in this report.

Acknowledgements

Persons and firms interested in fluorspar mining in Nevada have contributed much valuable information to make this publication possible. Particularly generous in time and effort were the Kaiser Aluminum and Chemical Corporation; W. C. Peters, formerly of the Mineral Development Department, Food Machinery and Chemical Corporation; the U. S. Geological Survey; and the U. S. Bureau of Mines.

ORIGIN AND OCCURRENCE OF FLUORSPAR

Fluorspar, a nonmetallic aggregate or mass containing a sufficient quantity of fluorite (CaF_2) to be of commercial value, occurs in fissure veins in all types of rocks and in replacement bodies in reactive rocks, usually limestone or dolomite. Fluorite is also a common gangue mineral in metalliferous deposits. Fluorite is normally a hydrothermal mineral and most geologists believe that commercial deposits are derived from solutions accompanying the intrusion of igneous rocks. Although it is a nonmetallic mineral, fluorite is thus similar in its modes of occurrence to hydrothermal metalliferous deposits. Fluorspar is found also as a constituent of sedimentary rocks rich in phosphate, but never in concentrations great enough to warrant mining. Efforts are being made toward recovering the fluorine now wasted in phosphate processing plants and, if successful, large quantities of fluorine will become available.

Nevada fluorspar deposits are found in limestone, dolomite, shale, quartzite, rhyolite, andesite, and granitic rocks. Commercial deposits are limited to those occurring in limestone, dolomite, shale, and andesite. Table 1. lists the total number of mines and prospects, the total production, and the number of productive mines in comparison to the wall rock types.

The table suggests that, with the exception of mines having andesite wall rock, limestone or dolomite wall rocks are apparently necessary if substantial commercial production is to be expected. The production from deposits in granitic rocks is due almost entirely to the production of fluorspar as a by-product of a single tungsten mining operation.

The fluorspar deposits in volcanic rocks are limited usually to fissure-filling types. The deposition of commercial grade fluorspar ore in these rocks requires an abnormally open structure. Mineral deposits containing a few fractions of an ounce per ton, as in the case of gold, or a few percent of metal per ton can readily be deposited around breccia fragments within a fissure. But when

it is considered that, to be commercial, the fissure must contain several tens of percent of fluorite over a mineable width, the difficulty with which such deposits are formed is apparent.

Deposits in limestone and dolomite are formed either by replacement or by a combination of replacement and fissure filling. Because replacement results in the removal of much of the gangue material, mineable grade fluorspar ore is more common in replacement deposits than in fissure-filling deposits.

TABLE 1.

Comparison of the frequency and total production of Nevada fluorspar mines with type of wall rock.

Wall Rock Type	Number of Mines and Prospects	Total Production, Short Tons	Number of Producers
Limestone, dolomite, & rhyolite	8	13,000	4
Limestone, dolomite, & shale	9	92,000	6
Limestone & dolomite	4	12,000	1
Rhyolite	11	200	1
Andesite	9	156,000	4
Post Precambrian granitic rocks	10	2,200	2
Precambrian granitic rocks	2	5	1
Quartzite	1	0	0
Shale	1	0	0

MARKETING AND ECONOMICS

Fluorspar is marketed in three major grades: metallurgical, ceramic, and acid. Metallurgical-grade fluorspar, the lowest priced on the three, may be sold in the lump form or as gravel, artificial pellets, or fine flotation concentrates, and usually is required to contain a minimum of 60 effective units of fluorite. Effective units are determined by subtracting 2.5 units of CaF₂ from the total CaF₂ content for each unit of SiO₂ present.* Metallurgical-grade fluorspar is used as a fluxing agent in blast furnaces. Silica (SiO₂) has the reverse action of fluorspar as regards fluxing properties and is therefore an undesirable contaminant.

Ceramic-grade fluorspar is not standardized. Specifications depend largely upon the requirements of the individual consumer. Most ceramic-grade fluorspar is fairly pure, commonly containing 95 percent CaF₂, 2.5 percent SiO₂, and 1.5 per-

*A unit is equal to 1 percent of a short ton. An ore containing 75 percent CaF₂ and 10 percent SiO₂ would contain 50 effective units of CaF₂: 75 percent minus 2.5 times 10 percent.

cent CaCO_3 .

Acid-grade fluorspar should contain a minimum of 97 percent CaF_2 and not more than 1.1 percent SiO_2 for the manufacture of aqueous hydrofluoric acid, or 1.5 percent SiO_2 for anhydrous hydrofluoric acid.

For many years the steel industry was the principal consumer of fluorspar, but since 1956 the quantity of acid-grade fluorspar consumed has exceeded the consumption of the metallurgical-grade product. This trend will continue as acid-grade fluorspar or hydrofluoric acid is required in ever increasing amounts for the manufacture of aluminum, various plastics and chemicals, spray-can propellants, and refrigerants.

The principal problem facing domestic fluorspar producers in recent years has been the competition of foreign imports, particularly those from Mexico. July, 1961 prices for fluorspar were: metallurgical-grade, 72.5 percent effective CaF_2 content, per short ton, F.O.B. Illinois-Kentucky mines, \$37.00 - \$41.00; acid-grade, 97 percent CaF_2 , per short ton, bulk, F.O.B. mine, \$45.00 - \$49.00; Mexican fluorspar, 70 percent CaF_2 , per short ton, F.O.B. border, duty paid, \$27.00 - \$28.00. Mexican fluorspar is subject to a duty of \$7.50 per short ton. Figure 1. (p. 5) indicates fluorspar production, imports, and consumption for the period 1945 - 1960.

The Illinois-Kentucky district has been the largest producer of fluorspar in the United States, followed by districts in Colorado, New Mexico, Montana, and Utah. Most of the Western States have produced fluorspar but the Rocky Mountain States have been the most productive.

The expansion of the steel, aluminum, and chemical industries on the Pacific Coast will require greater supplies of fluorspar in the future. Mines located near this market area should be able to compete with other producers, provided trucking costs from mine to rail transportation are not excessive.

General references describing the geology, mining, processing, and marketing of fluorspar are:

"Industrial Minerals and Rocks", published by the American Institute of Mining, Metallurgical and Petroleum Engineers.

"Mineral Facts and Figures", U. S. Bureau of Mines Bulletin 585, published by the U. S. Government Printing Office.

MINING ACTIVITY

Fluorspar has been of commercial importance in Nevada since 1919, when the Continental Fluorspar Co., headed by J. Irving Crowell, Sr., began mining fluorspar at the Daisy mine near Beatty, Nye County. Mining continued at that location until 1923 when the company was dissolved. In 1927 J. Irving Crowell, Jr., acquired the claims on a 99-year lease and has operated the mine continuously since that time.

The Kaiser mine, Mineral County, formerly the Baxter mine, was discovered by V. S. Baxter in 1928. Mr. Baxter operated the mine until 1951 when a lease and option-to-purchase agreement was made with H. W. Gould and Company. This agreement was transferred to the Fallon Fluorspar Mines, Inc., who, in 1952, sold the mine to the Kaiser Aluminum and Chemical Corp. The new owners operated the mine until early 1957 when mining ceased because all available ore had been mined.

The Wells Cargo mine, Lincoln County, was discovered in 1958 during an examination of the claims for barite. Substantial amounts of fluorspar have been shipped from there to the Kaiser Steel Corp. and to the U. S. General Service Administration stockpile.

