



CONTACT INFORMATION  
Mining Records Curator  
Arizona Geological Survey  
416 W. Congress St., Suite 100  
Tucson, Arizona 85701  
520-770-3500  
<http://www.azgs.az.gov>  
[inquiries@azgs.az.gov](mailto:inquiries@azgs.az.gov)

The following file is part of the  
James Doyle Sell Mining Collection

### **ACCESS STATEMENT**

These digitized collections are accessible for purposes of education and research. We have indicated what we know about copyright and rights of privacy, publicity, or trademark. Due to the nature of archival collections, we are not always able to identify this information. We are eager to hear from any rights owners, so that we may obtain accurate information. Upon request, we will remove material from public view while we address a rights issue.

### **CONSTRAINTS STATEMENT**

The Arizona Geological Survey does not claim to control all rights for all materials in its collection. These rights include, but are not limited to: copyright, privacy rights, and cultural protection rights. The User hereby assumes all responsibility for obtaining any rights to use the material in excess of "fair use."

The Survey makes no intellectual property claims to the products created by individual authors in the manuscript collections, except when the author deeded those rights to the Survey or when those authors were employed by the State of Arizona and created intellectual products as a function of their official duties. The Survey does maintain property rights to the physical and digital representations of the works.

### **QUALITY STATEMENT**

The Arizona Geological Survey is not responsible for the accuracy of the records, information, or opinions that may be contained in the files. The Survey collects, catalogs, and archives data on mineral properties regardless of its views of the veracity or accuracy of those data.

AMERICAN SMELTING AND REFINING COMPANY  
Tucson Arizona

February 4, 1954

Mr. W R Landwehr, Chief Geologist  
Western Mining Department  
Salt Lake City Office

Fluorspar Survey  
New Mexico and Arizona

Dear Sir:

Herewith, in accordance with the instructions in your letter and memorandum of December 30, is a report on the Fluorspar industry of New Mexico and Arizona.

These data were accumulated and compiled in part-time work by Messrs. Stephens, Hardie, Papke, Gabelman, Courtright, and me. Sources included Company files, published information, and personal contacts. Operators of active mines and mills were contacted in a number of instances to get current information.

In an effort to evaluate the future production possibilities, it seemed necessary to select two bases: first, the maximum possibilities under current economic conditions and, second, under improved conditions - that is, an expanded, higher-priced market and/or lower operating costs. Therefore, in the following summaries, tabulations, etc., the term "current price-cost basis" implies that, without appreciable capital investment, there exist the physical conditions or capacity to produce at the estimated rate. The term "improved price-cost basis" means that economic conditions are assumed to be sufficiently favorable that production is limited only by the mechanical or physical conditions of mining and transportation without particular regard for capital requirements. Though it is not proposed that this latter, highly favorable condition is apt to prevail, an analysis on this basis permits estimates of maximum potential production.

In this survey, estimates of ore reserves could have been made in only a few cases. The matter does not seem critical because, compared to the demand for fluorspar, reserves are large. For example, in 1944 the U.S.G.S. estimated total reserves in New Mexico to be somewhat under a million tons of 55%  $\text{CaF}_2$  ore and about an equal amount of 20%  $\text{CaF}_2$  ore.

With the Los Lunas mill shut down, there now would seem to be excess milling capacity in the Southwest. Apparently the market for finished products requiring fluorite controls mill production. There is no competitive market for acid-grade fluorspar since the producer,

February 4, 1954

General Chemical Co., is also the consumer. The level of mine production is controlled by this company which is in a position to stockpile more than current requirements to maintain assured sources of ore and discourage possible competition for mill-feed. The capacity of the Deming mill is apparently equal to or greater than the current demand for its finished product. They have plans, and reportedly an appropriation, to increase their mill capacity. This may be in anticipation of improved market conditions, or it may be merely an assurance of retaining their control of production.

In New Mexico there are a large number of small deposits which, in a mechanical or physical sense, could become productive on an improved price-cost basis. But they are too widely distributed, and probably individually too small, to support any new milling facilities. This being the case, the General Chemical Co. mill with its expansion potential, and thereafter the Los Lunas mill, would absorb mine production under an improved price-cost situation. Only a substantial boom in the market would justify additional milling facilities.

Under any circumstances, Arizona's production will be inconsequential.

The foregoing conclusions would be upset, of course, if a relatively large deposit of fluorspar were to be discovered. The chance that this will occur does not appear to be good.

Yours very truly,

KENYON RICHARD

KR/cn

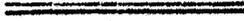
NEW MEXICO AND ARIZONA FLUORSPAR SURVEY

INDEX

	<u>Page</u>
SUMMARY - NEW MEXICO . . . . .	1-2
<u>DISTRICT SUMMARIES</u>	
Lordsburg Area . . . . .	3
Deming Area . . . . .	4
Burro Mts. Area . . . . .	5
Steeplerock District . . . . .	6
Gila District . . . . .	7
Mogollon Mts. Area . . . . .	8
Organ Mt. Area . . . . .	9
Hot Springs Area . . . . .	10
Oscura-San Andres Area . . . . .	11
Gallinas District . . . . .	12
Zuni Mts. Area . . . . .	13
Tijeras Canyon District . . . . .	14
Taos Area . . . . .	15
Socorro Area . . . . .	16
<u>MINES AND PROSPECTS, NEW MEXICO</u>	
Lordsburg Area . . . . .	17
Deming Area . . . . .	18
Burro Mts. Area . . . . .	19
Steeple Rock Dist. . . . .	20
Gila District . . . . .	21
Mogollon Mts. Area . . . . .	22
Organ Mts. Area . . . . .	23
Hot Springs Area . . . . .	24
Oscura-San Andres Mts. Area . . . . .	25
Gallinas District . . . . .	26
Zuni Mts. Area . . . . .	27
Tijeras Canyon District . . . . .	28
Taos Area . . . . .	29
Socorro Area . . . . .	30
<u>DETAIL, IMPORTANT MINES, NEW MEXICO</u>	
Burro Chief, Burro Mts. Area . . . . .	31
Greenleaf (Howard), Deming Area . . . . .	32
Huckleberry (Big Spar) . . . . .	33
Lyda K, Hot Springs Area . . . . .	34
Mirabal, Zuni Mts. Area . . . . .	35
Red Cloud, Gallinas Dist. . . . .	36
Shrine, Burro Mts. Area . . . . .	37
Twenty-one, Zuni Mts. Area . . . . .	38
Twenty-seven, Zuni Mts. Area . . . . .	39
U. S. Fluorspar Co., Hot Springs Area . . . . .	40
White Eagle, Deming Area . . . . .	41

INDEX, CONT'D.

	<u>Page</u>
<u>DETAIL, MILLS, NEW MEXICO</u>	
General Chemical Co., Deming . . . . .	42-43
Zuni Milling Co. . . . .	44
Heim, Gallinas . . . . .	45
Mex-Tex, San Antonio . . . . .	46
<u>ARIZONA STATE SUMMARY.</u> . . . . . 47	
Summary, Mayflower District. . . . .	48
<u>MINES AND PROSPECTS</u>	
May flower District . . . . .	49
Miscellaneous . . . . .	50
DUNCAN MILL, (Arizona Eastern Fluorspar Corp'n.) .	51



# TAB

Summary - New Mexico

## NEW MEXICO FLUORSPAR SURVEY

SUMMARY, JANUARY, 1954

The estimated total fluorspar production from New Mexico is 480,322 tons of 59%  $\text{CaF}_2$ . This total is arrived at by adding estimated total production from individual mines, but it cannot be reconciled with a lower figure of 398,000 tons arrived at by using a summary in the 1950 Minerals Yearbook and estimated shipments from 1951 and 1952 added to published production figures for the 1952-1953 fiscal year. The higher figure is preferred since our estimates of total production from two of the three major producing areas are considerably under figures published by the U. S. Geological Survey (Zuni Mts. and Burro Mts.) New Mexico ranks fourth among the States with about 4% of the total U. S. production.

The estimated current production rate is 29,400 tons of 60%  $\text{CaF}_2$  per year from six mines. This may be compared with the published figure of 24,300 tons for the 1952-1953 fiscal year. This estimated higher production rate may be accounted for by the added production of the Greenleaf mine in the Deming Area and the Red Cloud-Deadwood mine in the Gallinas District.

About fifty mines have production histories. Only six of these mines are currently operating. Maximum possible future production under current market conditions is estimated at about 100,000 tons of 54%  $\text{CaF}_2$  per year. This would come from the six operating mines plus the Lyda K mine and four mines in the Zuni Mt. area.

Under an "improved price-cost basis" the total possible production (or the physical limit) from 50 listed mines would be about 200,000 tons of 54%  $\text{CaF}_2$  per year. The three major districts (Zuni, Burro Mts. and Deming) and the Lyda K mine comprise 90% of this figure.

Over 80% of the current production of fluorspar ore in New Mexico goes to the custom flotation mill of the General Chemical Company in Deming from two mines in the Cooks Range and one mine in the Burro Mts. -- all within 65 miles of Deming. The Zuni Mts. area was an important producer, but there is no appreciable current production due to the recent shut-down of the Shattuck Denn Mill at Los Lunas. Small production from the Zuni Mts. may be going as metallurgical-grade hand-sorted fluorspar to Colorado Fuel and Iron Company at Pueblo, Colorado. Under current market conditions, it is unlikely that the Zuni Mts. Area will be active. Although this area is potentially the largest source of easy-milling ore in New Mexico, it cannot now compete with the mines tributary to Deming. Mines in the Deming area can be considered captives of the General Chemical Company which mines, mills and fabricates fluorspar into finished products for the chemical, aluminum and petroleum industries. The custom mill at Deming pays a maximum special price of \$26.85 per ton of 90% or better  $\text{CaF}_2$  delivered to the mill in trucks; the regular price for this grade of ore delivered in trucks is \$24.15 per ton.

Recent reports indicate that the General Chemical Company has approved a \$70,000 appropriation for expansion of their Deming custom mill. This expansion could possibly double their capacity to 150 tons per day. A regrinding and boiling circuit would be added to treat refractory siliceous ores (such as the Lyda K) as well as to re-treat their tailings pile which carries 15% CaF<sub>2</sub>.

