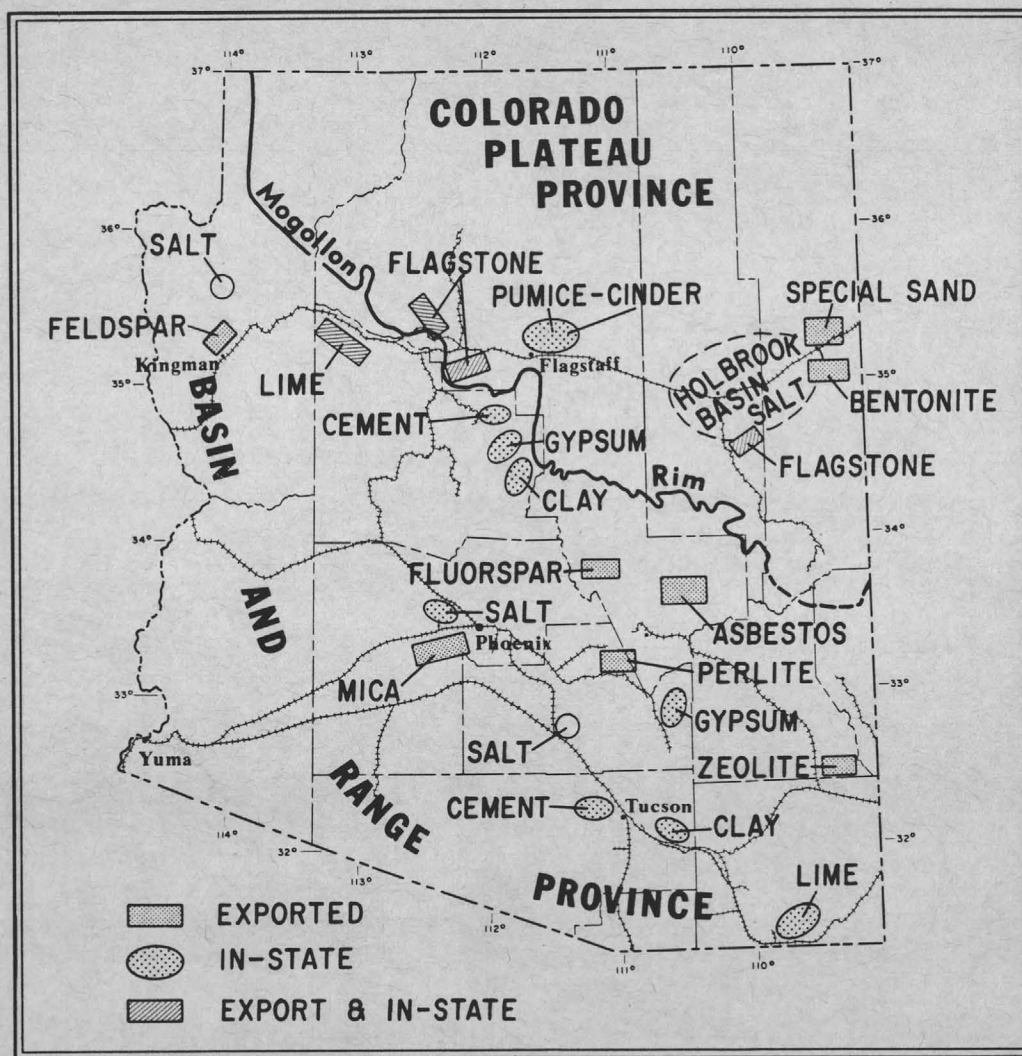


ARIZONA INDUSTRIAL MINERALS

MINERAL REPORT NO.-2



BY
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STATE OF ARIZONA

DEPARTMENT OF MINERAL RESOURCES

ARIZONA

INDUSTRIAL MINERALS

by

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MINOBRAS

1978

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ARIZONA INDUSTRIAL MINERALS

Introduction

Current industrial minerals produced in Arizona are: perlite, asbestos, limestone, diatomite, feldspar, bentonite, (swelling and non-swelling), mica, silica-quartz, gypsum, speciality sands, pumice, building stone, dolomite, clay, (ball, fire, and common varieties) and gemstones. The value of the production of these minerals is approaching \$100 million annually.