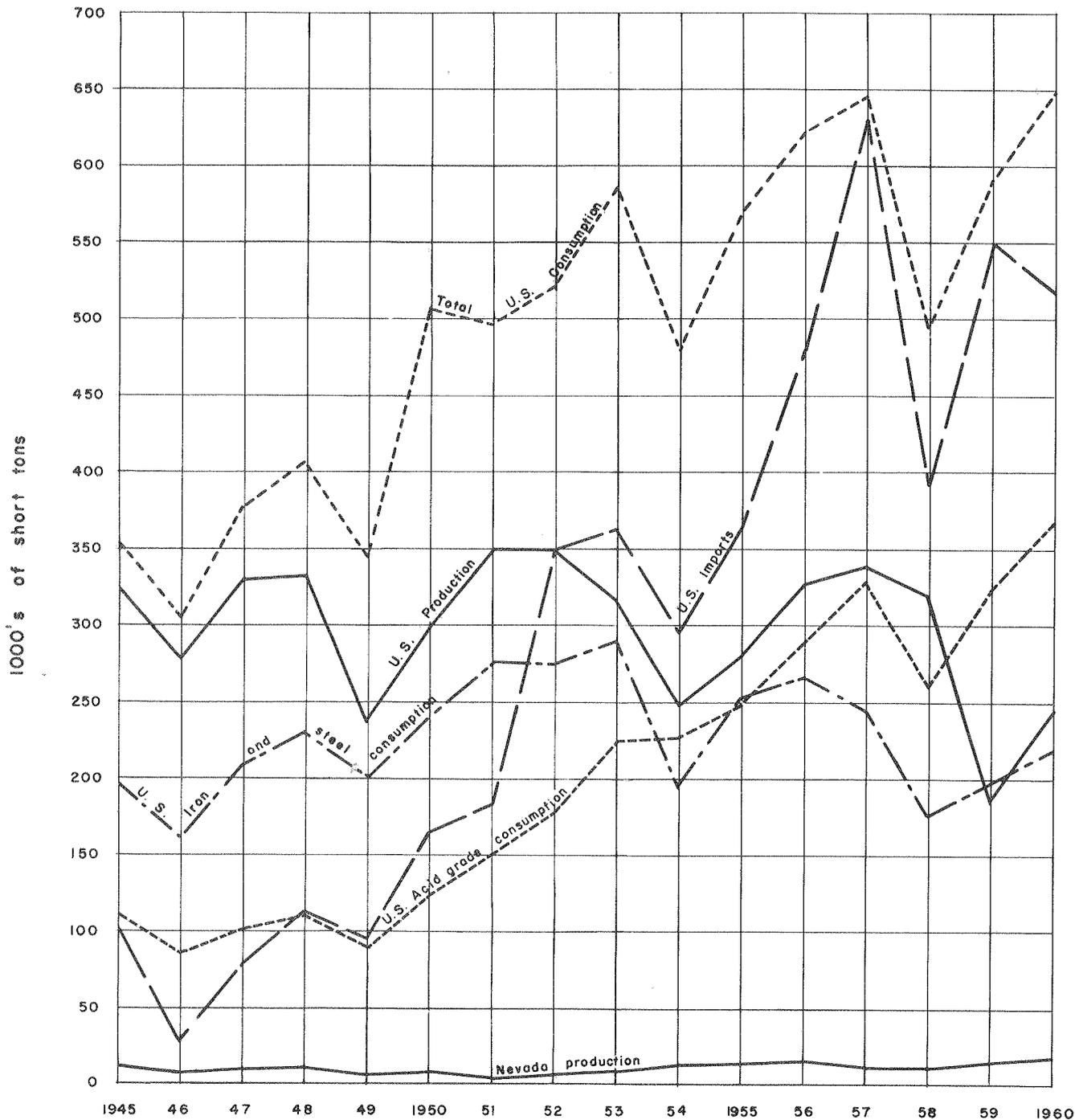


Figure 1. Graph showing flourspar production, imports, and consumption for Nevada and the United States

RVW

Other small mines and prospects in Nevada have produced minor amounts of fluorspar, most of which was sold to the Kaiser Aluminum and Chemical Corp. mill near Fallon, Churchill County. The mill, constructed following the purchase of the Kaiser mine, has not operated since the mine was closed in 1957.

CLASSIFICATION OF NEVADA FLUORSPAR DEPOSITS

The fluorspar deposits of Nevada may be subdivided on the basis of their mode of occurrence, age of mineralization, and geographic distribution. For purposes of discussion the fluorspar deposits have been divided into "mesothermal" and "epithermal" types. This classification is tentative pending additional study of deposits considered to be mesothermal.

The mesothermal deposits are those genetically associated with granitic intrusives or having no apparent genetic association with Tertiary volcanic rocks. All of these deposits are presumed to have been formed at considerable depths below the surface of the earth and are generally older than the extensive Tertiary volcanism in Nevada. The epithermal deposits are associated with Tertiary volcanism and probably were formed near the surface.

Mesothermal deposits include those of the Union district, the Fluorine district, and the Wells Cargo mine in Lincoln County. The epithermal deposits include those in the "western epithermal fluorspar belt" and in the Quinn Canyon Range district.

The known occurrences of fluorspar in Nevada are shown on Plate 1. (foldout inside rear cover).*

Mesothermal Deposits

Union District, Nye County

The Union district is located on the west side of the Shoshone Mountains in northwestern Nye County. It includes the old mining camps of Ione, Berlin, and Grantsville. The geology has been described by Silberling (1959) and the mining activities by Kral (1951, p. 195-206). Substantial amounts of quicksilver have been mined in the district from Tertiary and Triassic rocks (Bailey and Phoenix, 1944, p. 149-154). These deposits are probably related to the Tertiary volcanism. High-grade gold deposits also have been mined in the Tertiary volcanic rocks. Gold, silver, copper, lead, and zinc have been mined from pyrometasomatic deposits in the Grantsville formation (Triassic). The fluorspar deposits in the area are briefly described by Silberling (1959, p. 12) as follows:

"Along the west front of the range, on either side of the mouth of West Union Canyon, fluorite mineralization is concentrated in the limestone member of the Grantsville. Fluorite occurs along the faults of both the northward-trending frontal range system and the northwestward-trending Union Canyon system where they transect the limestone. Fluorite also occurs as a replacement in the limestone, especially near the top of the unit where it is capped by the impervious siliceous conglomerates of the Luning formation. Similar occurrences of fluorite are also present on the west slope of Richmond Hill".

*Plate 1. is a greatly reduced copy of Nevada Bureau of Mines Preliminary Map 3, showing individual occurrences of fluorspar in Nevada.

Fluorine District, Nye County

The fluorspar deposits of the Daisy (Crowell) mine near Beatty are in the Nopah dolomite (Upper Cambrian) which has been sheared and brecciated by thrust faulting. Thurston (1943, p. 4) states:

"The age relationship of the faults associated with the fluorspar deposits are not known, but the faults may have been formed in a single protracted period of deformation. . . . Fluorspar deposition may have occurred within a period of major deformation, but it is also possible that the fluorspar was deposited along faults after one period of faulting and that the deposits were then dislocated by some later and unrelated movement which utilized, at least in part, pre-existing fault planes".

The short-lived camp of Bullfrog, located a few miles west of the Crowell mine, contains ore deposits of the epithermal type. Small amounts of quicksilver have been recovered from deposits in lower Paleozoic limestone and Tertiary volcanic rock near the fluorspar mine. The fluorspar deposits, however, were probably formed during a period of mineralization earlier than that which deposited the gold and quicksilver. The fissures in which the gold and quicksilver deposits were formed have not had any substantial post-ore movement, while the fluorspar deposits show considerable post-ore movement. The absence of fluorite as a gangue mineral in the gold deposits of the Bullfrog district lends additional support to this hypothesis. Ball (1907, p. 45, 156-157) listed the scattered gold deposits of Bare Mountain and the Fluorine district as post-Jurassic and pre-Tertiary in age. Also mentioned is the occurrence of fluorite at the Lige-Harris prospect (the discovery point for the Crowell mine) which he considers to be pre-Tertiary.

Fluorspar at the Goldspar mine is found near the contact of a rhyolite dike, which has intruded limestone of the Nopah (Upper Cambrian) formation. The nature of the deposit is not readily apparent. The mine is being developed by the Monolith Cement Co. and, with additional mine openings, the geology of the deposit may become clearer.

Wells Cargo Mine, Lincoln County

Fluorspar deposits at the Wells Cargo mine are of the replacement type with minor amounts of fissure filling. Mineralization has been controlled by a major fault that forms the footwall of the ore body. The host rock is Mississippian(?) limestone. Minor amounts of barite occur with the fluorspar, and a manganese deposit is located on the same fault, but outside the area of fluorspar mineralization.

This fluorspar deposit is unique, at least in Nevada, because most of the ore is practically indistinguishable in hand specimen from the limestone wall rock. In thin section the ore is seen to be composed of microcrystalline fluorite. Clear areas in the thin section are interpreted as fissure fillings and clouded areas as replaced breccia fragments.

Miscellaneous

Many small fluorspar deposits in Nevada have been found directly associated with granitic intrusives. The fluorspar is within the intrusive body or in the contact zone. Fluorspar deposits in this category have not been of commercial importance. Included in this classification are many of the deposits in Esmeralda and White Pine Counties.

Epithermal Deposits

Western Epithermal Fluorspar Belt

The term "western epithermal fluorspar belt" as used in this report includes most of the fluorspar deposits in Pershing, Churchill, and Mineral Counties, as indicated on Plate 1. Numerous fluorspar prospects, some with minor production, occur in a belt, some 40 miles wide, extending 140 miles north and 80 miles south of the Kaiser mine (No. 30 on Pl. 1). All of the deposits in this belt, except those in the Union district, Nye County, and possibly the Fluorine Group in Pershing County, are thought to be of the epithermal type and genetically related to Tertiary volcanism. This belt also includes 8 of the 12 most productive quick-silver districts in Nevada (Bailey and Phoenix, 1944, p. 10) and, if extended northward, would include 10 of the 12. A similar concentration of antimony prospects is found within this belt (E. F. Lawrence; oral communication, 1960). The inferences drawn from this alignment of epithermal mineral deposits must be considered carefully as there is also a concentration, within the belt, of tungsten, molybdenum, and iron deposits.