The Heim mill at Gallinas in Lincoln County produces a 60% fluorspar product by gravity concentration which is sent to the General Chemical Company flotation mill at Deming. It is possible that the Heim mill could be expanded to take custom ore from the Gallinas District and produce a higher-grade concentrate. Such expansion is not anticipated since the principal product of the mill is bastnasite which occurs in the fluorspar ore.

The New Mexico Copper Corporation which operates the Rio Tinto Mine in the Gallinas District has indefinite plans for a flotation mill to treat their fluorspar, galena, chalcopryite ore. It is very doubtful that these plans will materialize.

The Mex-Tex gravity concentration mill at San Antonio in the Oscura-San Andres Mts. Area produces a jig-tail product that carries from 7½% to 15% CaF<sub>2</sub>. A small potential exists in a stockpile of this product, but no effort is now being made for recovery of this fluorspar.

Mathis and White, lessee-operators of the Greenleaf fluorspar mine in the Florida District, Luna County, own a flotation mill at Silver City. In April, 1953, plans were being made to rehabilitate this mill to handle fluorspar ore from the Gila and Burro Mt. Districts in competition with the General Chemical Company's custom flotation mill at Deming. These plans were never carried out because of lack of funds and probably by a better competitive position enjoyed by General Chemical Company. In January, 1954, Mathis and White had no plans for operating their mill at Silver City. Besides the difficulty of finding a suitable market for their ore, they could not hope to compete with a "bonus" system such as that reportedly given to the Ozark-Mahoning Company (\$2.00 per ton) to discourage them from building their own mill.

---

# TAB

~~District Summaries~~  
NEW MEXICO

NEW MEXICO FLUORSPAR SURVEYLORDSBURG AREASUMMARY:

The estimated total production from this area is 3400 tons of 60% fluorspar and 100 tons of 70% fluorspar. There is no current production. Estimated production potential is 500 tons/month of 60% fluorspar with improved market conditions. This production potential is estimated for General Chemical Company's mine in the Fluorite Group 10 miles south of Lordsburg. Potential production is based on ore outlined by diamond drilling and some underground development reported by the owners. Truck-hauls on dirt roads to Lordsburg from known prospects are up to 45 miles in length. The custom fluorspar mill of the General Chemical Company is located at Deming, 54 miles via Southern Pacific R.R., or U.S. Highway 70-80 east of Lordsburg.

Fluorspar veins in the area are in Tertiary and Cretaceous volcanics and have widths up to six feet.

4

NEW MEXICO FLUORSPAR SURVEY

DEMING AREA

SUMMARY:

Estimated total production from this area is 156,200 tons of 60% fluorspar. These tonnage and grade figures are estimates based on conflicting statistics on production from individual mines. Present production at the rate of 1500 tons/month of 60% fluorspar could be increased to an estimated 3100 tons/month under improved market conditions. Present production is going to the custom flotation mill of General Chemical Company located at Deming. Maximum truck-haul to Deming is from northern Cooks' Range, 32 miles distant.

Fluorspar is mined from veins associated with Tertiary dikes in pre-Cambrian granite in northern Cooks Range. At Fluorite Ridge (southern Cooks Range) and in the Florida Mts., fluorspar veins occur in Tertiary intrusive and clastic rocks. Fluorspar ore from the White Eagle mine in northern Cooks Range is reportedly difficult to mill due to finely divided silica intimately associated with the fluorite. Ores from Fluorite ridge in southern Cooks Range are reportedly easy-milling.

NEW MEXICO FLUORSPAR SURVEY

BURRO MTS. AREA

SUMMARY:

Total production from the area is estimated at 104,550 tons of 60% fluorspar. These tonnage and grade figures are estimates based on conflicting statistics on production from individual mines. Current production is estimated at 500 tons/month of 60% fluorspar. With improved market conditions, production could probably be increased to about 1600 tons/month. The 60% grade of fluorspar estimated is an average of a higher metallurgical grade and lower mill-grade production. Most of the production has come in the past, and will probably come in the future, from two mines, the Shrine and the Burro Chief, owned by General Chemical Company and Phelps Dodge Corporation, respectively. The average truck-haul from mines to Silver City is about 15 miles (including about 5 miles of dirt road). The truck-haul from Silver City to Deming is 56 miles on pavement, or 50 miles via a spur of the Santa Fe Railroad. Ore from the area is purchased by the custom flotation mill of the General Chemical Company in Deming. During the period from 1943 to 1947, ore was trucked to Gila, an average of 30 miles (including 5 miles of dirt road) to a Government stockpile that was treated by a gravity concentration mill. This mill is now dismantled.

Fluorspar mineralization is mined from veins and breccia-filling associated with faults in pre-Cambrian granite. Tertiary rhyolite intrusives in the granite are also associated with the fluorspar deposits.

NEW MEXICO FLUORSPAR SURVEY

STEEPLEROCK DISTRICT

SUMMARY:

Estimated total production is 3127 tons of 60% fluorspar produced from 1940 to 1943. Other production, if any, is negligible. There is no current production, and no future production can be expected even with improved market conditions. This district is about 25 miles from Duncan, Arizona (about 12 miles of dirt truck-road). Probably all production has been processed in Duncan.

Veins mined have been up to seven feet in width in silicified Tertiary andesite porphyry.

7

NEW MEXICO FLUORSPAR SURVEY

GILA DISTRICT

SUMMARY:

Total production from the district is estimated at 30,640 tons of 55% fluorspar. The current production of 50 tons/month could possibly be increased to 650 tons/month with improved market conditions. The average truck-haul to Gila is 8 miles. A mill located at Gila during the period 1943 to 1947 (now dismantled) treated ore from the district. The truck haul to the custom flotation mill of the General Chemical Company at Deming is 82 miles on pavement from Gila, via Silver City. This route is paralleled by a truck haul of 26 miles to Silver City, where a spur of the Santa Fe Railroad runs to Deming, about 50 miles distant.

Fluorspar is mined from veins in Tertiary extrusive rocks.

NEW MEXICO FLUORSPAR SURVEYMOGOLLON MTS. AREASUMMARY:

Total production from this area is estimated at 11,500 tons of 60% fluorspar. There is probably no current production. With improved market conditions, the area has an estimated potential production of 5000 tons/year of 60% fluorspar. This potential production is estimated for the Huckleberry mine, the only mine of importance in the district. The truck-haul to Silver City is 64 miles including 8 miles of dirt road. The custom flotation mill of General Chemical Company at Deming is about 50 miles by paved highway or Santa Fe Railroad from Silver City.

Fluorspar deposits are in volcanic rocks as fissure veins or as breccia-fillings. In some deposits, replacement has been important as in the Huckleberry mine. In this mine the fluorspar ore is localized beneath a zone of impermeable gouge in a low-angle fault which cuts pyroclastic rocks.

NEW MEXICO FLUORSPAR SURVEY

ORGAN MT. AREA

SUMMARY:

Total estimated production from this area is 25,000 tons of 73% fluorspar. Approximately 80% of this production came from the Tortuga mine. There is no current production from the area. Potential estimated production from this area with improved market conditions is 3000 tons/year of 60% fluorspar. This production is estimated for the Tonuco mine. The Tonuco mine is about a mile east of the Santa Fe Railroad, and about 2-1/2 miles east of U.S. Highway 85; Rincon is 8 miles north. The rail and highway (N.M. 26) distance to Deming from Rincon is about 54 miles.

The larger fluorspar deposits in the area are in northwesterly-trending fault zones. Quartz, barite and calcite are associated with the fluorite.

NEW MEXICO FLUORSPAR SURVEY

HOT SPRINGS AREA

SUMMARY:

Total estimated production from this area is 11,305 tons of 60% fluorspar. There is no current production. Potential production with improved market conditions is estimated at 7600 tons/month of 48% fluorspar from two properties.

The Lyda K mine in the southern Caballos Mountains, has a potential of 4000 tons per month and is 24 miles north of Hatch, the nearest rail-loading point on the Santa Fe Railroad. The 24-mile truck-haul includes 3 miles of dirt road and 21 miles on paved U.S.Highway 85. The U.S. Fluorspar Company mines in the northern Caballos Mountains, with a potential of 3600 tons per month of 45% fluorspar, are about 19 miles south of Engle, rail-loading point on the Santa Fe Railroad. The 19-mile truck haul includes 8 miles of rough dirt road and 11 miles of improved dirt road.

The fluorspar deposits occur in pre-Cambrian granite and in Paleozoic sedimentary rocks. The deposits are fissure veins or bedded deposits, with one exception, which is a contact metamorphic deposit. The deposits have associated quartz and calcite and occasional barite and sulfides.

//

NEW MEXICO FLUORSPAR SURVEY

OSCURA-SAN ANDRES MTS. AREA

SUMMARY:

There is no known past or current production from this area. The only known potential of the area is the jig-tailings stockpile of the Mex-Tex mill. This stockpile is estimated to contain 50,000 tons of 7-1/2% to 15% fluorite. The stockpile is being increased at a rate of 12,000 tons per year. The Mex-Tex mill is located on a siding of the Santa Fe Railroad about one mile south of San Antonio.

Most of the fluorspar deposits in the area are fissure veins and replacements of brecciated limestone. There may be some small prospects in pre-Cambrian granite, but this is not definitely known. The mineral fluorite occurs with quartz and barite as a gangue in lead and copper deposits.

NEW MEXICO FLUORSPAR SURVEYGALLINAS DISTRICTSUMMARY:

Total estimated production from this area is 6,000 tons of 30% fluorspar ore. Current production is an estimated 800 tons per month of 30% fluorspar ore. Potential production with improved market conditions is estimated at 1,400 tons per month of 30% fluorspar ore.

The mines average six miles of dirt road from Gallinas, a loading point on the Southern Pacific Railroad and also the location of the Heim gravity-concentration mill for bastnasite and fluorspar. The major production comes from the Red Cloud-Deadwood deposit and is treated at the Heim mill. The mill produces 60% fluorspar as a by-product of bastnasite recovered from mill feed. Gravity concentrated fluorspar is shipped with some hand-sorted ore to the custom flotation mill of General Chemical Company in Deming, via the Southern Pacific Railroad.