Uses of Directory

Active or former mines, prospects and occurrences are reported by section, township, range. To assist in locating the properties, the applicable U.S. Geological Survey map is listed. Also presented, are an index for locating specific industrial minerals by counties and township-range index map.

Acknowledgement

This directory was originally prepared by Mr. E.A. Elevatorski. He has gratefully acknowledged the cooperation and assistance of the Department of Mineral Resources in the preparation. Although Mr. Elevatorski made every effort to verify and check the information contained herein, no responsibility is assumed for its usage. Mr. Elevatorski has permitted publication of this directory as a contribution by him to the minerals field and as a possible stimulant to Arizona Industrial Minerals exploration and development.

There are many restrictive environmental and health laws, rules, and regulations that may impede the prospecting for, and the eventual mining and processing of minerals. These laws, rules, and regulations can be either Federal, State, County, or Local, legislated or promulgated and enforced.

Potential impacts such as disruption of aquifers, maintenance of air quality, disruption of existing land surface, vegetation and soils, possible conflict of user interest, workers health and safety, radiation controls, and modification of socioeconomic patterns (including additional roads, population increase, powerlines, traffic, public services required, etc.)

These possible restrictions should not deter the prospector from actively seeking a mineral deposit or developing an ore body. The highly restrictive rules and regulation problems can be solved. If the potential problems are acknowledged, then solutions engineered into the proposed operation, compliance is possible and feasible. The Department engineers are available to discuss these problems and possible solutions with the prospector or operator.

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ARIZONA INDUSTRIAL MINERALS

COMMODITY REVIEWS

A brief review of each commodity, and its uses is given. It should be noted, however, that many industrial minerals are sold on the basis of direct negotiations between the buyer and seller, and not by published prices.

ALUNITE

Alunite is a hydrous sulfate of aluminum and potassium. In a pure state it contains 37 percent alumina, 11 percent potassium oxides, 39 percent sulfur trioxide, and the remainder, combined water. Commonly it is white, although pink and brownish shades are representative of the impure varieties.

A deposit of alunite occurs near Quartzite, Yuma County, as veins in a schistose dacite hostrock. Occurrences are reported in Gila and Santa Cruz Counties.

Potential uses of alunite are for its alumina content, and for fertilizers, composed of potassium salts.

ASBESTOS

Chrysotile is the prevalent fibrous form of asbestos that is mined in Arizona. Other forms that occur are tremolite, actinolite, and anthophyllite. For marketing, the asbestos fibers are generally milled to provide a specified length. Processed asbestos is a high priced mineral, and depending upon its length and grade, varies from \$80 to over \$1500 per ton.

Mines located in northern Gila County near the Salt River have long been important producers. The mines produce chrysotile asbestos, from vein-type of deposits within Mescal limestone (Pre-Cambrian), in proximity to diabase sills and dikes. The cross-fiber veins are in thin serpentine layers, within silicate zones. Important mines are the Sloan Creek Group, Walnut Creek Group, Cherry Creek, Asbestos Peak, Stansbury Mine, Apache Mine, Regal Group, Canadian, Phillips Mine, Victory and El Dorado Mines, EMSCO Mine, Bear Canyon Mine, Pinetop Mine, Globe and Miami Group, and Fiber King Mine.

Additional chrysotile deposits are found in Pinal County. Tremolite and actinolite veinlets, associated with marble, occur in Pima and Yuma Counties.

BARITE

Barite (BaSO_4) is an unusually heavy mineral, with a specific gravity in the range of 4.2 to 4.6. It is generally, white to gray, occurring as veins, replacements, or residual deposits, commonly associated with quartz, fluorspar and calcite. Principal uses for barite are as a weighing agent in oil well drilling mud, refining sugar, barium chemicals, paints, glass, rubber and fillers.