It is not thought that these epithermal fluorspar deposits will be of substantial commercial importance, although there is a possibility of finding another "Kaiser mine" type of deposit. The only major producer within the epithermal belt, and also the only productive mine in Nevada having andesite wall rock, is the Kaiser mine in Mineral County. This mine produced 155,555 tons of fluorspar but is reported to be mined out. At the Kaiser mine fluorspar was found in a lens-shaped shear zone 1,800 feet long in the upper workings, decreasing to 600 feet in length on the 700 level. No ore of importance was found outside the shear zone. Gillson (1945, p. 24) believes that the Kaiser (Baxter) mine may be an example of epithermal mineralization as contrasted to the mesothermal mineralization found in most productive fluorspar mines.

Quinn Canyon Range District, Nye and Lincoln Counties

The fluorspar deposits in the Quinn Canyon Range district of Nye County are found in limestone, dolomite, and rhyolite or felsite. Many of the deposits are near or at the intrusive contact of rhyolite and limestone. The remoteness of the area has hindered development of the deposits. Had the area been convenient to transportation facilities there might already have been a larger production of fluorspar. The deposits are similar in many respects to those found in the western epithermal fluorspar belt in that they are generally narrow fissure veins or breccia fillings. Although the abundance of fluorspar deposits in this area is encouraging, the area does not appear to be as promising as the Union district.

FLUORSPAR OCCURRENCES BY COUNTY

The following list describes the fluorspar occurrences of Nevada by counties. Each mine, prospect, or group is numbered and may be located on Plate 1, by means of that number. References are given when ever a mine or prospect has been described in previous literature. Where no references are given the information has been collected through personal observation or by means of private communications with the most reliable known informants, usually mine owners or operators.

Churchill County

1. Madraso Prospect

Location: Sec. 13, T. 23 N., R. 29 E.; Lat. 39°-52' N., Long. 118°-40' W.
Production: None
Development: None on fluorspar; small amount of underground work at nearby gold prospects.
Geology: Fluorspar reported as breccia filling in 'hard rock' overlying shale. Outcrop of breccia reported as 10 feet by 150 feet in area.

2. Revenue Group

Other Names: Kent Fluorspar Mine; Cox's Canyon Mines; Cirac Mine
Location: Sec. 9(?), T. 21 N., R. 33 E.
Ownership: F. E. Walters, Reno, Nevada, and others.
Production: 830 tons of 73 percent CaF₂ to Kaiser mill, Fallon. Additional ore shipped prior to 1951.
Development: Extensive underground workings.
Geology: Fluorspar occurs in veins up to 3 feet wide at the contact of Triassic(?) calcareous shale and Paleozoic(?) limestone or dolomite. A private report suggests that the fluorspar deposition was controlled by a thin bed of argillite, incorrectly identified by Vanderburg as a basalt dike.
Reference: Vanderburg, 1940, p. 35.

3. Purple Spar Prospect

Location: Sec. unknown, T. 19 N., R. 35 E., Lat. 39°-29.8' N., Long. 118°-05.2' W.
Production: None
Development: Short adit and prospect pits.
Geology: A 2-foot-wide vein of quartz and fluorspar reported exposed in the adit.

4. Little Jim Prospect

Location: Sec. unknown, T. 19 N., R. 35 E.; Lat. 39°-28.1' N., Long. 118°-06' W.
Production: None
Development: Unknown
Geology: 1-foot-wide vein of fluorspar in andesite reported.

5. Black Hills Prospect

Location: Sec. unknown, T. 18 N., R. 33 E.; Lat. 39°-25.7' N., Long. 118°-18' W.
Production: None
Development: Unknown
Geology: Reported as disseminated fluorspar in contact zone near a granitic intrusion.

Churchill County (Continued)

6. Dixie Mine

Location: Sec. unknown, T. 18 N., R. 32 E.; Lat. 39°-26' N.,
Long. 118°-20' W.
Ownership: Keller Bros., Fallon, and Thomas McDowell, Stillwater, Nevada.
Production: 666 tons of 65 percent CaF₂ shipped to Kaiser mill, Fallon.
Development: Unknown
Geology: Reported as a 40-foot-wide contact zone, associated with a
granitic intrusion, containing disconnected pods of fluorspar
that yielded 5 to 100 tons each.

7. Michigan Prospect

Other Names: La Plata prospect.
Location: Sec. unknown, T. 18 N., R. 32 E.
Production: None
Development: Unknown
Geology: Fluorspar veinlets in limestone near rhyolite intrusives.
References: Vanderburg, 1940, p. 39.

8. Merkt Prospect

Location: Sec. unknown, T. 16 N., R. 35 E.; Lat. 39°-17.1' N.,
Long. 118°-03.4' W.
Production: None
Development: Shallow pits
Geology: Fluorspar reported in an alteration zone 4-foot-wide along a
shale-limestone contact.

Clark County

9. Walker Prospect

Location: Sec. 19(?), T. 15 S., R. 71 E.
Production: None
Development: Prospect pits
Geology: Small fluorspar veinlets in garnet gneiss.

10. Nipton Prospect

Other Names: Stolte mine; Thorkildson (Thorkelson) mine.
Location: Sec's. 31 & 32, T. 28 S., R. 61 E.
Production: Reported as "several tons".
Development: Shallow shafts and numerous adits.
Geology: Veinlets of fluorspar in Precambrian gneiss.
References: Vanderburg, 1937, p. 25.
Burchard, 1934, p. 395.

Douglas County

11. Boulder Hill Mine

Other Names: Blue Jay Mine; Bromite Mine.
Location: SW $\frac{1}{4}$ sec. 30, NW $\frac{1}{4}$ sec. 31, T. 10 N., R. 24 E.
Production: None
Development: Unknown
Geology: Reported as limestone overlain by andesite and intruded by quartz monzonite with fluorspar occurring in a brecciated, silicified agglomerate zone 400 feet west of the monzonite-limestone contact.

Esmeralda County

12. Flora Prospect

Location: Sec. 28, T. 4 N., R. 36 E.
Production: None
Development: 50-foot shaft; 300 to 400 feet of drifting.
Geology: Reported as granodiorite containing quartz veins up to 30 feet wide mineralized with sulphides and, in places, considerable fluorspar.

13. Bullfrog-George Prospect

Location: Sec. unknown, T. 7 S., R. 41 E.
Production: None
Development: Small pits and cuts.
Geology: Fluorspar and molybdenite in pegmatites associated with a granitic intrusive.
References: Ball, 1907, p. 192, 194-195.

14. Amry Prospect

Other Names: Sorenson Fluorspar prospect.
Location: Sec. 4, T. 7 S., R. 39 E.
Production: None
Development: Numerous trenches and pits; 23-foot shaft and 153 feet of drifting.
Geology: Reported as fluorspar veins in a metamorphosed calcareous roof pendant in a granitic intrusive. Veins up to 4 feet wide and 50 feet long.

Humboldt County

15. Sunset Prospect

Location: Sec. 11, T. 39 N., R. 25 E.; Lat. 41°-18' N., Long. 119°-05' W.
Production: None
Development: Unknown
Geology: Reported as a vein of fluorspar with quartz and calcite in coarse granitic rock. The vein reported to be 1 to 2 feet wide and traceable for 2,000 feet.

Humboldt County (Continued)

16. Thunderbird Prospect

Location: Sec. unknown, T. 35 N., R. 38 E.; in Water Canyon, 4 miles south of Winnemucca.
Production: None
Development: 6-foot pit, 400 feet of stripping.
Geology: Reported as fissure filled veins containing quartz and some fluorite in metamorphosed argillite, shale, and limestone.

Lander County

17. Ell Cee Prospect

Location: Sec. 11, T. 23 N., R. 44 E.; Lat. 39°-50' N., Long. 117°-00' W.
Production: None known
Development: 82 feet of underground work.
Geology: Two veins 1/2 foot to 3 feet wide, traceable for 300 feet, reported in a granitic stock intruding limestone.

18. Iowa Canyon Mine

Other Names: Iowa Fluorspar mine
Location: Sec. 6, T. 22 N., R. 45 E.; Lat. 39°-48' N., Long. 116°-57.7' W.
Ownership: Keller Bros. and Thomas McDowell, Fallon, Nevada.
Production: 398 tons of 61 percent CaF₂ shipped to Kaiser mill, Fallon. Additional small shipments made to other purchasers.
Development: 45-foot shaft and 55 feet of drift and crosscut.
Geology: Area underlain by Tertiary volcanics, principally andesite. Fluorspar occurs as vein fillings, usually between two ribs of quartz. DMEA Report, Docket No. 3398, describes the results of a DMEA exploration program. A mineralized zone 2,000 feet long with veins from a few inches to 6 feet in width was delineated. The ore, containing an average of 56 percent CaF₂ and 25 percent SiO₂, is reported cut-off down-dip by a large fault.

19. Hill Top Prospect

Location: Sec. 7, T. 22 N., R. 45 E.; Lat. 39°-47.5' N., Long. 116°-57.3' W.
Production: None
Development: 7-foot shaft.
Geology: Reported as fluorite, quartz, and calcite in an intersecting vein system, with 2 feet being the maximum width observed.