Fluorspar mineralization in the Gallinas District occurs as veinlets and breccia-filling in broken sandstone (Permian) and intrusive syenite porphyry (Tertiary?).

NEW MEXICO FLUORSPAR SURVEYZUNI MTS. AREASUMMARY:

Total estimated production from this area is 129,100 tons of 50% fluorspar. The maximum estimated past production rate is 10,000 tons per year. There is no known current production from the area. Potential production from the area with improved market conditions is estimated to be 2,850 tons per month of 47% fluorspar. This production would require extensive development. Gravel and dirt roads, some very poor, connect the mines with Grants, 23 to 26 miles northerly. Grants is on the Santa Fe Railroad 85 miles from Los Lunas. The custom mill of the Zuni Milling Company at Los Lunas has been closed since October, 1953.

Fluorspar deposits in the Zuni Mountains occur as fissure veins and breccia-filling in the pre-Cambrian granitic core of the mountains. Most of the veins strike northeast and vary from 2 to 6 feet in width. Some of the veins have been traced for several thousands of feet along strike. Ore from the Zuni Mountains is described as easy milling.

NEW MEXICO FLUORSPAR SURVEY

TIJERAS CANYON DISTRICT

SUMMARY:

Total past production is estimated at 6000 tons of 60% fluorspar. There is no current production, and there are no geologic indications of significant future production. Most deposits are within a restricted area controlled by the Navy.

The fluorspar deposits are fissure veins or breccia-fillings. Most veins are within pre-Cambrian rocks close to faulted contacts with sedimentary rocks.

NEW MEXICO FLUORSPAR SURVEYTAOS AREASUMMARY:

Total estimated production from this area is about 1800 tons of mill-grade ore (50% ?). There is no current production, but potential production with improved market conditions is estimated to be 150 tons/month. Several of the mines are reportedly being explored at the present time. Santa Fe is the nearest railroad shipping point, about 60 to 100 miles from the fluorspar deposits via paved highways and short stretches of good dirt road. The rail distance from Santa Fe to Los Lunas, location of the Zuni Milling Company's custom mill (now shut down), is about 100 miles.

Fluorspar is present in veins or brecciated shear zones. These deposits are in the pre-Cambrian complex or in Tertiary rocks.

NEW MEXICO FLUORSPAR SURVEYSOCORRO AREASUMMARY:

There is no recorded production of fluorspar from this area. There is no current production, and potential is considered poor.

Fluorspar occurs as fissure veins and breccia-fillings in pre-Cambrian granite and Paleozoic sedimentary rocks. Generally the fluorspar, with quartz and barite, is a gangue mineral in lead and copper deposits.

# TAB

MINES & PROSPECTS  
NEW MEXICO

NEW MEXICO FLUORSPAR SURVEY, January, 1954

List of Mines

LORDSBURG AREA (Animas Mts. Dist., Lordsburg Dist.)

<u>Map Index No.</u>	<u>Property</u>	<u>Production History</u>	<u>Present Production</u>	<u>Future Production</u>	
				<u>Current Price-cost basis</u>	<u>Improved Price-cost basis</u>
1	Animas	3000T-60% ('42-'43) 100T-Met. Grade (70%)	None	None	Negligible
2	Fluorite Gp.	400T-60% ('37-'44)	None (Jan. '54)	None	500T/Mo.

PROSPECTS

Lone Star (Lordsburg Dist.)

Hoggett (Animas Mts. Dist.)

NEW MEXICO FLUORSPAR SURVEY, JANUARY, 1954

List of Mines

DEMING AREA (Little Florida Mts., Fluorite Ridge and Cooks Peak Dists.)

Map Index No.	Property	Production History	Present Production	Future Production	
				Current Price-cost basis	Improved Price-cost basis
3	Florida (Duryea)	200T - 70%	Prob. none	None	Insignificant
4	Greenleaf (Howard)	28,000T + 60% thru '43 <u>6,000T</u> +60% '44-'53 Est. 34,000T +60% total	300T/Mo. 70%	600T/Mo. 70%	1000T/Mo. 70%
5	Saddler	32,000T '09 - '38	None	None	100T/Mo.
6	Lucky	Unknown, est. 5000T	None	None	50T/Mo.
7	Grattan	12000T thru '44 20,000T Total prod. est.	None	None	50T/Mo.
8	San Juan	Small	None	None	50T/Mo.
9	Greenspar	Unknown, est. 25000T	None	None	50T/Mo.
10	White Eagle	20,000T thru '45 40,000T est. total	600T/Mo. Stockpile 600T/Mo. to Gen. Chem. Mill Deming 1200T/Mo. 60% Total	1200T/Mo. 60%	1800T/Mo. 60%

PROSPECTS

Price Little Florida Mts. Dist.

- Spar No. 2 (Deckert) )
- Whitehill )
- Tip Top )
- Grattan State Land ) (Fluorite Ridge Dist.)
- Hilltop Spar )
- Greenleaf No. 4 )
- Duke of Luxemburg )
- Bond )
- Lookout No. 1 ) (Cooks Peak Dist.)
- Defense )
- Vista & Wagon Tire )

NEW MEXICO FLUORSPAR SURVEY, JANUARY, 1954

List of Mines

BURRO MTS. AREA (Burro Mt., Flemming, Red Rock and White Signal Districts)

Map Index No.	Property	Production History	Present Production	Future Production	
				Current Price-cost basis	Improved Price-cost basis
11	Spar Hill	800T-54% ('42-'44)	Unknown	Unknown	Unknown
12	Shrine (Osmer)	5000T-80% ('36-'44) 25000T-60% ('45-'53) (Estimated) 30000T-63% Total	500T/Mo.-60% (Estimated)	500T/Mo.-60% est.	800T/Mo.-60% est.
13	Burro Chief	28,500T - 57% ('13-'44) 31,500T-60% ('45-'53) (Estimated) 60,000T-59% Total	None	None	500T/Mo.-60% est.
14	Hummingbird	1950T-50% est.	Probably none	Probably none	50T/Mo.-50% est.
15	Great Eagle	3800T-92% ('17-'21) 1900T-70% ('31-'41) 6000T-60% ('43-'44) None est. ('45-'53) 11,700T-72% Total (Est. Grades)	None	None	250T/Mo.-60% Max. Poss. Estimated
16	Tom McCauley	100T, Est. ('45 or '46) 60%	Unknown (some devel. work March, 1953)	Probably none	10T/Mo. 60% est.

PROSPECTS

Valley Spar, Ace High, Friday, )  
Pine Canyon, Purple Heart, ) Burro Mts. Dist.  
Clover Leaf, Long Lost Brother )

Cottonwood Canyon, Ash Spring Canyon (Tularosa) - Flemming Dist.

Harper; Jack Pot - Telegraph Dist.

Money maker, Blue Bird, American, Knight Peak, Accident, Malpai Tanks, Bound's Ranch, )  
Continental, Double Strike, Jap Ranch, Windmill, Grand View, Fenceline, Grant County ) White Signal District

BURRO MTS. AREA  
19

NEW MEXICO FLUORSPAR SURVEY, JANUARY, 1954

List of Mines

STEEPLE ROCK DISTRICT

Map Index No.	Property	Production History	Present Production	Future Production	
				Current Price-cost basis	Improved Price-cost basis
17	Mohawk	3000T.-60% ('40-'41)	None	None	Negligible
18	Powell (Fork)	127T.-59% ('43)	None	None	Negligible

PROSPECTS

Big Nine

NEW MEXICO FLUORSPAR SURVEY, JANUARY, 1954

List of Mines

GILA DISTRICT

Map Index No.	Property	Production History	Present Production	Future Production	
				Current Price-cost basis	Improved Price-cost basis
19	Clum	25,000T-55% ('37-'54)	50T/Mo. - 75%	50T/Mo. - 75%	50T/Mo. - 75%
20	Foster	5,000T-70% ('80-'54)	None	None	100T/Mo.-70%
21	Victoria	600T-55% ('44-'?)	None	None	Unimportant
22	Last Chance	40T-40% (1944-?)	None	None known	50,000T-30% reserves possible 500T/Mo-30%

PROSPECTS

Big Trail  
Brock Canyon  
Big Spar  
Blue Spar  
Cedar Hill (Howard)  
Thanksgiving  
Watson Mountain  
Blue Spar West Vein  
Green Spar

NEW MEXICO FLUORSPAR SURVEY, January, 1954

List of Mines

MOGOLLON MTS. AREA (74 Mountain, Mogollon, and Wilcox Districts)

Map Index No.	Property	Production History	Present Production	Future Production	
				Current Price-cost basis	Improved Price-cost basis
23	Good Hope (Rain Creek, Blue Bird, Gold Spar)	1100T. - 85% (Estimated)	Unknown	Negligible	Negligible
24	Sacaton	400T.-55% to '43 Negligible to '53 (estimated)	Unknown - prob. none	Prob. none	Prob. none
25	Huckleberry	10,000T.-60% ('27-'44)	Unknown	None	420T/Mo. - 60%

PROSPECTS

Lone Star No. 7 )  
 Mogollon )  
 74 Mountain ) Mogollon District  
 Little Charlie )  
 Lakeview )

Rainbow (Wytcherly) )  
 Blue Rock ) Wilcox District

NEW MEXICO FLUORSPAR SURVEY, JANUARY, 1954

List of Mines

ORGAN MTS. AREA (Organ, Modoc, Tonuco Mt., Black Mt., and Tortugas Mt. Districts)

Map Index No.	Property	Production History	Present Production	Future Production	
				Current Price-cost basis	Improved Price-cost basis
26	Tortugas	20,000T.-75% ('19-'27)	None	None	Negligible
27	Tennessee	1,000T.-55% ('42-'44)	Unknown	None	Negligible
28	Tonuco (Incl. Beale prospect)	4,000T.-70% ('19-'25) (Est.)	Unknown	None	3000T./Yr. 60% est.