Major production has come from the Granite Reef Mine in Maricopa County, where the barite occurs in veins within volcanic conglomerate. There has been production from the Bouse District, Yuma County from vein deposits in volcanic rocks. Relatively minor production has come from mines in Cochise, Gila and Mohave County.

CLAYS

Excluding the common clays that are used in bricks and tiles, which are not included in this compendium, the industrial clays are bentonite, kaolin, and refractory clays.

Bentonite composed chiefly of montmorillonite, is a clay type that has altered from volcanic ash. There are two types; i. e. a sodium-based clay of high swelling capacity; and a low swelling clay with a calcium base. Production in Arizona has been largely from the low swelling bentonite, mined from deposits near Sanders and Chambers in Apache County. It is shipped and processed for uses in refining and decolorizing oils, making petroleum catalysts, and in desiccants. The high swelling bentonites are used in oil well drilling mud, stock feed binders, pelletizing iron ores, animal feeds, pharmaceuticals, and canal-reservoir sealants. Some production for these uses has come from the Camp Verde area, Yavapai County; and from the Burro Creek area of Mohave-Yavapai County boundary.

Kaolin and refractory clay, also referred to as fire clay, are found as layers in hydrothermally altered volcanic rocks. These include kaolinite, an impure kaolin. High-grade kaolin is used in paper-coating material, whitewares, and the rubber industry. The refractory clays have a high resistance to heat and are used in making stoneware, refractory brick and ceramic products. Near Globe, in Gila County, the Weary Lode has furnished kaolinite for ceramic products. For the copper industry, refractory clays have been made into bricks, for lining the smelter converters. Some production has been reported near Yucca, Mohave County; and several extensive deposits are located on the Navajo Indian Reservation. These kaolinite outcrops are capped or overlain by the Dakota sandstone.

CORUNDUM

Corundum, excluding the gem varieties, is found as an accessory mineral associated with sillimanite in schist and gneiss. Reported occurrences are in Mohave and Pinal Counties.

DIATOMITE

Diatomite or diatomaceous earth are the fossilized remains for fresh or salt water organisms. The White Cliffs Mine, Pinal County, has been an important producer. Its output has been used for filter aids, fillers, and cement additives. Diatomite is also found associated with gypsum in Cochise and Yavapai Counties. A number of diatomite deposits occur in Graham and Greenlee Counties at the locations described herein.

FELDSPAR

Found within pegmatites, feldspar minerals include microcline, orthoclase, and plagioclase, and are often associated with mica minerals. Important production has come from mines in the Cerbat Mtns. near Kingsman. This output has been used in the glass and pottery industries. Potential uses are in abrasives, enamels, high-temperature coatings and cement. In Pima County, production has come from the San Antonio Mine near Ajo, where a silica-feldspar mixture has been used as smelter flux.

FLUORSPAR

Referred to as "spar" or the mineral fluorite, fluorspar consists of calcium fluoride, CaF_2 , with silica and calcite being the most common impurities. It is marketed in three grades: metallurgical, ceramic, and acid-grade. Major uses of fluorspar concentrates are as a fluxing agent for making steel, in the fluorine chemical industry, and in aluminum production. Most of Arizona's production has been used for steel flux. Output has come from vein-type of deposits; which include the Lone Star Mine (Cochise County), Castle Dome Mines (Yuma County), Packard Mine (Gila County), Neptune Mine (Pima County), Mt. Jackson Spar (Graham County), Snowball Deposit (Maricopa County), and Vulture Mtns. area, in Maricopa County. In recent years, acid-grade concentrates have been produced from mines near Tonto Basin, Gila County.

GARNET

Garnet-bearing diatrema structures consisting of pyrope are found on the Navajo Indian Reservation, (Apache and Navajo County). Andradite garnet occurs in metamorphosed limestone in areas of Gila, Graham, Greenlee and Pima Counties. Potential uses for garnets are for abrasives.