Lincoln County

20. Greenspar Prospect

21. El Cortez Prospect

Lincoln County (Continued)

22. Paiute Prospect

23. Blue Bell Prospect

24. Shannon Queen Prospect

25. Fluorspar Corporation of America

The fluorspar deposits listed above are described under the Quinn Canyon Range District, Nye County, because of their proximity to a large number of prospects in Nye County.

26. Florence Prospect

Other Names: Bull Hill group
Location: NW¼ sec. 29, T. 1 N., R. 71 E.
Production: None
Development: Extensive underground workings mined while developing and mining gold ores.
Geology: Reported as fluorspar stringers associated with gold ores in Tertiary volcanics, mainly rhyolites.

27. Wells Cargo Mine

Location: Sec. 32, T. 8 S., R. 69 E.
Ownership: Wells Cargo Inc., Las Vegas, Nevada.
Production: Open pit mining started in March, 1958.
Development: 3 or 4 small open pits.
Geology: Replacement bodies of fluorspar in Paleozoic limestone. The fluorspar is generally dark colored and difficult to distinguish from the limestone. There is no evidence of igneous activity within the immediate area. The general area appears worthy of additional exploration and development work. The ore is mined in small open pits and shipped, after crushing and screening, as metallurgical-grade fluorspar.

28. Lincoln Mine

Other Names: Tempiute Mine; Wah Chang Tungsten Mine
Location: Sec. 36, T. 3 S., R. 56 E., at Tempiute, Nevada.
Ownership: Wah Chang Corp., New York, New York.
Production: Undisclosed
Development: Extensive underground workings made while mining scheelite.
Geology: Fluorspar occurs with scheelite in a tactite zone associated with a granitic intrusive. Fluorspar was recovered as a by-product by treating tailings from the tungsten milling operations.

Mineral County

There are two fluorspar districts in Mineral County, one in the vicinity of the Kaiser mine, 6 miles west of Broken Hills, and the other in the vicinity of Mount Montgomery Pass.

Mineral County (Continued)

29. Little Fluorspar Prospect (Broken Hills district)

Location: Sec. 29(?), T. 14 N., R. 33 E.; adjoins north side of Kaiser mine claims.
Production: None
Development: One shaft 34 feet deep, one shaft reported 100 feet deep. Kaiser Aluminum and Chemical Corp. drilled a 243-foot diamond drill hole.
Geology: Fluorspar mineralization reported as being found for 200 feet along a 2,500-foot fault zone.

30. Kaiser Mine (Broken Hills district)

Other Names: Baxter Mine
Location: Sec. 29(?), T. 14 N., R. 33 E.; Lat. 39°-03' N., Long. 118°-16' W.
Ownership: Kaiser Aluminum & Chemical Corp., Oakland, California.
Production: 50,869 tons by V. S. Baxter; 104,575 tons by Kaiser. Kaiser production averaged 46 percent CaF₂.
Development: Mine developed to the 700-foot level; extensive underground workings.
Geology: Fluorspar veins in andesite. The main vein is traceable on the surface for 3,000 feet with widths ranging from a few inches to 10 feet. The ore body is 600 feet long on the 600 level, compared to 1,800 feet in length in some of the upper levels. The mine is now closed and considered to be mined out.
References: Burchard, 1934, p. 395.
Gillson, 1945, p. 24.
Matson and Trengove, 1957.
Vanderburg, 1937, p. 24.

31. West Slope Prospect (Broken Hills district)

Location: Sec. 8(?), T. 14 N., R. 33 E.; adjacent to the Black Cap prospect, 5,000 feet south and 6,000 feet west of the Kaiser mine main shaft.
Production: None
Development: 35-foot adit, 12-foot winze; a 554-foot diamond drill hole by Kaiser Aluminum & Chemical Corp.
Geology: Reported as a fault traceable for 3,900 feet in rhyolite with disseminated fluorspar and fluorspar stringers traceable for 500 feet along the fault.

32. Spar Dome Mine (Broken Hills district)

Location: Sec. 15(?), T. 13 N., R. 33 E.; 2 to 3 miles south of the Kaiser mine.
Production: 247 tons of 53 percent CaF₂ shipped to Kaiser mill, Fallon, Nevada.
Development: 55 feet of sinking, 20-foot drift.
Geology: Unknown. Fluorspar ore 4 feet wide reported exposed as bottom of shaft.

Mineral County (Continued)

33. Black Cap Prospect (Broken Hills district)

Location: Sec. 16(?), T. 13 N., R. 33 E.; 2 to 3 miles southwest of the Kaiser mine. Adjoins Spar Dome mine.
Production: None
Development: Small pits and cuts.
Geology: Reported as a vein of quartz and fluorspar up to 2½ feet wide.

34. Fluorspar King & Blue Bell Group (Mount Montgomery Pass district)

Other Names: Summerfield Mine; Overholzer Mine
Location: Sec. 8, T. 1 N., R. 33 E.
Ownership: W. W. Overholzer and A. M. Perry, Reno, Nevada.
Production: 200 tons reported shipped in 1929.
Development: 6 adits totaling about 400 feet, 400 feet of trenching.
Geology: Dacite capped by andesite and other volcanics, overlying granite. Fluorspar veins up to 3 feet wide occur along shear zones in the dacite. The property is worthy of additional exploration work.
References: Burchard, 1934, p. 38.
Gillson, 1945, p. 38.
Hewett, & others, 1936, p. 172.
Vanderburg, 1937, p. 49.

35. Valley View Prospect (Mount Montgomery Pass district)

Location: Sec. 7, T. 1 N., R. 33 E.; Lat. 37°-57' N., Long. 118°-21' E.
Production: None
Development: 2 shafts totaling 40 feet and 50 feet of trenching.
Geology: Reported as rhyolite intruding granitic rocks with fluorspar occurring in small vugs and fissures.

36. Linda & St. Joseph Group (Mount Montgomery Pass district)

Location: Sec. 30, T. 1 N., R. 32 E., in the first canyon east of Queen Canyon.
Production: None
Development: Unknown
Geology: Reported as slate intruded and overlain by an intrusive and extrusive complex of rhyolite, andesite, and basalt with fluorspar occurring in a fault zone along the slate-andesite contact. The mineralization is reported to extend for a length of 1,000 feet with widths up to 5 feet.

37. Queen Canyon Prospect (Mount Montgomery Pass district)

Location: T. 1 N., R. 32 E.; in Queen Canyon, just below first ranch house in Owens(?) Canyon.
Production: None
Development: Unknown
Geology: Unknown

Nye County

There are three major fluorspar districts in Nye County; the Union district, the Quinn Canyon Range district, and the Fluorine district.

38. See Bee Group (Union district)

Other Names: Shoshone Group(?)
Location: Sec's. 28 & 30, T. 12 N., R. 39 E.
Ownership: L. B. Murrey, Ion, Nevada.
Production: 327 tons of 73 percent CaF₂ shipped to Kaiser mill.
Development: Shallow underground workings with small stopes, small open cut.
Geology: Reported as 2- to 5-foot wide en echelon veins in limestone and shale.

39. Fluorspar Group (Union district)

Other Names: Fluorspar Lode
Location: Sec. 34, T. 12 N., R. 39 E.
Production: None
Development: 3 bulldozer cuts, the largest 34 by 10 feet.
Geology: Scattered fluorspar mineralization reported found for a length of 100 feet.

40. Alameda Claims (Union district)

Location: T. 12 N., R. 39 E., or T. 11 N., R. 39 E.
Production: None
Development: Unknown
Geology: Unknown

41. Last Chance Group (Union district)

Location: Sec's 3 & 10, T. 11 N., R. 39 E.
Production: None
Development: Two shallow shafts and numerous small prospect pits and cuts.
Geology: Fluorspar reported in a silicified zone that extends for about 2,000 feet.

42. Mary Jane Group (Union district)

Location: S $\frac{1}{2}$ sec. 10, T. 11 N., R. 39 E.
Production: None
Development: Three shallow shafts, two large open cuts and numerous small open cuts.
Geology: Reported as fluorspar veins in limestone.

Nye County (Continued)

43. Murrey Group (Union district)

Other Names: Uranico mine; Murray mine.
Location: Sec. 10, T. 11 N., R. 39 E.
Production: None known
Development: Unknown
Geology: Unknown

44. Chicago Claim (Union district)

Location: Sec. 10, T. 11 N., R. 39 E.
Ownership: Gordon Smith and Lindsay Smith (L and G Mining Co.) Gabbs, Nevada.
Production: 31 tons of hand sorted ore reported shipped in 1949.
Development: About 200 feet of sinking for silver ore; 50 feet open cut.
Geology: Pods of high-grade fluorspar reported.

45. Allied Group (Union district)

Location: Sec. 10, T. 11 N., R. 39 E.
Ownership: R. C. Ames, Ione, Nevada.
Production: 81 tons of 92 percent CaF_2 reported shipped in 1951.
Development: 25-foot inclined shaft with 24-foot drift; numerous open cuts.
Geology: Fluorspar, calcite, and quartz reported in two veins; one traced for 50 feet, the other traced for 200 feet.