PROSPECTS

- Sunshine - Black Mtn. District
- Jones - Tortugas Mt. District
- Golden Lily )
- Silver Cliff )
- Bishop's Cap ) Organ District
- Ruby (Hanier) )

NEW MEXICO FLUORSPAR SURVEY, JANUARY, 1954

List of Mines

HOT SPRINGS AREA (Caballo Mt., So. Caballo Mt., Derry, Sierra Cuchillo, and Hermosa Districts)

Map Index No.	Property	Production History	Present Production	Future Production	
				Current Price-cost basis	Improved Price-cost basis
29	Alamo	3000T-50%	None	None	Unimportant
30	Lyda K	2500T-60% ('20-'37)	None	4000T/Mo.-50%	4000T/Mo.-50%
31	Imperial	Negligible	None	None	Unimportant
32	Blue Jacket	600T-55% est.	None (prob.)	None	None
33	U.S. Fluorspar Co., (White Star, Oakland, Universal)	4500T-70% ('26-'45) est.	None	None	3,600/Mo.-45%
34	Cox	705T-60% Est.	None	None	Unimportant
35	Napoleon (Rosa Lee)	Small amts. galena-fluorite	None	None	Unimportant
36	Scheelemite Area	No fluorspar	None	None	Unimportant (Possible 5000T-30% fluorspar as by-product)

PROSPECTS

Dewey )  
 Esperanza )  
 Fluoride )  
 Forty-One ) Caballo Mt. Dist.  
 Harding )  
 Marion )  
 Tingley )  
 White Swan )

Nakaye, Velarde — Southern Caballo Mt. Dist.

Victorio — Sierra Cuchillo Dist.

NEW MEXICO FLUORSPAR SURVEY, JANUARY, 1954

List of Mines

OSCURA-SAN ANDRES MTS. AREA (Hansonburg, Salinas Peak, Mockingbird Gap, Lava Gap and Goodfortune Creek Districts)

Map Index No.	Property	Production History	Present Production	Future Production	
				Current Price-cost basis	Improved Price-cost basis
37	Mex-Tex and Hur- low Co's. Hanson- burg Mine	Unknown	1000T/Mo. 7½-15% Fluorspar to Jig Tailing stockpile (Mex-Tex Co.)	1000T/Mo. 7½% - 15% fluorspar	1000T/Mo. 7½% - 15% fluorspar

PROSPECTS

Cave Spar	)	Goodfortune Creek Dist.	)	
Lava Gap	)	Lava Gap Dist.	)	
Mockingbird Gap	)	Mockingbird Gap Dist.	)	(San Andres Mts.)
Salinas Peak	)	Salinas Peak Dist.	)	

NEW MEXICO FLUORSPAR SURVEY, JANUARY, 1954List of Mines  
GALLINAS DISTRICT

<u>Map Index</u> <u>Number</u>	<u>Property</u>	<u>Production History</u>	<u>Present Production</u>	<u>Future Production</u>	
				<u>Current</u> <u>Price-cost basis</u>	<u>Price cost basis</u>
38	Red Cloud-Deadwood	3000T-60% ('43-'53)* (Estimated)	400T/Mo. - 60%*	650T/Mo.- 60%*	700T/Mo.-60%*
39	All American- Wild Turkey	None	None	None	None
40	Rio Tinto Grp.	Insignificant	Possibly - small	50T/Mo.	100T/Mo.

PROSPECTS

Sky High  
Hoosier Girl  
Eagle Nest  
Congress  
Conqueror-Hilltop  
Helen S.  
Old Hickory  
Eureka  
Bottleneck  
Summit  
Canyon Lode  
Big Bend Ext.  
South Star (Julia Ann)

\*Production by gravity concentration of 30% mine run ore with occasional shipments of hand-sorted 60% fluorspar ore.

NEW MEXICO FLUORSPAR SURVEY, JANUARY, 1954

List of Mines

Zuni Mts. Area

<u>Map Index No.</u>	<u>Property</u>	<u>Production History</u>	<u>Present Production</u>	<u>Future Production</u>	
				<u>Current Price-cost basis</u>	<u>Improved Price-cost basis</u>
41	Twenty-one	52,500T.-55%, est.	Prob. inactive	4500T/Yr.-50% (est.)	9000T/Yr.50% (possible)
42	Twenty-seven	Est. 52,500T-40% (assuming equal prod. betw. Twenty-one & Twenty-seven)	" "	4500T/Yr.-40% (estimated)	9000T/Yr.40% (possible)
43	Spruce Hill & Sect. 15	300T. approx.	Intermittent expl.	None	Insignificant
44	Juniper	400T. approx.	None	None	Insignificant
45	Porter-Mirabal	300T-55% est.	None	100T/Mo.-55% (possible)	100T/Mo.-55% poss.
46	Bonita	900T.Approx.	None	None	None
47	Betts	200T/Approx.	None	None	None
48	Mirabal (Copperhill)	22,000T.-60% approx.	None	625T/Mo.-55% est.	1250T/Mo.-50% est.

PROSPECTS

Breece  
Zuni No. 1  
Bonnekay  
Ice Caves  
Stella Mae

NEW MEXICO FLUORSPAR SURVEY, JANUARY, 1954

List of Mines

TIJERAS CANYON DISTRICT

<u>Map Index No.</u>	<u>Property</u>	<u>Production History</u>	<u>Present Production</u>	<u>Future Production</u>	
				<u>Current Price-cost basis</u>	<u>Improved Price-cost basis</u>
49	Galena King	100T-approx.	None (under Navy lease)	None	None
50	Blackbird	500T.-60% approx.	None (under Navy lease)	None	None

Prospects

Capulin Peak  
Red Hill  
Eighty-five  
Darrel  
Schmidt

NEW MEXICO FLUORSPAR SURVEY, JANUARY, 1954

List of Mines

TAOS AREA (La Madera, Ojo Caliente, El Rito, and Cleveland Dists.)

<u>Map Index No.</u>	<u>Property</u>	<u>Production History</u>	<u>Present Production</u>	<u>Future Production</u>	
				<u>Current Price-cost basis</u>	<u>Improved Price-cost basis</u>
51	Mora Minint Co.	1000T.- est.	None	Unimportant	50T/Mo. poss.
52	M. Sanchez Lease	300T - est.	Exploration	50T/Mo.-poss.	50T/Mo. poss.
53	E. Cole Lease	500T.-est.	Exploration	50T/Mo. poss.	50T/Mo. poss.

PROSPECTS

T. Trejo Lease - Ojo Caliente Dist.  
W. Chavez - Cleveland Dist.

NEW MEXICO FLUORSPAR SURVEY, JANUARY, 1954

List of Mines

SOCORRO AREA (Ladrones Mts., Chupadera Districts)

<u>Map Index No.</u>	<u>Property</u>	<u>Production History</u>	<u>Present Production</u>	<u>Future Production</u>	
				<u>Current Price-cost basis</u>	<u>Improved Price-cost basis</u>

No properties

PROSPECTS

Dewey (Jenkins)	)	Chupadera Dist.
Joyita	)	
Martinez	)	
La Bonita	)	
Gonzales	)	
Juan Torres	-	Ladrones Mts. Dist.

# TAB

DETAILS, IMPORTANT MINES  
NEW MEXICO

NEW MEXICO FLUORSPAR SURVEY - JANUARY, 1954

Name: BURRO CHIEF MINE  
District: Burro Mts.  
County: Grant  
State: New Mexico

Location: S 1/2 of Section 15 and N 1/2 of Section 22, T 19 S, R 15 W.  
1 1/2 miles SW of Tyrone. 12 1/2 miles by highway from Silver City, shipping  
point on Santa Fe R. R.

Ownership: Phelps Dodge Corporation.

Type of Deposit: Fault breccia veins in altered granite.

Development: Vertical shaft 800 feet (1950). Levels at 260, 400, 500 and  
650. Develop. extends 1000 feet south and 300 feet north of shaft.

Production: 1913-1944 - 28,500 tons + 57% CaF<sub>2</sub>  
1943-1953 - 31,500 tons of 60% CaF<sub>2</sub> est.  
Est. total, 60,000 tons of 59%

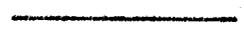
Operations ceased July 1, 1953.

Reserves: Information not at hand.

Production Facilities: Equipped for operation in July, 1953.

Production Costs: No information at hand.

References: New Mex. Bureau of Mines and Mineral Resources Bull. 21 - 1946.  
U. S. G. S. Bull. 973-F.



NEW MEXICO FLUORSPAR SURVEY — JANUARY, 1954

Name: GREENLEAF (HOWARD) MINE  
 District: Fluorite Ridge  
 County: Luna  
 State: New Mexico

Location: Section 18, T 22 S, R 8 W. 2,000 feet SE from Saddler Mine on SE end of Fluorite Ridge. 5 miles to Mirage nearest railroad loading point on the S. P. R. R.

Ownership: Owned by Greenleaf Corporation; leased to H. E. McCray; sub-leased to Mathis and White.

Type of Deposit: Fault fissure veins in monzonite porphyry and Tertiary clastics contain lenses of high grade fluor spar and brecciated masses cemented by fine-grained fluorite and cryptocrystalline red and brown quartz or jasper.

Development: 510-foot inclined shaft ( $-70^{\circ}$ - $-80^{\circ}$ ) with levels at 60, 173, 210, 220, 367 and 490 feet. Drifting on 367 level; south 145', north 285'. Present workings on 490-foot level.

Production: 28,000 tons + 60%  $\text{CaF}_2$  thru 1943. Owner's estimate.  
 6,000 " + 60%  $\text{CaF}_2$  1944-1953. Estimated.  
 34,000 " + " "

Current: 300 tons per month + 70%  $\text{CaF}_2$ . Going to Gen. Chem. Co. custom mill at Deming.

Future (anticipated): 600 tons per month + 70%  $\text{CaF}_2$ .

Reserves: Measured - Negligible amounts.  
 Indicated - 10,000 to 100 feet of additional depth.  
 Inferred - No estimate made.

Production Facilities: Ore bins, buildings, hoisting and mining equipment including pump.