GRAPHITE

Found in schist, graphite occurs in both crystalline and amorphous forms, and is used as lubricants, crucibles, foundry facings and refractories. It is a high-value mineral. A vein-type of deposit in schist occurs in Mohave County.

GYPSUM

Gypsum is a hydrous calcium sulfate, normally soft, granular to massive, and found within limestones and shales, and in association with diatomite, clays and salts. Reserves of gypsum in Arizona are extensive, with occurrences in most counties. Current production is from the Camp Verde area of Yavapai County, and from three mines in Pinal County. Some of the raw gypsum is sold for soil conditioners and for cement making; however, most of the gypsum is calcined and made into wallboard, lath, and plaster. The operating properties are captive mines of the processors, and therefore market prices are not available.

LIMESTONE-DOLOMITE

There are extensive reserves of limestone, dolomite (including marble) in Arizona. Pure limestone is 100 percent calcite; whereas dolomite predominantly contains magnesium. In nature, they are rarely found in a pure state, and in most instances they occur together as a mixture, consisting of various percentages of carbonates.

Limestone is an important commodity in Arizona and its output is used in making cement, as flux for smelting copper, and a variety of lime products. There are two cement plants in Arizona; one near Clarkdale, Yavapai County that uses limestone of the Redwall formation (Miss.), and the other at Rillito, Pima County where the Naco limestone (Penn.) is mined. Important producers of limestone for lime products are located at Paul Spur (Cochise County); Helvetia (Pima County); and at Nelson (Yavapai County). For metallurgical flux, limestone is mined near Globe and Hayden (Gila County); near Morenci (Greenlee County); near San Manuel (Pinal County). Most of these operations mine limestone of Mississippian age.

Marble is quarried near Wenden, Yuma County; near Dragoon, Cochise County; and in Pima County, for use in roofing granules, terrazo, stucco, mineral food and fillers.

LITHIUM MINERALS

Numerous occurrences of lithium minerals are found in Arizona. Minerals of this group include lepidolite, spodumene, and amblygonite; found in peg-

matites and in association with feldspar and quartz. Some production of spodumene and amblygonite has been reported from the White Picacho District, located on the Maricopa-Yavapai County Border. Uses for lithium minerals include glasses, ceramics, enamels, chemicals, batteries and greases.

MAGNESITE-BRUCITE

Magnesite is magnesium carbonate, and usually found as altered rocks of the peridotite family. Brucite is a magnesium hydroxide, containing 69 percent magnesium oxide, and 31 percent water. It is soft, resembling talc, and may be fibrous, massive or foliated. Massive white brucite outcrops occur near Oatman, Mohave County. Both magnesite and brucite are used in the manufacture of refractories for furnace linings and for magnesia chemicals.

MICA

Biotite and muscovite are the principal mica minerals that are processed and sold in two grades: sheet mica for electrical insulators and electronics, and scrap mica, ground for use in roofing materials, rubber, paints, fillers, extenders and soil conditioners. Commonly associated with mica pegmatite deposits are quartz, beryl, and feldspar. Current production is from the Buckeye Hills, Maricopa County. Past production has been from Mohave, Cochise, Pima, Yavapai and Yuma Counties.

PERLITE

Mainly of rhyolitic composition, perlite is a glassy volcanic rock that expands markedly upon heating. Current production is from Pinal County near Superior. This output is expanded and used in insulation, plaster, filters, fillers, extenders, and light-weight aggregates. Past production has come from the Black Mountains of Mohave County.

PUMICE GROUP

Included in the pumice group are: pumice, pumicite, scoria, and volcanic cinders. Pumice, a light-weight ash-fall material, is used for pozzolan, abrasives, soil aids, absorbents, fillers and light-weight aggregates. Pumicite, an impure pumice, has similar uses, and also for pesticide carriers, and soil conditioners. Cinders are used for railroad ballast, cinder blocks and aggregates.

Large reserves of pumice materials exist in Coconino and Yavapai Counties. There are active operations with a large output. In the past, there has been production near Douglas, Cochise County, primarily for aggregates.