Nyco Fluoride Corp. Mine (Union district)

Many of the properties in the Union district were under lease to the Nyco Fluoride Corp. in 1956. It is believed that these leases are no longer in affect.

L and G Mining Co. (Union district)

The L and G Mining Co. of Gabbs, Nevada, had leased or purchased many of the properties described in the Union district and, in 1959, was conducting an exploration and development program. The company is controlled by Lindsay Smith and Gordon Smith of Gabbs, Nevada.

46. Colton Mine

Other Names: Western Fluorspar & Lead mine; Cottonwood Canyon mine.
Location: Sec. 35, T. 9 N., R. 40 E.; Lat. 38°-36' N., Long. 117°-27' W.
Production: None known
Development: Unknown; Reported to be developed as open pit operation.
Geology: Reported as: Fluorspar exposed as massive vein fillings and incrustation.

Nye County (Continued)

47. Crystal Group (Quinn Canyon Range district)

Location: Sec's 3 & 4 (approximately), T. 3 N., R. 57 E.
Production: None
Development: Unknown
Geology: Fluorspar occurs as a cement in an intrusive breccia zone trending northeastward across the strike of an underlying limestone and overlying quartzite.

48. Mammoth Prospect (Quinn Canyon Range district)

Location: Sec. 3, T. 3 N., R. 56 E.; Lat. 38°-09' N., Long. 115°-39.6' W.
Production: None
Development: 60-foot trench and shallow pits.
Geology: Fluorite mixed with quartz and calcite reported in a silicified limestone.

49. Big Jim and White Horse Prospects (Quinn Canyon Range district)

Other Names: Carlson Fluorite Mine.
Location: Sec. 17, T. 3 N., R. 56 E.; Lat. 38°-07' N., Long. 115°-42.2' W.
Production: None known
Development: 10-foot shaft and several small pits.
Geology: Limestone intruded by rhyolite. Fluorspar occurs at fracture intersections within two silicified and brecciated areas in the limestone.
References: Kral, 1951, p. 215.

50. Nyco Mine (Quinn Canyon Range district)

Location: Sec. 7, T. 3 N., R. 56 E.; Lat. 38°-08' N., Long. 115°-43' W.
Ownership: D. W., S. C. and S. E. Terrell, Tonopah, Nevada.
Production: 14 tons of 50 percent CaF₂ ore shipped to Kaiser mill, Fallon. Additional small shipments reported.
Development: 400-foot adit with chutes and raises. Mine leased and developed by Wah Chang Corp. prior to closure of Tempiute mill.
Geology: 3-foot vein of fluorspar reported in the back of the adit. Wall rocks unknown, but probably limestone and/or rhyolite. This mine is presently the best developed in the Quinn Canyon Range district.

51. Spar Group (Quinn Canyon Range district)

Other Names: Welch Spar Group
Location: Sec. 29, T. 3 N., R. 56 E.; Lat. 38°-06.7' N., Long. 115°-42.4' W.
Production: None
Development: 10-foot adit and numerous shallow cuts and pits.
Geology: Fluorspar occurs in a brecciated zone in silicified limestone near a rhyolitic intrusive-limestone contact.

Nye County (Continued)

52. Highgrade Group (Quinn Canyon Range district)

Location: Sec's. 19 & 30 (approximately), T. 3 N., R. 56 E.
Production: None
Development: Unknown
Geology: Fluorspar veins associated with acidic volcanic dikes in limestone.

53. Rainbow Prospect (Quinn Canyon Range district)

Other Names: Anderson Fluorite Prospect
Location: Sec. 6, T. 2 N., R. 55 E.; Lat. 38°-03.8' N., Long. 115°-50' W.
Production: 200 tons reported shipped in 1945.
Development: 25-foot shaft, short adits, small open cuts.
Geology: Small lenses of fluorspar - up to 3½ feet thick - in rhyolite intruded by andesite.
Reference: Kral, 1951, p. 216.

54. Bruno Prospect (Quinn Canyon Range district)

Location: Sec. unknown, T. 2 N., R. 54 E.
Production: None
Development: Numerous trenches
Geology: Numerous fluorite veinlets reported in an area 250 by 600 feet.

20. Greenspar Prospect (Quinn Canyon Range district)

Location: Sec. 12, T. 2 N., R. 55 E.
Production: None
Development: None
Geology: Reported as narrow fluorite veins in rhyolite.

21. El Cortez Prospect (Quinn Canyon Range district)

Location: Sec. 5, T. 2 N., R. 56 E.; Lat. 38°-02.5' N., Long. 115°-43' W.
Production: None
Development: Unknown
Geology: Fluorspar intergrown with quartz in a fault zone which cuts bedded volcanic rocks.

22. Paiute Prospect (Quinn Canyon Range district)

Location: Sec. 20, T. 2 N., R. 56 E.
Production: None
Development: Unknown
Geology: Fluorspar and quartz reported in a vein 1 to 4 feet wide for a length of 400 feet.

Nye County (Continued)

23. Blue Bell Prospect (Quinn Canyon Range district)

Location: Sec. 20, T. 2 N., R. 56 E.; Lat. 38°-01' N., Long. 115°-41' W.
Contiguous with Paiute Prospect (22).
Production: None
Development: Unknown
Geology: Fluorspar vein up to 4 feet wide and 250 feet long, reported in silicified rhyolite.

24. Shannon Queen Prospect (Quinn Canyon Range district)

Location: Sec. 20, T. 2 N., R. 56 E. Coincides with west end of Blue Bell prospect (23).
Production: None
Development: Unknown
Geology: Siliceous fluorspar reported in echelon veins within volcanic rocks.

25. Fluorspar Corporation of America (Quinn Canyon Range district)

Location: Sec. 1, 12, 13, 24, 25, T. 2 N., R. 54 E.
Production: None
Development: Trenches and numerous drill holes.
Geology: Narrow fluorspar veins in acidic volcanic rocks.

American Minerals & Chemical Co. (Quinn Canyon Range district)

The American Minerals and Chemical Co. was active in the Quinn Canyon district in 1951-1952. The company performed exploration work on a number of the properties but it is believed that it no longer holds claims in the area. The activity of this company and the general geology of the area are described in a report by the Union Pacific Railroad Company.

55. Daisy Mine (Fluorine district)

Other Names: Crowell Mine
Location: Sec. 23, T. 12 S., R. 47 E.
Ownership: J. Irving Crowell, Jr. and others, Beatty, Nevada.
Production: 1919-1957: 81,261 tons.
Development: Extensive underground developments by shafts, crosscuts and drifts.
Geology: A series of pipes, irregular bodies, and veins with pipe like shoots, occur in a zone of chaotic structure associated with a large thrust fault. The pipes are localized in crackled zones in limestone and minor shale. Some tabular bodies are as much as 350 feet long and 250 feet high. The grade varies between 50 and 80 percent CaF₂.

Nye County (Continued)

55. Daisy Mine (Continued)

References: Ball, 1907, p. 157.
Gillson, 1945, p. 38.
Geehan, 1946.
Kral, 1951, p. 60-61.
Ladoo, 1927, p. 132-136.
Thurston, 1949.

56. Goldspar Mine (Fluorine district)

Other Names: Diamond Queen mine; Treadwell mine; Shae mine.
Location: Sec. 5, T. 13 S., R. 48 E.
Ownership: Monolith Cement Co., Los Angeles, California.
Production: Unknown; currently operating.
Development: 200-foot shaft with adit connecting at the bottom, open pits and other small underground workings.
Geology: Fluorspar veinlets and pods associated with brecciated zones at Rhyolite-limestone contact. Rhyolite dikes intruding limestone. The fluorspar is associated with brecciated zones in the limestone.
References: Hewett, & others, 1936, p. 172.
Kral, 1951, p. 63.
Ladoo, 1927, p. 135.

Pershing County

57. Mammoth Prospect

Location: Sec. 14, T. 33 N., R. 38 E.
Production: None
Development: Shallow trenches and pits.
Geology: Reported as small high-grade lenses of fluorspar in limestone and argillite.

58. Piedmont Prospect

Location: Sec. 12, T. 31 N., R. 33 E.; 1 mile northwest of the Fluorine group(59).
Production: None
Development: None
Geology: Reported as shale and limestone intruded by volcanic rocks with shear zones in the sediments and volcanics containing veins of quartz and calcite with some fluorspar.

Pershing County (Continued)

59. Fluorine Group

Other Names: Valery mine; Hamilton mine.
Location: Sec. 24, T. 31 N., R. 33 E.
Ownership: Marion Schendel & Henry Schwabrow, Lovelock, Nevada.
Production: 723 tons of 44 percent CaF₂ shipped to Kaiser mill, Fallon.
Other earlier shipments to California consumers reported.
Development: Extensive trenching and underground workings.
Geology: Fluorspar occurs in a zone of intersecting fissures in argillaceous sediments interbedded with massive limestone.
Reference: Kral, 1947.