Production Costs: On present 300-ton-per-month basis with ten men employed, direct and indirect mining costs including development are estimated at around \$22.50 per ton.

References: New Mexico Bureau of Mines and Mineral Resources Bull. 21 — 1946.  
 New Mexico " " " " " " Bull. 4 — 1928.  
 U. S. B. M. Report of Investigations 3987.

NEW MEXICO FLUORSPAR SURVEY - JANUARY, 1954

Name: HUCKLEBERRY MINE  
 (Big Spar prospect)  
 District: Mogollon Mts.  
 County: Catron  
 State: New Mexico

Location: Section 29, T 11 S, R 19 W. Four miles east of Glenwood and 65 miles NW of Silver City, shipping point on Santa Fe R. R.

Ownership: Acquired by R. S. Dunbar in 1944.

Type of Deposit: Fluorite mineralization fills openings and replaces country rock in the brecciated zone of a flat ( $-25^{\circ}$ ) dipping fault in Tertiary volcanics.

Development: Two adits and flat stope area 100 feet by 200 feet. Ore 2 feet to 12 feet thick; av. 6 feet.

Production: 1927-1944 —  $\pm$  10,000 tons 60%  $\text{CaF}_2$ . Since 1944 very little production.

Reserves: Measured 15,000 tons 40  $\text{CaF}_2$ .  
 Indicated 10,000 " 40 " estimated.  
 Inferred — no estimate made.

Production Facilities: Equipment probably removed.

Production Costs: Not known.

References:

New Mexico Bureau of Mines and Mineral Resources, Bull. 21 - 1946.  
 " " " " " " " " Bull. 4 - 1928.  
 " " " " " " " " Bull. 12 - 1937.  
 U. S. B. M. Report of Investigations 4053.

---

NEW MEXICO FLUORSPAR SURVEY - JANUARY, 1954

Name: Lyda K  
District: Caballo Mts., (Pittsburg)  
County: Sierra  
State: New Mexico

Location: One mile SE Caballo Reservoir dam on Rio Grande, 24 miles to Hatch, nearest railroad loading point.

Ownership: Patented mining claims owned by E. U. du Pont de Nemours and Co.

Type of Deposit: Vein in granite; jaspery fluorspar with very sparse galena.

Development: Three 1 $\frac{1}{2}$  compartment shafts totaling 620 feet. 1300-foot drifts and crosscuts.

Production: Past: 2500 tons — estimated grade 60%.  
Current: None.

Reserves: (Estimated to a depth of 550 feet)

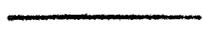
	<u>Tons</u>	<u>%CaF<sub>2</sub></u>
Measured.....	Negligible	amounts
Indicated.....	175,000	50
Inferred.....	<u>150,000</u>	50
Total	325,000	50

Metallurgical tests conducted at Deming Unit indicate that the above total tonnage would produce 150,000 tons of acid grade spar.

Production Facilities: Ore bins, buildings and a few minor items of mining equipment.

Production Costs: (Estimated)  
Total mine, mill (Deming) costs, including depletion but not including Income Taxes and interest: \$18.51 per ton of crude ore, or \$43.87 per ton acid grade concentrate; based on a production rate of 20,000 tons of acid grade spar per year.

Reference: Lyda K Report August 12, '53, by J. H. C.



NEW MEXICO FLUORSPAR SURVEY - JANUARY, 1954

Name: MIRABAL MINE  
District: Zuni Mts.  
County: Valencia  
State: New Mexico

Location: E 1/2 of Section 7, T 11 N, R 12 W. Three miles NW of Mount Sedgwick. 26 miles from Grants, shipping point on Santa Fe R. R.

Ownership: Mr. Moises Mirabal, Grants, New Mexico.

Type of Deposit: Fluorite-bearing veins and breccia masses occupy fault fissures in pre-Cambrian complex of granitic and metamorphic rocks.

Development: 484' of shafts (40' to 85' deep), 1290' of drifting, 780' of trenching, 685' of stoping length.

Production: Through 1944, 5,000 tons.  
1944-1948, 10,000 tons  
Since 1948, 7,000 tons  
Total ± 22,000 " ± 60% CaF<sub>2</sub> met. and mill grade.

Reserves: Measured - Possible small tonnage.  
Indicated - 22,000 estimated.  
Inferred - 50,000 "

Production Facilities: None except bins.

Production Costs: \$8.00 per ton in 1945. Estimated present costs \$18.00 to \$22.00 per ton.

References: New Mexico Bureau of Mines and Mineral Resources Bull. 21, 1946.  
" " " " " " " " " 4, 1928.  
Reports by John Gabelman July 2, 1953 and January 14, 1954.



NEW MEXICO FLUORSPAR SURVEY, JANUARY, 1954

Name: Red Cloud Mine  
 District: Gallinas  
 County: Lincoln  
 State: New Mexico

Location: Section 25, T 1 S, R 11 E. About ten miles from Gallinas, shipping point on Southern Pacific R. R.

Ownership: Corona Corporation. Leased for five years to William Heim and Gene Tom of Corona, New Mexico.

Type of Deposit: Brecciated zone in quartzite sandstone and silt stones between two intersecting faults has been unevenly mineralized by fluorite. Dimensions of ore body 100 feet by 50 feet by 50 feet deep.

Development: 110-foot shaft with drifts and crosscuts at 35 and 100 levels totaling 575 feet. 270 feet of trenching.

Production: 6,000 tons 30% CaF<sub>2</sub> estimated.  
 Current: Estimate 400 tons 60% per month (concentrates).

Reserves: Measured - 22,700 tons 30% - 100 x 50 x 50  
 Indicated - 25,000 " 15% - est. 11  
 Inferred - No estimate.

Production Facilities: Mine equipped for operation.

Production Costs: No information at hand.

References: New Mexico Bureau of Mines and Mineral Resources, Bull 21, 1946.  
 U.S.B.M. Report of Investigations 3854.  
 Tucson office file NM-0.0.6.  
 " " " NM-12.3.3.  
 " " " NM-12.7.0.

---

NEW MEXICO FLUORSPAR SURVEY - JANUARY, 1954

Name: SHRINE MINE  
District: Burro Mts.  
County: Grant  
State: New Mexico

Location: N 1/2 of section 13, T 19 S, R 16 W. Five miles airline W. of Tyrone. 24 miles by road to Silver City, shipping point on Santa Fe R. R.

Ownership: General Chemical Division of the Allied Chemical and Dye Corp'n., owns four patented claims.

Type of Deposit: A 3 to 5-foot fault breccia vein in a fine to coarse-grained pre-Cambrian granite. Breccia partly cemented with fluorspar.

Development: Inclined shaft 430' with 7 levels. Vein developed 325 feet easterly and 600 feet westerly.

Production: Estimated 5,000 tons 80%  $\text{CaF}_2$  1936 - 1944.  
Estimated 25,000 tons 60%  $\text{CaF}_2$  1945 - 1953.  
30,000 tons of 63%

Current: Estimated at 500 tons of 60% per month.

Reserves: Production recently curtailed and development program intensified, indicating lack of measured reserves.

Production Facilities: Equipped for operation.

Production Costs: No information at hand.

References: New Mexico Bureau of Mines and Mineral Resources Bull. 21 - 1946.  
U. S. G. S. Bull. 973-F.

---

NEW MEXICO FLUORSPAR SURVEY - JANUARY, 1954

Name: TWENTY-ONE MINE  
District: Zuni Mts.  
County: Valencia  
State: New Mexico

Location: Section 21, T 9 N, R 11 W. 24 miles by road from Grants, shipping point on Santa Fe R. R.

Ownership: Shattuck-Denn Mining Corp'n. (Zuni Milling Co.)

Type of Deposit: Fault fissure veins in gneissic granite. Av. 2.5' wide.

Development: In 1945 - shafts 300', drifts 2500'. Subsequent development by Shattuck-Denn not known.

Production: Estimate 52,500 tons of 55% (assuming equal production from "21" and "27" of 105,000 tons total).

Reserves: Measured - Prob. small.  
Indicated - 50,000 estimated.  
Inferred - No estimate.

Production Facilities: Mine equipped for operation and a 150-ton flotation mill at Los Lunas.

Production Costs: Information not at hand.

References: New Mexico Bureau of Mines and Mineral Resources, Bull. 21, 1946.  
Report by John Gabelman January 14, 1954.

---

NEW MEXICO FLUORSPAR SURVEY, JANUARY, 1954

Name: TWENTY-SEVEN MINE  
 District: Zuni Mts.  
 County: Valencia  
 State: New Mexico

Location: Section 27, T 9 N, R 11 W. 22 miles by road from Grants, shipping point on Santa Fe R. R.

Ownership: Shattuck-Denn Mining Corp. (Zuni Milling Co.)

Type of Deposit: Fault fissure veins in gneissic granite. Av. 3' wide. Gangue is quartz, calcite and aragonite.

Development: By three tunnels. In 1945 drifts totaled 2200'. Subsequent development by Shattuck-Denn not known.

Production: Estimate 52,500 tons of 40% (assuming equal production from "21" and "27" of 105,000 tons total).

Reserves: Measured - Prob. small.  
 Indicated - ± 100,000 estimated.  
 Inferred - No estimate.

Production Facilities: Mine equipped for operation and a 150-ton flotation mill at Los Lunas.

Production Costs: Information not at hand.

References: New Mexico Bureau of Mines and Mineral Resources, Bull. 21, 1946.  
 Report by John Gabelman January 14, 1954.

---

NEW MEXICO FLUORSPAR SURVEY - JANUARY, 1954

Name: U. S. FLUORSPAR COMPANY  
District: Caballo Mts. (Northern)  
County : Sierra  
State : New Mexico

Location: 3 miles SSE of Hot Springs. Property includes six prospects, only three of which are considered of potential value. These are: (1) White Star, (2) Oakland, (3) Universal, (4) Blue Jacket, (5) Tingley and (6) Forty-one. 19 miles to Engle, loading point on S. P. R. R.

Ownership: Group of 7 patented claims owned by Blanchard Hanson of Hot Springs.