SALT (ROCK)

Halite or rock salt, occurs near Camp Verde, Yavapai County. It is associated with mirabilite and thenardite, and at one time was mined and used for cattle feed.

SAND (SPECIALTY)

Specialty sands are defined as those used other than for the common purposes of aggregate, ballast, or fill. Most specialty sands have high quartz contents, making the sand physically durable and chemically inert. Silica sands are used as an ingredient of glass and soluble silicates. Other uses are for foundry and molding sand, sandblasting and filtering. Currently, a specialty sand is produced near Sanders, Apache County. Its' output is as hydrofrac sand, used in the oil well drilling industry. Significant silica sand deposits are reported on the Navajo Indian Reservation, Apache and Navajo Counties.

SHALE (EXPANSIBLE)

Suitable clay-shales when rapidly heated in high-temperature kilns, are expanded and combine the properties of low weight with high-strength, making them useful for light-weight aggregates used in concrete mixes. Bloating-shale occurrences are in Pinal and Yuma Counties.

SILICA-QUARTZ

Silica is a commodity producible from silica sands, sandstones, quartzite, or quartz. Crushed quartzite and sandstone are processed into refractory bricks, cements, fillers, foundry ganister, abrasives, silicon and industrial chemicals.

Most quartzite and quartz produced in Arizona is used as metallurgical flux by the copper smelters in Cochise, Greenlee, Gila, Pima, and Pinal Counties. In association with feldspar, quartz pods found in pegmatites near Kingman, Mohave County, are used in abrasives.

SILLIMANITE GROUP

Minerals of the sillimanite group include: dumortierite, kyanite, andalusite, pyrophyllite, and sillimanite. All of these have similar chemical compositions, but differ widely in physical character. Primary uses of sillimanite minerals are for high-alumina refractories. In addition, pyrophyllite, a hydrous aluminum silicate, is used for insecticides, fillers, paints, and cermics. Deposits of pyrophyllite occur in schist and are located in Mohave and Yuma Counties. Some kyanite has been shipped from near Squaw Peak, Maricopa County.

SODIUM SULFATE

A saline deposit with sodium minerals: mirabilite and tenardite, associated with clay and halite is found near Camp Verde, Yavapai County. They occur in the Verde Formation lake beds of Cenozoic age. Potential uses for sodium sulfate minerals are in the cattle industry, kraft paper, chemicals and soaps.

STRONTIUM

Strontium minerals include strontianite and celestite, commonly interbedded with gypsum, in sandstones or tuffs. Two deposits are located in Maricopa County. Potential uses are for chemicals, pyrotechnics, paints and fillers.