60. Devaney Prospect

Location: T. 31 N., R. 29 E.
Production: None
Development: Unknown; area prospected and developed for gold and silver ores.
Geology: Reported as seams and lenses of fluorspar and quartz in rhyolite.
Reference: Vanderburg, 1936, p. 13.

61. Needle Peak Prospect

Location: Sec. 18, T. 28 N., R. 40 E.; Lat. 40°-18' N., Long. 117°-31' E.
Ownership: T. Johnson & Marius Allard, Battle Mountain, Nevada.
Production: One carload reported shipped to Geneva Steel Corp., Utah.
Development: 125-foot drift; 5-foot pit; 75-foot bulldozer cut.
Geology: Reported as rhyolite and limestone with fluorspar occurring in a shear zone 8 by 150 feet in area.

62. Emerald Spar Group

Location: Sec. 1, T. 27 N., R. 33 E.(?) Reached by traveling northeast 8 miles from Lovelock, Nevada, on U. S. Highway 40, then 10 miles east on Coal Canyon road, then 3 miles northeast on dirt road.
Production: None
Development: Unknown
Geology: Fluorspar reported as occurring in small lenses and disconnected seams in a sheared calcareous shale.

63. Bohannan Prospect

Location: Sec. 16, T. 27 N., R. 34 E.
Production: None
Development: 105 feet of underground workings; small open cuts and pits.
Geology: Reported as limestone, sandstone, and shale with minor amounts of disseminated fluorspar.

Pershing County (Continued)

64. Susie Prospect

Other Names: Neal and McKay prospect.
Location: Sec. 19, T. 26 N., R. 37 E.; Lat. 40°-06' N.; Long. 117°-51' W.
Production: None
Development: Numerous prospect pits and cuts.
Geology: Fluorspar occurs in small veinlets and irregular pods in dolomitic beds of the Grass Valley formation.

65. Hay & Inman Prospect

Location: Sec. 30(?), T. 26 N., R. 37 E.; reported as "south of the Susie prospect".
Production: None
Development: Unknown
Geology: Unknown - probably similar to the Susie prospect.

66. Harris Prospect

Location: Sec. 9, T. 25 N., R. 37 E.; Lat. 40°-03' N., Long 117°-50' W.
Production: None
Development: None
Geology: Reported as an irregular outcrop containing fluorspar, quartz, calcite and barite.

67. Edson-Wightman Prospect

Location: Sec. 29, T. 25 N., R. 37 E.; Lat. 40°-00' N., Long. 117°-51' W.
Production: None
Development: Unknown
Geology: Reported as fluorspar occurring as incrustations and granules in gouge.

68. Baker Prospect

Location: Reported as 11 miles south-southwest of Lovelock, Nevada.
Production: None
Development: Prospect pits.
Geology: Occurrence reported as fluorspar in small seams.

69. Vesco Prospect

Location: Sec. 20, T. 25 N., R. 32 E.
Production: None
Development: A few prospect pits.
Geology: Fluorspar reported as occurring in pods in a vein of quartz, calcite, and barite.

Washoe County

70. Leadville District

Location: Sec. 9, T. 37 N., R. 23 E.
Production: None
Development: None
Geology: Reported as Tertiary andesite, overlain by tuffs and breccia, intruded by large dikes of porphyritic diorite containing large fluorite crystals.
Reference: Overton, 1947, p. 67.

White Pine County

71. Hilltop Prospect

Location: Sec. 6, T. 23 N., R. 63 E.; Lat. 39°-54' N., Long 114°-54' W.
Production: None
Development: Bulldozer scraping only.
Geology: Reported as fluorspar, quartz, and calcite veins in a stock work in quartz monzonite. Maximum size of fluorspar veins reported as 2.5 feet wide and 300 feet long.

72. Rainbow Prospect

Location: Sec. 32, T. 21 N., R. 62 E.; Lat. 39°-38' N., Long. 114°-59' W.
Production: None
Development: 47-foot shaft, 120 feet of drifts and crosscuts.
Geology: Reported as a faulted area in limestone and volcanics in which fluorspar mineralization was indicated by a "purple bloom" microscopically identified as fluorspar.

73. Rattlesnake Heaven Prospect

Other Names: Desert Mine
Location: Sec's. 25 & 36, T. 14 N., R. 66 E.
Production: None
Development: 17-foot shaft; shallow pits.
Geology: Reported as fluorspar filling fissures in a quartzite breccia. A 4-foot sample contained: 58.48 percent CaF₂, 29.70 percent SiO₂, and 7.57 percent CaCO₃.

74. Sawmill Canyon Mine

Other Names: Hendrickson mine.
Location: Sec. 8, T. 12 N., R. 63 E.
Ownership: Lund Mining Co., Lund, Nevada.
Production: Reported as "A few tons".
Development: Shallow shaft and small cuts on north side of canyon; short adit on south side of canyon.
Geology: Pennsylvanian-Permian limestone intruded by rhyolite. Fluorspar occurs as fissure filling veins in limestone and rhyolite. The veins are narrow and do not persist along the strike.

FLUORSPAR OCCURRENCES AS GANGUE

Fluorspar as gangue or scattered occurrences has been reported from the following mining districts and localities which are shown on Plate 1. by a series of "G" numbers.

- Churchill County: G-1, White Cloud district (Ransome, p. 59-60); G-2, Bruffy's Hot Springs (White, p. 144); G-3, Wonder district (Burgess, p. 590).
- Clark County: G-4, Gold Butte district (Hill, p. 49).
- Elko County: G-5, Jarbidge district (Schrader, 1912, p. 54-55); G-6, Spruce Mountain district (Schrader, 1931, p. 23).
- Humboldt County: G-7, Moonlight mine (Sharp, p. 12).
- Lincoln County: G-8, Patterson district (Lincoln p. 123).
- Nye County: G-9, Lodi district (Lincoln, p. 174); G-10, Fairplay district (Lincoln, p. 167), G-11, Round Mountain district (Ferguson, 1921, p. 393); G-12, Manhattan district (Ferguson, 1924, p. 107-108).
- Pershing County: G-13, Antelope district (Lincoln, p. 201); G-14, Oreana district (Kerr, p. 413).
- White Pine County: G-15, Ely district (Spencer, p. 131, 167); G-16, Sacramento district (Lincoln, p. 215-216); G-17, Nevada district (Lincoln, p. 252); G-18, Osceola district (Weeks, p. 127-128); G-19, Tungsten district (Lincoln, p. 256); G-20, Mount Wheeler district (Stager, p. B71).

REFERENCES

- Bailey, E. H., and Phoenix, D. A., 1944, Quicksilver deposits in Nevada: Nev. Univ. Bull., v. 38, no. 5; Geol. and Min. ser. 41, 206 p., illus.
- Ball, S. H., 1907, A geologic reconnaissance of southwestern Nevada and eastern California: U.S. Geol. Survey Bull. 308, 218 p., map.
- Burchard, E. F., 1934, Fluorspar deposits in Western United States: A.I.M.E. Trans., v. 109, p. 370-393.
- Burgess, J. A., 1917, The halogen salts of silver at Wonder, Nevada: Econ. Geology, v. 12, p. 589-593.
- Ferguson, H. G., 1921, The Round Mountain district, Nevada: U.S. Geol. Survey Bull. 725-I, p. 383-406, illus.

- Ferguson, H. G., 1924, Geology and ore deposits of the Manhattan district, Nevada: U.S. Geol. Survey Bull. 723, 163 p., illus.
- Geehan, R. W., 1946, Exploration of the Crowell fluorspar mine, Nye County, Nevada: U.S. Bur. Mines Rept. Inv. 3954, 9 p.
- Gillson, J. L., 1945, Fluorspar deposits in the western States: A.I.M.E., Tech. Pub. 1783, Mining Technology, v. 9, no. 2, 28 p. illus; Trans., v. 173, p. 19-46, illus., 1947.
- Hewett, D. F., Callaghan, Eugene, Moore, B. N., Nolan, T. B., Rubey, W. W., and Schaller, W. T., 1936, Mineral resources of the region around Boulder Dam: U.S. Geol. Survey Bull. 871, 197 p.
- Hill, J. M., 1916, Notes on some mining districts in eastern Nevada: U.S. Geol. Survey Bull. 648, 214 p., maps.
- Kerr, P. F., 1938, Tungsten mineralization at Oreana, Nevada: Econ. Geology, v. 33, no. 4, p. 390-427, illus.
- Kral, V. E., 1947, Valery fluorspar deposit, Pershing County, Nevada: U.S. Bur. Mines Rept. Inv. 4014, 8 p.
- _____, 1951, Mineral resources of Nye County, Nevada: Nev. Univ. Bull., v. 45, no. 3; Geol. and Min. Ser. 50, 223 p., illus.
- Ladoo, R. B., 1927, Fluorspar, its mining, milling and utilization: U.S. Bur. Mines Bull. 244, 185 p., 26 figs.
- Lincoln, F. C., 1923, Mining districts and mineral resources of Nevada: Reno, Nevada, Nevada Newsletter Publishing Company.
- Matson, E. J., and Trengove, R. R., 1957, Investigation of fluorspar deposit, Kaiser mine, Mineral County, Nev.: U.S. Bur. Mines Rept. Inv. 5344, 38 p.
- Overton, T. D., 1947, Mineral resources of Douglas, Ormsby, and Washoe Counties: Nev. Univ. Bull., v. 41, no. 9, Geol. and Min. Ser., no. 46, 88 p.
- Ransome, F. L., 1909, Notes on some mining districts in Humboldt County, Nevada: U.S. Geol. Survey Bull. 414, 75 p., map.
- Schrader, F. C., 1912, A reconnaissance of the Jarbidge, Contact, and Elk Mountain mining districts, Elko County, Nevada: U.S. Geol. Survey Bull. 497, 162 p., map.
- _____, 1931, Spruce Mountain district, Elko County, and Cherry Creek (Egan Canyon) district, White Pine County: Nev. Univ. Bull., v. 25, no. 7, 38 p., maps.
- Sharp, B. J., 1955, Uranium occurrence at the Moonlight mine, Humboldt County, Nevada: A.E.C. RME-2032 (pt. 1).