Type of Deposit: Siliceous fluorspar veins in limestone.

Development: Several adits and open cuts totaling about 2000 linear feet. Maximum depth of development is about 100 feet.

Production: Past: 1926-1945, 4500 tons of 70% fluorspar, estimated.  
Current: None.

Reserves: Estimated figures include three veins: White Star, Oakland and Universal.

Measured: Negligible amounts.  
Indicated: 150,000 tons of 40%-50% CaF<sub>2</sub> to a depth of 100 feet.  
Inferred: No estimate made.

Production Facilities: None.

Production Costs: Mining costs would be comparatively low due to firm nature of limestone wallrock and an average vein-width of 10 feet. Metallurgical tests at the Deming Milling Unit indicate that ore is amenable to flotation. Estimated cost of producing acid-grade fluorspar is \$50.00 per ton at a production rate of 20,000 tons per year.

References: Memorandum to K. E. Richard dated June 25, 1953 from J. H. Courtright. Fluorspar Resources of New Mexico, N. M. B. M. Bull. No. 21, 1946.

NEW MEXICO FLUORSPAR SURVEY, JANUARY, 1954

Name: WHITE EAGLE MINE  
District: Cooks Peak  
County: Grant  
State: New Mexico

Location: Section 34, T 19 S, R 9 W. Thirty-two miles by road north of Deming, shipping point on Santa Fe R. R.

Ownership: Owned by Ozark-Mahoning Company.

Type of Deposit: Fluorspar veins occupy irregularly vertical, branching and overlapping minor faults in a medium-grained pink and gray granite. Ore bodies have an over-all length of some 850'.

Development: Main No. 1 shaft is incline (-85°) 550' deep with levels at 220, 320, 420 and 520. No. 2 shaft is about 230 feet deep. Development along a strike length of 600-700 feet.

Production: ± 20,000 tons + 65% CaF<sub>2</sub> prior to 1945. Production latter part of 1953 was 1200 tons per month. Probable total production ± 40,000 tons + 60% CaF<sub>2</sub>.

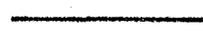
Current: 1200 tons + 60% CaF<sub>2</sub>.

Reserves: Measured - Negligible amounts.  
Indicated - 60,000 to 70,000 tons to 520 level.  
Inferred - 30,000 tons 100 feet below 520 level.

Production Facilities: Mine equipped for operation.

Production Costs: On the basis of a production of 1200 tons per month with ten men on pay roll (operator's statement) direct and indirect mining costs including development are estimated to be around \$5.00 per ton.

References: New Mexico Bureau of Mines and Mineral Resources Bull 21 - 1946.  
" " " " " " " " " Bull. 4 - 1928.  
U. S. B. M. Report of Investigation 3903.  
Memorandum by Byron S. Hardie, August 27, 1953.



**TAB**

DETAILS MILLS  
NEW MEXICO

NEW MEXICO FLUORSPAR SURVEYGENERAL CHEMICAL COMPANY MILL  
Deming  
Luna County, N. Mex.

The custom flotation mill of the General Chemical Company at Deming is served by the Santa Fe and Southern Pacific railroads.

General Chemical Company acquired the Deming mill in 1938. The capacity was then tripled and production has been continuous since then except for short periods during mill improvement. Total past production is not known. The mill is currently producing about 1100 tons per month of acid grade (98%) fluor spar concentrate. This product is shipped to their various chemical plants.

Mill capacity is stated to be 75 tons per day of mill feed. The estimated mill feed per month is 1950 tons. The estimated statistics on mill feed are tabulated below:

TABLE I

<u>Source</u>	<u>Tonnage</u>	<u>Grade</u>	<u>Delivery</u>	<u>Price/Ton FOB Mill</u>
Heim Mill, Gallinas	400	60%	Rail	\$13.80
White Eagle, Cooks Peak	600	60%	Truck	15.35
Greenleaf, Florida Dist.	300	70%	Truck	18.95
Clum, Gila	50	75%	Truck	18.75
Shrine, Burro Mt.	600	60%	Rail	13.80
Total tons per month - -	1950	Av. 62%		Av. \$15.20

Prices paid are based on rates shown in Table II. The special price is paid for easy-milling ores — non-refractory silica — from the Shrine and Greenleaf mines and is assumed for the Heim gravity mill product. Otherwise, no penalties are levied. A \$0.75 per ton credit is given for truck-delivery of ore to the mill bin. Ore from the White Eagle mine is paid for at the regular price plus \$2.00 per ton. This "bonus" is reportedly paid to prevent the owners of the White Eagle mine (Ozark-Mahoning) building their own mill in Deming. Ozark-Mahoning owns a millsite near the custom mill of General Chemical Company.

TABLE II

General Chemical Company's Deming Custom Flotation Mill  
Purchase Schedule in effect January, 1954

<u>CaF<sub>2</sub>%</u> <u>Assay at Mill</u>	<u>Regular price per ton</u>	<u>Special price per ton</u>
40 (Minimum)	\$6.00	
45	7.20	
50	9.00	
55	10.62	
60	12.60	\$13.80
65	14.50	15.86
70	16.80	18.20
75	18.76	20.63
80	20.80	23.20
85	22.10	24.65
90	23.40	26.10

The cost per ton of 98% CaF<sub>2</sub> concentrates is estimated to be \$35.75, and has been arrived at as follows:

- Heads: 62% CaF<sub>2</sub> (Table 1, est.)
- Tails: 15% CaF<sub>2</sub> (Gen. Chem. statement)
- Concentrate: 98% CaF<sub>2</sub> (Gen. Chem. statement)
- Milling cost: \$5.00 per ton of mill feed (estimated)
- Ore cost: \$15.20 " " " " " (Table 1, est.)

Calculated results using these figures:

- Recovery: 89.3%
- Ratio of Conc: 1.77: 1
- Cost per ton of 98% Conc: \$35.75 (\$20.20 x 1.77)

The grade of mill-feed was not available from General Chemical Company officials and may be a few per cent off. A stockpile of fluorspar ore at the mill contains an estimated 5000 tons. This stockpile is built by truck with minus 1/2 inch crushed ore. Various grades of ore are segregated during dumping to facilitate mixing the required type of mill feed containing the optimum CaF<sub>2</sub> and silica content. Mixing is effected with a scraper delivering to a cribbed passageway in the stockpile. This mixed feed is delivered to the mill by conveyor belt under the stockpile.

It is reported that General Chemical Company plans to add to their plant capacity. A reported \$70,000.00 has been appropriated for this purpose. Such a program reportedly includes addition of a regrinding and boiling circuit to handle refractory siliceous ores. This report is reinforced by statements by General Chemical Company officials that they have recently examined the Lyda K mine in the Hot Springs area. This mine is known to contain refractory, siliceous ore.



LOS LUNAS MILL  
ZUNI MILLING COMPANY  
Valencia County

The mill of the Zuni Milling Company (owned by Shattuck-Denn Mining Company) is located near Los Lunas, Valencia County. The plant is served by the Santa Fe Railroad.

The total past production of the Los Lunas mill is unknown; it is estimated as about 105,000 tons. The principal source of ore has been the Company-owned "21" and "27" mines, located about 85 miles to the west. During 1952 and part of 1953 the mill operated mainly on imported Mexican ore.

The Zuni mill was shut down in October of 1953. While it is understood that milling of Mexican ore was resumed late in 1953, it is not known whether they are in operation at the present time. In the spring of last year about 80 per cent of the concentrates were shipped to Nyotex Chemical Company in Houston, Texas. The remainder was sold on the open market; purchasers included Kaiser Aluminum Company, Reynolds Aluminum Company and General Chemical Company.

The capacity of the Zuni Mill is estimated to be up to 150 tons/day. Future operation of the mill appears to depend upon the availability of markets.

Mill schedule for the Los Lunas mill obtained in July, 1953, from Mr. Heim at Gallinas is quoted below:

<u>Total CaF<sub>2</sub> %</u>	<u>\$ Per ton</u>
90	30.00
85	28.00
80	26.00
etc. to 50% CaF <sub>2</sub>	

50% CaF<sub>2</sub> is minimum grade accepted.

No penalty on silica. No penalty on barite to 3%. Over 3% deduct 1% CaF<sub>2</sub> for each 1% barite. 10% barite is maximum accepted.

---

NEW MEXICO FLUORSPAR SURVEY

HEIM MILL  
Gallinas, Lincoln County

A small mill at Gallinas, owned by William Heim, is producing fluorspar as by-product from milling of rare earth ore. The mill is served by a spur from the Southern Pacific Railroad.

The total past production of the Heim mill is estimated at about 3000 tons of 60% CaF<sub>2</sub>. This fluorite-bastnasite ore comes from his Red Cloud mine, located about 8 miles northwest of Gallinas. Formerly the fluorite concentrate (60% CaF<sub>2</sub>) was shipped to Los Lunas for finishing; it now goes to the Deming mill of General Chemical Company.

It is estimated that the monthly production is about 400 tons containing 60% CaF<sub>2</sub>. On an improved price or cost basis, production probably could be increased to 600 tons/month.

Purchase schedules obtained from Mr. Heim are shown below:

Colorado Fuel and Iron Company, Pueblo, Colorado

<u>Effective CaF<sub>2</sub></u>	<u>\$ Per ton</u>
55 minimum	25.00

One car in three will be accepted as low as 55% effective CaF<sub>2</sub>; the other two cars must be better than 60% effective CaF<sub>2</sub>. 2.5% of CaF<sub>2</sub> is deducted for each 1% SiO<sub>2</sub>. No penalty on barite to 9%. Not much trouble if barite goes a little over 9%.

Lone Star Steel Company, Texas

<u>Effective CaF<sub>2</sub></u>	<u>\$ per ton</u>
85.5 minimum	36.00

No penalty on 2-3% CaO. 2.6% CaF<sub>2</sub> deducted for each 1% SiO<sub>2</sub>.