VERMICULITE

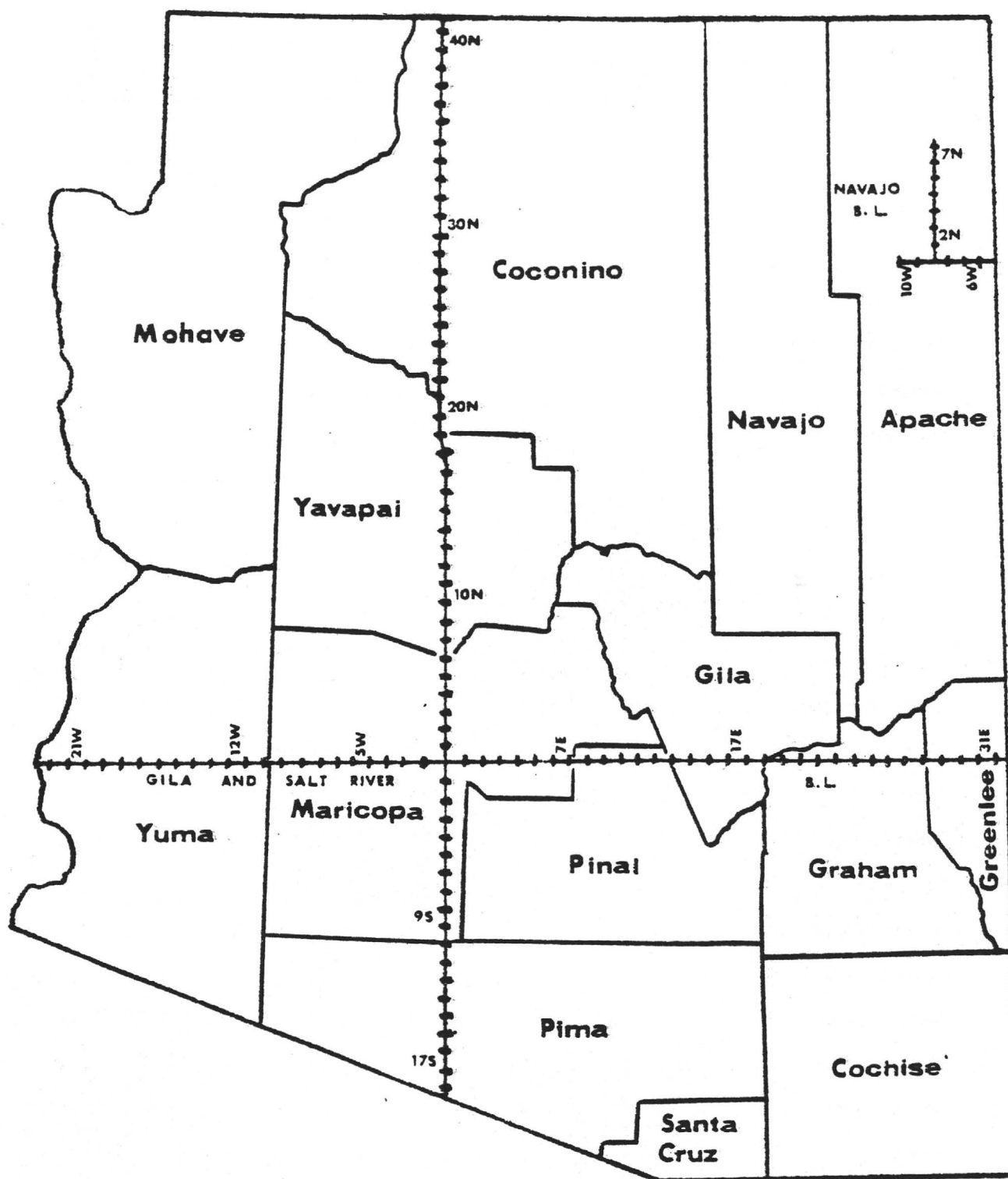
Vermiculite is a micaceous silicate, formed by the alteration of biotite and silicate minerals. It retains most of its ability to cleave, similar to mica; and ranges in color from yellowish-brown to green. Its lightweight and inert properties make it useful when heated and expanded, for insulation and fireproofing material. Other uses are as mineral fillers, plaster, soil conditioners and insecticide carriers. Occurrences are in Maricopa, Mohave, and Pinal Counties.

WOLLASTONITE

As a calcium metasilicate, wollastonite is found in metamorphosed limestones, with garnet and diopside impurities. It is sold, in a processed form, for extenders-fillers in paints, insulation, plastics, and as an ingredient in ceramics. Occurrences of wollastonite, found within limestones, are in Cochise, Gila, Pima and Yuma Counties.

ZEOLITES

Zeolites are formed in vitric ashes, or tuffaceous rocks, usually of lacustrine origin. Primarily they are hydrated aluminum silicates containing alkaline elements. Reported zeolites in Arizona are chabazite, analcime, clinoptilolite, mordenite, phillipsite, and eronite. Adjacent to the Big Sandy River near Wikieup, Mohave County are greenish mudstones containing analcime, chabazite and clinoptilolite. Some bedded zeolites, mostly chabazite, are mined from tuff deposits along San Simon Creek, Graham County. Potential uses for zeolites are as hydrocarbon catalysts, in molecular sieves to separate gases and liquids, ion-exchangers in wastewater purification, fillers, fertilizer compounds, and pozzolan.