- Silberling, N. J., 1959, Pre-Tertiary stratigraphy and Upper Triassic paleontology of the Union district, Shoshone Mountains, Nevada: U.S. Geol. Survey Prof. Paper 322, 67 p., illus.
- Spencer, A. C., 1917, The geology and ore deposits of Ely, Nevada: U.S. Geol. Survey Prof. Paper 96, 189 p., maps.
- Stager, H. K., 1960, A new beryllium deposit at the Mount Wheeler mine, White Pine County, Nevada: U.S. Geol. Survey Prof. Paper 400-B, p. B 70-71.
- Thurston, W. R., 1943, The Daisy fluorspar deposit near Beatty, Nye County, Nevada: U.S. Geol. Survey Prelim. Report 3-209.
- Vanderburg, W. O., 1936, Reconnaissance of mining districts in Pershing County, Nev.: U.S. Bur. Mines Inf. Circ. 6902, 57 p.
- _____, 1937, Reconnaissance of mining districts in Clark County, Nev.: U.S. Bur. Mines Inf. Circ. 6964, 81 p.
- _____, 1937, Reconnaissance of mining districts in Mineral County, Nev.: U.S. Bur. Mines Inf. Circ. 6941, 79 p.
- _____, 1940, Reconnaissance of mining districts in Churchill County, Nev.: U.S. Bur. Mines Inf. Circ. 7093, 57 p.
- Weeks, F. B., 1907, Geology and mineral resources of the Osceola mining district, White Pine County, Nev.: U.S. Geol. Survey Bull. 340, Part I, p. 117-133, illus., (1908).
- White, D. E., 1955, Thermal springs and epithermal ore deposits, in Pt. 1 of Bateman, A.M. ed., Economic Geology, Fiftieth Anniversary Volume 1905 - 1955, pt. 1, p. 99-154, tables.

INDEX

Alameda claims	16
Allard, Marius; see Needle Peak prospect	22
Allied group	17
American Minerals and Chemical Co.	20
Ames, R. C.; see Allied group	17
Amry prospect	11
Anderson Fluorite prospect; see Rainbow prospect	19
Antelope district	25
Baker prospect	23
Bare Mountain	7
Baxter mine; see Kaiser mine	4, 14
Berlin district	6
Big Jim and White Horse prospects	18
Black Cap prospect	15
Black Hills prospect	9
Blue Bell group, Mineral County; see Fluorspar King group	15
Blue Bell prospect, Nye County	20
Blue Jay mine; see Boulder Hill mine	11
Bohannon prospect	22
Boulder Hill mine	11
Broken Hills district	14, 15
Bromite mine; see Boulder Hill mine	11
Bruffy's Hot Springs	25
Bruno prospect	19
Bullfrog	7
Bullfrog-George prospect	11
Bull Hill group; see Florence prospect	13
Carlson Fluorite mine; see Big Jim prospect	18
Chicago claim	17
Cirac mine; see Revenue group	9
Colton mine	17
Continental Fluorspar Co.	4
Cottonwood Canyon mine; see Colton mine	17
Cox's Canyon mine; see Revenue group	9
Crowell mine; see Daisy mine	20
Crystal group	18
Daisy mine	4, 7, 20
Desert mine; see Rattlesnake Heaven prospect	24
Devaney prospect	22
Diamond Queen mine; see Goldspar mine	21
Dixie mine	10
Edson-Wightman prospect	23
El Cortez prospect	19
Ell Cee prospect	12
Ely district	25
Emerald Spar group	22
Fairplay district	25
Fallon Fluorspar Mines, Inc.	4
Flora prospect	11
Florence prospect	13
Fluorine district	6, 7, 20, 21
Fluorine group	8, 22

Fluorspar Corporation of America	20
Fluorspar group	16
Fluorspar King and Blue Bell group	15
Fluorspar Lode; see Fluorspar group	16
Gold Butte district	25
Goldspar mine	7, 21
Gould, H. W. and Company	4
Grantsville	6
Greenspar prospect	19
Hamilton mine; see Fluorine group	22
Harris prospect	23
Hay and Inman prospect	23
Hendrickson mine; see Sawmill Canyon mine	24
Highgrade group	19
Hill Top prospect, Lander County	12
Hilltop prospect, White Pine County	24
Inman prospect; see Hay and Inman prospect	23
Ione	6
Iowa Canyon mine	12
Iowa Fluorspar mine; see Iowa Canyon mine	12
Jarbridge district	25
Johnson, T.; see Needle Peak prospect	22
Kaiser Aluminum and Chemical Corp.; see Kaiser mine	4, 6, 14
Kaiser mine	4, 8, 14
Keller Brothers; see Dixie mine and Iowa Canyon mine	10, 12
Kent Fluorspar mine; see Revenue group	9
L and G Mining Co.	17
La Plata prospect; see Michigan prospect	10
Last Chance group	16
Leadville district	24
Lige-Harris prospect	7
Lincoln mine	13
Linda and St. Joseph group	15
Little Fluorspar prospect	14
Little Jim prospect	9
Lodi district	25
Lund Mining Co.; see Sawmill Canyon mine	24
Madraso prospect	9
Mammoth prospect, Nye County	18
Mammoth prospect, Pershing County	21
Manhattan district	25
Mary Jane group	16
McDowell, Thomas; see Dixie mine and Iowa Canyon mine	10, 12
McKay prospect; see Susie prospect	23
Merkt prospect	10
Michigan prospect	10
Monolith Cement Co.; see Goldspar mine	7
Moonlight mine	25
Mount Montgomery Pass district	15
Mount Wheeler district	25
Murray mine; see Murrey group	17
Murrey group	17
Murrey, L. B.; see See Bee group	16
Neal prospect; see Susie prospect	23

Nevada district	25
Needle Peak prospect	22
Nipton prospect	10
Nyco Fluoride Corp. mine (Union district)	17
Nyco mine (Quinn Canyon Range district)	18
Oreana district	25
Osceola district	25
Overholzer mine; see Fluorspar King group	15
Overholzer, W. W.; see Fluorspar King group	15
Paiute prospect	19
Patterson district	25
Perry, A. M.; see Fluorspar King group	15
Piedmont prospect	21
Purple Spar prospect	9
Queen Canyon prospect	15
Quinn Canyon Range district 6, 8, 18, 19,	20
Rainbow prospect, Nye County	19
Rainbow prospect, White Pine County	24
Rattlesnake Heaven prospect	24
Revenue group	9
Round Mountain district	25
Sacramento district	25
Sawmill Canyon mine	24
Schendel, Marion; see Fluorine group	22
Schwabrow, Henry; see Fluorine group	22
See Bee group	16
Shae mine; see Goldspar mine	21
Shannon Queen prospect	20
Smith, Gordon and Lindsay, see Chicago claim and L and G Mining Co.	17
Shoshone group; see See Bee group	16
Sorenson Fluorspar prospect; see Amry prospect	11
Spar group	18
Spar Dome mine	14
Spruce Mountain district	25
St. Joseph group; see Linda group	15
Stolte mine; see Nipton prospect	10
Summerfield mine; see Fluorspar King group	15
Sunset prospect	11
Susie prospect	23
Tempiute mine; see Lincoln mine	13
Terrell, D. W., S. C., and S. E.; see Nyco mine	18
Thorkildson mine; see Nipton prospect	10
Thunderbird prospect	12
Treadwell mine; see Goldspar mine	21
Tungsten district	25
Union district 6, 8, 16,	17
Uranico mine; see Murrey group	17
Valery mine; see Fluorine group	22
Valley View prospect	15
Vesco prospect	23
Wah Chang Corp.; see Lincoln mine	13
Wah Chang Tungsten mine; see Lincoln mine	13
Walker prospect	10
Walters, F. E.; see Revenue group	9