NEW MEXICO FLUORSPAR SURVEY

MEX-TEX MILL  
San Antonio  
Socorro County

The Mex-Tex mill at San Antonio, Socorro County, is a potential producer of fluorspar. The Company has a jig-tailings pile estimated to contain 50,000 tons with  $7\frac{1}{2}$  to 15%  $CaF_2$  and 10% barite. This pile is being increased at a rate of 1200 tons per month. Ore comes from the Company mine in the Hansonburg district.

It is reported that Reynolds had offered \$3.00 per ton for this tailings stockpile in July, 1953, but the negotiations were never completed. This material may eventually be re-milled in some manner.

The Mex-Tex mill produces a high-grade barite product for use in drilling. The mill is located on the Santa Fe Railroad.

---

**TAB**

ARIZONA

ARIZONA FLUORSPAR SUMMARY, JANUARY, 1954

The estimated total production from Arizona is 22,300 tons of 73%  $\text{CaF}_2$ . This is higher than figures obtained from the Minerals Yearbook (total production through 1953 is approximately 18,200 tons, using Yearbook figures). The difference is caused by the crediting, in Minerals Yearbook, of much of the Mayflower District production as flotation concentrates rather than crude ore at an average of 65%  $\text{CaF}_2$ .

The current yearly production rate is estimated at 1000 tons at about 70%  $\text{CaF}_2$  content. Intermittent production makes accurate estimate difficult. Under present market conditions, the maximum potential production is estimated to be 2160 tons per year. Maximum potential production under improved market conditions is estimated to be 8440 tons per year. However, 4800 tons of this figure is estimated production from Castle Dome ore or tailings, and it is questionable whether this rate could be maintained for any length of time.

Arizona has produced about 0.2% of the U. S. total production of fluorspar, and ranks 7th among the states. The principal production periods were: 1918-1920; 1936-1945; and 1947-1950. During the latter period, the Lone Star mine was the principal producer. This mine has produced over 25% of the total, but it is not currently operating.

The Mayflower District has been the most important fluorspar-producing district, having accounted for almost 50% of the total state production. Some of the fluorspar produced in the Mayflower district has been shipped to flotation mills in Lordsburg and Deming, New Mexico. Most of the remainder of Arizona production has been shipped directly to steel mills.

Maximum production of fluorspar was attained in 1939 when 1608 tons were shipped. The latest published figures (Minerals Yearbook) show Arizona fluorspar production as 952 tons during 1950.

Arizona Eastern Fluorspar Corporation's mill at Duncan is short of ore. Continued operation can be expected to increase production from the Mayflower District.

A mill in southwestern California has been used to produce a fluorspar concentrate from ore and tailings from the Castle Dome area. This mill has recently ceased operations because their market has been lost to imported Mexican ore. Until recently, 20 tons of acid-grade concentrates per day were shipped to Niletex Chemical Corp., Houston, Texas. A by-product of lead concentrate was shipped to the Company's El Paso smelter. Elsewhere in Arizona, transportation distance is a major factor in limiting production from small deposits. However, no one area seems able to support a mill.

---

ARIZONA FLUORSPAR SURVEY, JANUARY, 1954MAYFLOWER DISTRICT  
Greenlee CountySUMMARY

The total production of this district is estimated to be 11,100 tons of 65% fluorspar. This production came principally between 1936 and 1944. Most of this ore was treated at flotation mills at Lordsburg and Deming, New Mexico; some material was shipped directly to steel mills. There is little or no current production. However, successful operation of the Arizona Eastern Fluorspar Corporation mill at Duncan might result in a small, intermittent production from the district. Maximum estimated production is about 1200 tons per year under improved market conditions. Truck-haul to the Duncan mill averages about 20 miles, half of this distance being on gravel roads and half on paved roads. The Mayflower district is about 5 miles southeast of the fluorspar mines in the northern end of the Steeple Rock district in New Mexico.

Fluorspar deposits in the district occur in fissure veins in extrusive rocks. Fluorite, quartz and locally calcite are associated in the veins.

---

ARIZONA FLUORSPAR SURVEY, JANUARY, 1954

List of Mines

Mayflower District

<u>Map Index No.</u>	<u>Property</u>	<u>Production History</u>	<u>Present Production</u>	<u>Future Production</u>	
				<u>Current Price-cost basis</u>	<u>Improved Price-cost basis</u>
2	Daniel Camp	2000T. est.	None	None	None
3	Fourth of July	3200T - 65% est.	None probably	None probably	Unimportant
4	Luckie	3000T - 60% est.	None probably	None	Unimportant
5	Polly Anne (Forbes)	2000T - 85% est.	None (\$6925 Govt. loan 1952 - inactive at present prob. due to large water inflow)	30T/Mo.	30T/Mo. Est.

PROSPECTS

Foster )	900T estimated	None	10T/Mo.	30T/Mo.
Ellis )				
Dean )				
Stotts )				

ARIZONA FLUORSPAR SURVEY, JANUARY, 1954

List of Mines

Miscel. Districts and Areas

Map Index No.	Property	Production History	Present Production	Future Production	
				Current Price-cost basis	Improved Price-cost basis
1	<u>WHETSTONE MTS. DIST.</u> Lone Star	6000T - 85% est.	None	600T/Yr. est.	1200T/Yr. est.
6	<u>FT. THOMAS AREA</u> Rhoades	400T - 60% est.	720T/Yr. est.	720T/Yr. est.	960T/Yr. est.
7	<u>SIERRITA DISTRICT</u> Various prop.	600T - est.	None	None	200T/Yr. est.
10	<u>WICKENBURG AREA</u> Various prop.	1200T - est.	360T/Yr. est.	360T/Yr. est.	360T/Yr. est.
11	<u>AGUILA AREA</u> Various prop.	1000T - est.	None	None	200T/Yr. est.
14	<u>CASTLE DOME DIST.</u> Castle Dome Area	2000T - by prod. est.	None prob.	None	4800T/Yr. est.

PROSPECTS

8	Silver Bell-Martinez	) 300T est. misc. prod.	Martinez Canyon
9	Packard		Tonto Basin
12	Snowball		Ellsworth
13	Townsend-Santa Maria		Santa Maria
15	Red Cloud and Others		Silver District

ARIZONA FLUORSPAR SURVEY

ARIZONA FLUORSPAR MILL

Duncan  
Greenlee County

The mill of the Arizona Eastern Fluorspar Corporation is located about 2½ miles northwest of Duncan, Greenlee County. A railroad serves Duncan but finished fluorspar product must be trucked from mill to loading point.

The Duncan mill has had intermittent production since its erection a few years ago. Since early in 1953 the mill has been owned by the present Company. Total production probably was less than 2-3000 tons.

The mill is rated at 50 tons per day capacity. However, shortage of ore limits the mill operation; milling is done for one or two shifts. It is estimated that the mill is producing only 40 tons per week with 90% CaF<sub>2</sub>; this material is sold to eastern ceramic plants.

In January, 1954, all ore was obtained from independent mines, principally the Rhoades Mine (Fort Thomas), Hummingbird Mine (Telegraph District), and Foster Mine (Mayflower District). The Company hopes to produce some ore from its own mines in the Mayflower District and from the Lone Star Mine. It seems safe to predict that ore supply will continue to be a major problem. In buying of ore the schedule used by General Chemical's Deming mill has been adopted.

When visited in January, 1954, the mill appeared to be handling about 1½ tons per hour. The finished product was said to contain about 90% CaF<sub>2</sub>. However, due to soot added during the drying process, it appears unlikely that the material will be acceptable to the Ceramic industry.

Assuming adequate supply of ore and some revision of the plant, the Company might be able to process up to 50 tons of ore per day.

The purchase schedule for Arizona Eastern Fluorspar Corporation, Duncan, Arizona, is as follows:

<u>Total CaF<sub>2</sub>%</u>	<u>\$Per ton</u>
40	6.00
50	8.00
60	12.60
70	16.80
80	20.80
90	?

This schedule is the same as the regular price on General Chemical Company's schedule. No knowledge is had of any special prices such as are in effect at General Chemical Company's Deming, New Mexico, mill. Arizona Eastern Fluorspar Corp'n. does not pay \$0.75 for truck-delivery to the mill as does General Chemical Company.

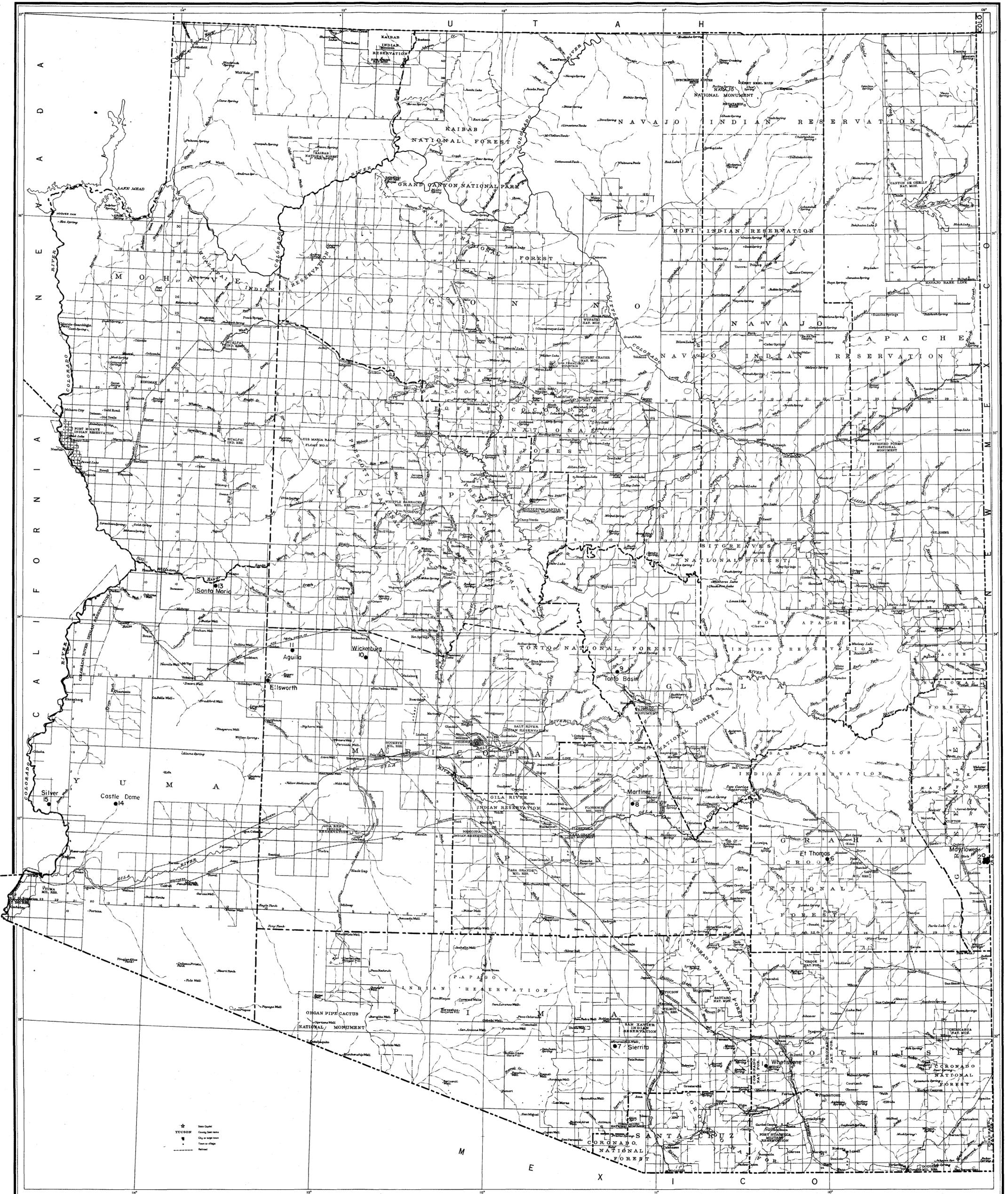
ARIZONA FLUORSPAR MINES, PROSPECTS and AREAS

Numerical List

Alphabetical List

1. Lonestar
2. Daniel Camp
3. Fourth of July
4. Luckie
5. Polly Anne
6. Rhoades
7. Sierrita District
8. Silver Bell-Martinez
9. Packard
10. Wickenburg Area
11. Aguila Area
12. Snowball
13. Townsend-Santa Maria
14. Castle Dome District
15. Red Cloud and Others

11. Aguila Area
14. Castle Dome District
2. Daniel Camp
3. Fourth of July
1. Lonestar
4. Luckie
9. Packard
5. Polly Anne
15. Red Cloud and Others
6. Rhoades
7. Sierrita District
8. Silver Bell-Martinez
12. Snowball
13. Townsend-Santa Maria
10. Wickenburg Area



FLUORSPAR MINES - NEW MEXICO

Alphabetical List

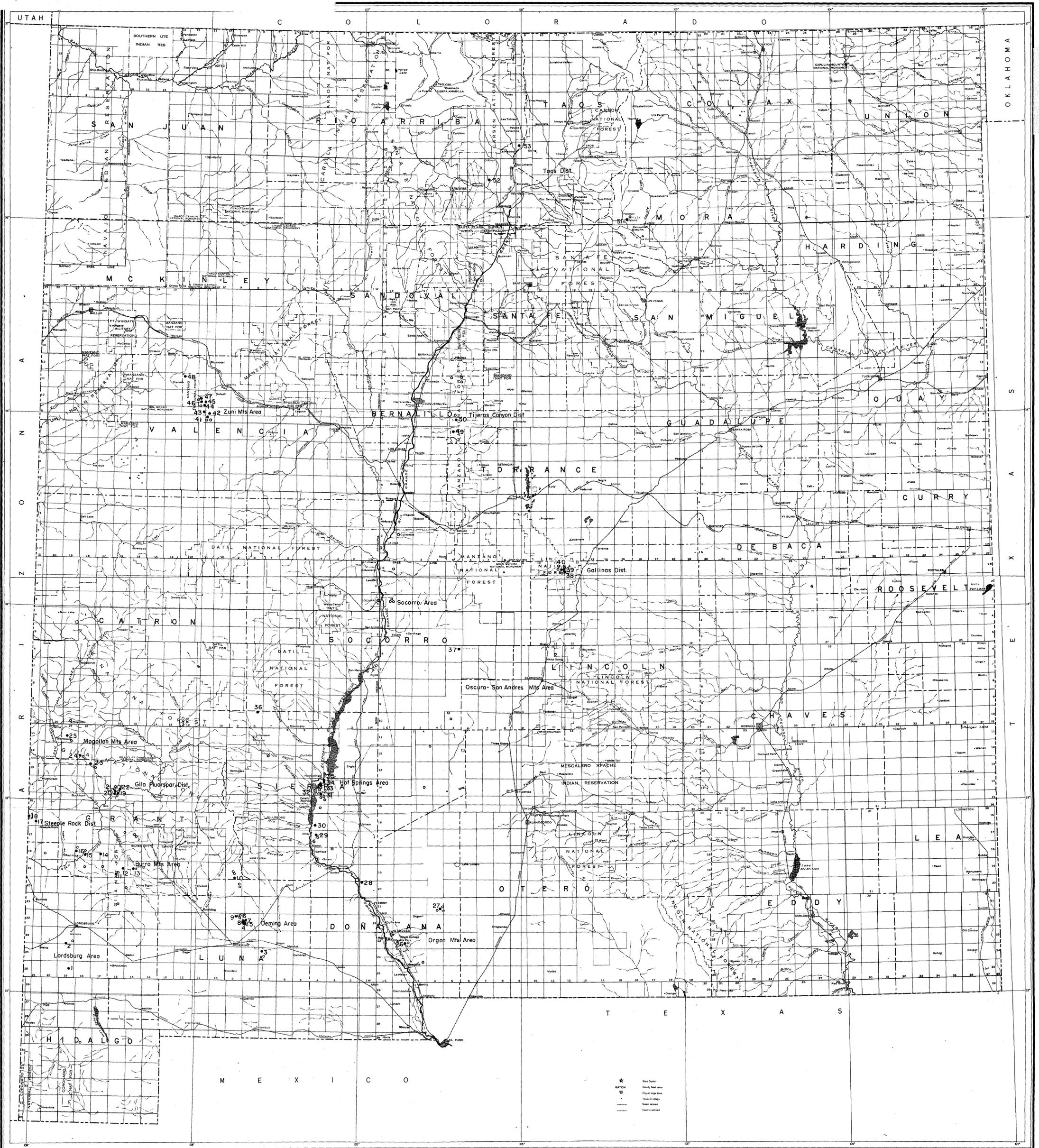
<u>Map No.</u>	<u>Name</u>	<u>Map No.</u>	<u>Name</u>
29	Alamo	37	Mex-Tex Mng. Co.
39	All American	48	Mirabal (Copperhill)
1	Animas	17	Mohawk
		51	Mora Mining Co.
28	*Beal prospect	52	M. Sanchez Lease
47	Betts		
50	Blackbird	35	Napoleon (Rosa Lee)
23	*Blue Bird		
32	Blue Jacket	33	*Oakland
46	Bonita	12	*Osmer
13	Burro Chief		
		45	Porter-Mirabal
19	Clum	18	Powell (Fork)
53	*Cole Lease		
48	*Copperhill	23	*Rain Creek
34	Cox	38	Red Cloud (Deadwood)
		40	Rio Tinto Group
38	*Deadwood	35	*Rosa Lee
3	Duryea		
		24	Sacaton
53	E. Cole Lease	5	Saddler
		52	Sanchez Lease
3	Florida (Duryea)	8	San Juan
2	Fluorite Group	36	Schoelamite Area
18	*Fork	12	Shrine
20	Foster	11	Spar Hill
		43	Spruce Hill
49	Galena King		
23	*Gold Spar	27	Tennessee
23	Good Hope	16	Tom McCauley
7	Grattan	28	Tonuco
15	Great Eagle	26	Tortugas
4	Greenleaf (Howard)	41	Twenty-one
9	Greenspar	42	Twenty-seven
			(White Star)
4	*Howard	33	*U. S. Fluorspar Co. (Oakland)
25	Huckleberry		(Universal)
14	Hummingbird	21	Victoria
37	Hurlow Mining Co.		
		10	White Eagle
31	Imperial	33	*White Star
		39	*Wild Turkey
44	Juniper		
22	Last Chance		
6	Lucky		
30	Lyda K		

— \*Prospect also known by another name —

FLUORSPAR MINES - NEW MEXICO

Numerical List

<u>Map No.</u>	<u>Name</u>	<u>Map No.</u>	<u>Name</u>
1	Anisas	27	Tennessee
2	Fluorite Group	28	Tonuco (inc. Beale pros.)
3	Florida (Duryea)	29	Alamo
4	Greenleaf (Howard)	30	Lyda K
5	Saddler	31	Imperial
6	Lucky	32	Blue Jacket
7	Grattan	33	(White Star)
8	San Juan	33	U.S. Fluorspar (Oakland)
9	Greenspar	33	(Universal)
10	White Eagle	34	Gox
11	Spar Hill	35	Napoleon (Rosa Lee)
12	Shrine (Osmer)	36	Scheelemitz Area
13	Burro Chief	37	Max-Tex and Hurlow Co.
14	Hummingbird	38	Red Cloud (Deadwood)
15	Great Eagle	39	All American (Wild Turkey)
16	Tom McCauley	40	Rio Tinto Group
17	Mohawk	41	Twenty-one
18	Powell (Fork)	42	Twenty-seven
19	Clum	43	Spruce Hill
20	Foster	44	Juniper
21	Victoria	45	Porter-Mirabal
22	Last Chance	46	Bonita
23	(Blue Bird)	47	Betts
23	Good Hope (Rain Creek)	48	Mirabal (Copperhill)
23	(Gold Spar)	49	Galena King
24	Sacaton	50	Blackbird
25	Huckleberry	51	Mora Mining Co.
26	Tortugas	52	M. Sanchez Lease
		53	E. Cole Lease



INDEX MAP  
NEW MEXICO

- ★ State Capital
- ☆ County Seat
- City or large town
- Town or village
- Small village
- Electric railway