Welch Spar group; see Spar group	18
Wells Cargo Inc.; see Wells Cargo mine	13
Wells Cargo mine	4, 6, 7, 13
West Slope prospect	14
Western Fluorspar and Lead mine; see Colton mine	17
White Cloud district	25
White Horse prospect; see Big Jim prospect	18
Wightman prospect; see Edson-Wightman prospect	23
Wonder district	25

FLUORSPAR DEPOSITS

CHURCHILL COUNTY

- 1 Madraso Prospect
- 2 Revenue Group
- 3 Purple Spar Prospect
- 4 Little Jim Prospect
- 5 Black Hills Prospect
- 6 Dixie Mine
- 7 Michigan Prospect
- 8 Merkl Prospect

CLARK COUNTY

- 9 Walker Prospect
- 10 Nipton Prospect

DOUGLAS COUNTY

- 11 Boulder Hill Mine

ESMERALDA COUNTY

- 12 Flora Prospect
- 13 Bullfrog - George Prospect
- 14 Amry Prospect

HUMBOLDT COUNTY

- 15 Sunset Prospect
- 16 Thunderbird Prospect

LANDER COUNTY

- 17 Eli Cee Prospect
- 18 Iowa Canyon Mine
- 19 Hill Top Prospect

LINCOLN COUNTY

- 20 Greenspar Prospect
- 21 El Cortez Prospect
- 22 Paiute Prospect
- 23 Blue Bell Prospect
- 24 Shannon Queen Prospect
- 25 Fluorspar Corp. of America
- 26 Florence Prospect
- 27 Wells Cargo Mine
- 28 Lincoln Mine

MINERAL COUNTY

- 29 Little Fluorspar Prospect
- 30 Kaiser Mine
- 31 West Slope Prospect
- 32 Spar Dome Mine
- 33 Black Cap Prospect
- 34 Fluorspar King & Blue Bell Group
- 35 Valley View Prospect
- 36 Linda & St. Joseph Group
- 37 Queen Canyon Prospect

NYE COUNTY

- 38 See Bee Group
- 39 Fluorspar Group
- 40 Alameda Claims
- 41 Last Chance Group
- 42 Mary Jane Group
- 43 Murrey Group
- 44 Chicago Claim
- 45 Allied Group
- 46 Colton Mine
- 47 Crystal Group
- 48 Mammoth Prospect
- 49 Big Jim & White Horse Prospects
- 50 Nyco Mine
- 51 Spar Group
- 52 Highgrade Group
- 53 Rainbow Prospect
- 54 Bruno Prospect
- 55 Daisy Mine
- 56 Goldspar Mine

PERSHING COUNTY

- 57 Mammoth Prospect
- 58 Piedmont Prospect
- 59 Flourine Group
- 60 Devaney Prospect
- 61 Needle Peak Prospect
- 62 Emerald Spar Group
- 63 Bohannon Prospect
- 64 Susie Prospect
- 65 Hay & Inman Prospect
- 66 Harris Prospect
- 67 Edson - Wightman Prospect
- 68 Baker Prospect
- 69 Vesco Prospect

WASHOE COUNTY

- 70 Leadville District

WHITE PINE COUNTY

- 71 Hilltop Prospect
- 72 Rainbow Prospect
- 73 Rattlesnake Heaven Prospect
- 74 Sawmill Canyon Mine

FLUORITE AS GANGUE MINERAL

- G-1 White Cloud District, Churchill Co.
- G-2 Bruffy's Hot Springs, Churchill Co.
- G-3 Wonder District, Churchill Co.
- G-4 Gold Butte, Clark Co.
- G-5 Jarbidge District, Elko Co.
- G-6 Spruce Mountain District, Elko Co.
- G-7 Moonlight Mine, Humboldt Co.
- G-8 Patterson District, Lincoln Co.
- G-9 Lodi District, Nye Co.
- G-10 Fairplay District, Nye Co.

- G-11 Round Mountain District, Nye Co.
- G-12 Manhattan District, Nye Co.
- G-13 Antelope District, Pershing Co.
- G-14 Oreana District, Pershing Co.
- G-15 Ely District, White Pine Co.
- G-16 Sacramento District, White Pine Co.
- G-17 Nevada District, White Pine Co.
- G-18 Osceola District, White Pine Co.
- G-19 Tungsten District, White Pine Co.
- G-20 Mount Wheeler District, White Pine Co.

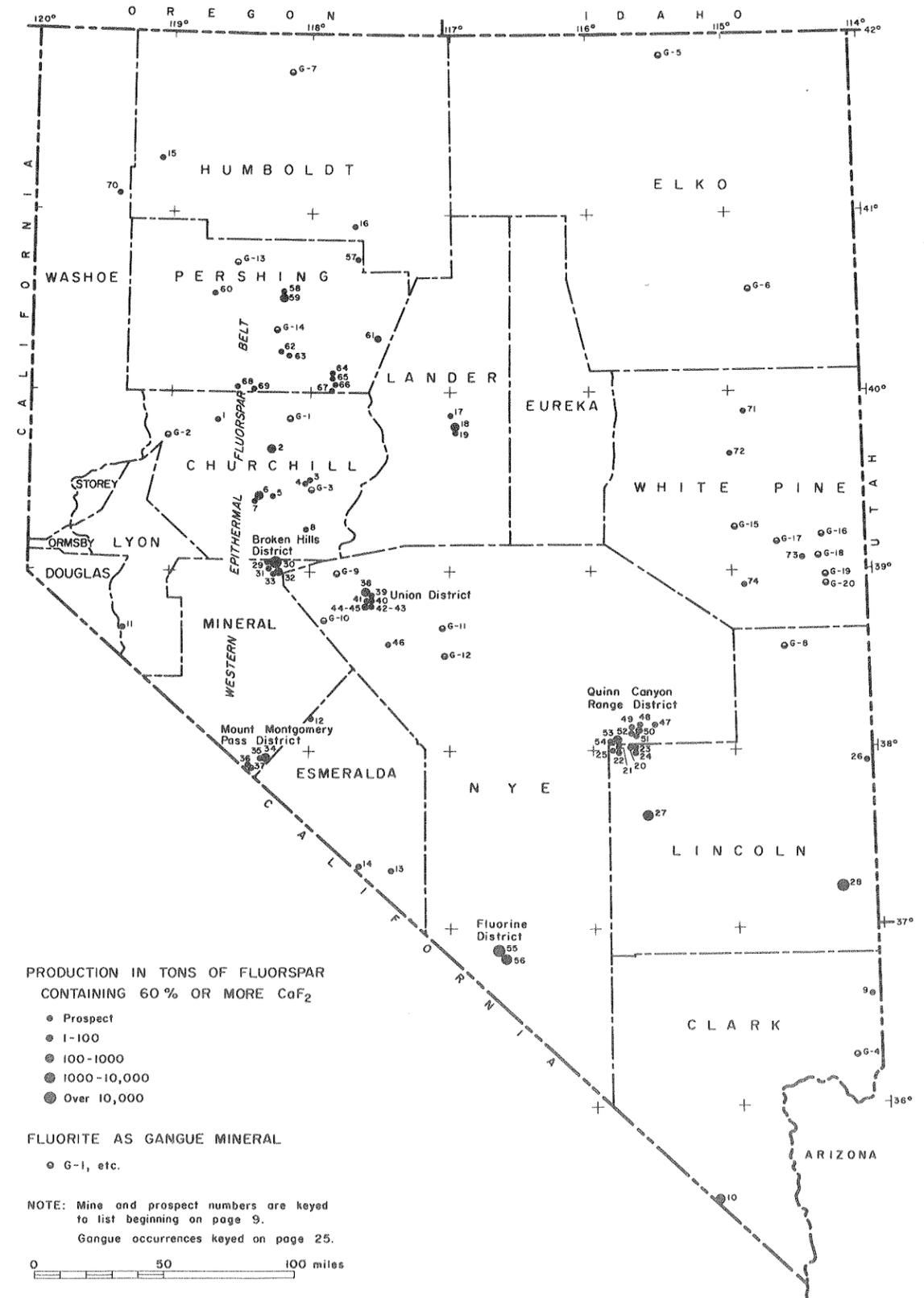


Plate 1. Map showing location of Nevada fluorspar occurrences.

The Mackay School of Mines is one of the several colleges of the University of Nevada. The School consists of three divisions: the academic Departments of Instruction, the Nevada Bureau of Mines, and the Nevada Mining Analytical Laboratory. The Mackay School of Mines is thus the State of Nevada's educational research and public service center for the mineral industry.

The Nevada Bureau of Mines and the Nevada Mining Analytical Laboratory serve the public as State agencies to assist in developing Nevada's mineral resources; they identify, analyze, and evaluate minerals, rocks, and ores found in Nevada; they conduct field studies on Nevada geology and mineral deposits, including metallic and industrial minerals as well as oil and gas; they pursue laboratory and library research in mineral beneficiation, extractive metallurgy, and economic problems connected with the mineral industry of Nevada.

For information concerning the mineral resources and mineral industry of Nevada, write to: Director, Nevada Bureau of Mines, University of Nevada, Reno, Nevada.