ARIZONA

ARIZONA INDUSTRIAL MINERALS

COMMODITY	COUNTIES													
	Apache	Cochise	Coconino	Gila	Graham	Greenlee	Maricopa	Mohave	Navajo	Pima	Pinal	Santa Cruz	Yavapai	Yuma
Alunite				X								X		X
Asbestos		X		X						X	X			X
Barite		X		X	X		X	X		X	X	X	X	X
Clays	X	X	X	X		X	X	X	X	X			X	X
Corundum								X			X			
Diatomite	X	X		X	X	X	X				X	X	X	
Feldspar				X			X	X		X	X		X	
Fluorspar		X		X	X	X	X	X		X	X	X	X	X
Garnet	X			X	X	X				X				
Graphite		X						X						
Gypsum		X	X	X			X	X	X	X	X		X	X
Limestone-Dolomite	X	X	X	X		X	X	X	X	X	X	X	X	X
Lithium Minerals							X			X			X	
Magnesite-Brucite								X					X	
Mica		X					X	X		X	X		X	X
Perlite				X	X	X	X	X		X	X			X
Pumice Group	X	X	X	X	X	X	X	X	X			X	X	X
Salt (Rock)													X	
Sand (Specialty)	X		X					X	X					
Shale (Expansible)			X								X			X
Silica - Quartz		X		X	X	X	X	X	X	X	X		X	
Sillimanite Group		X		X			X	X					X	X
Sodium Sulfate													X	
Strontium							X							
Vermiculite							X	X			X			
Wollastonite		X		X						X				X
Zeolite	X	X			X	X	X	X			X			X

ARIZONA

Note

All township-ranges refer to the Gila and Salt River Base Line, except a portion of Apache County which is of the Navajo Base Line, noted by Nav. B.L. herein.

APACHE COUNTY

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
CLAYS			
NE $\frac{1}{4}$ proj. 27N-23E		Steamboat School	Kaolinized sandstone in Cow Springs Form., below Dakota sandstone.
	Many Farms NE 7 $\frac{1}{2}$ '	Round Rock Mesa	Bentonitic clay.
	Yellowstone Canyon 15'	Lukachukai Creek	Bentonitic clay.
27N-26E		Ganado	Bleaching clay.
S $\frac{1}{2}$ 1N-10W Nav. B.L.		Ganado Mesa	Bleaching clay in vitric tuff.
sec. 23 proj. 21N-29E		Old Cheto Mine	Active mine, bleaching clay used in filtering oils, petroleum catalysts, desiccants, fillers, insecticides, occurs in altered vitric ash lenses of Bidahochi Form. (Plio- cene).
sec. 8 proj. 21N-28E		Chambers Mine	Past production, bleach- ing clay in altered vitric tuff, Bidahochi Form. (Pliocene).
sec. 6 proj. 21N-28E		Big Six Mine	Past production, bleach- ing clay in altered tuff.
NW $\frac{1}{4}$ proj. 22N-29E		Burntwater Wash	Bleaching clay in altered tuff.
SE $\frac{1}{4}$ 22N-30E, SW $\frac{1}{4}$ 22N-31E		Southwest of Lupton	Bentonitic clay, Chinle Form (Triassic), overlain by sandstone.

APACHE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
CLAYS (Cont'd) approx. sec. 9, 21N-29E			Bleaching clay.
sec. 21,22 21N-29E		Graywater Wash	Bleaching clay/lenses in altered vitric tuff.
2N-11W Nav. B.L.	Ganado 1 NE 7½'	Beautiful Valley	Bentonitic clay in Chinle Form; capped by shale.
		Balakai Mesa	White kaolinized sand- stone overlying Dakota sandstone.
sec. 26 proj. 21N-29E		Allentown Mine	Bleaching clay, past production.
sec. 18 proj. 21N-29E		Cheto No. 2	Active bleaching clay mine, used for filtering, vitric tuff lenses in Bidahochi Form.
sec. 7 proj. 21N-29E		Cheto No. 1	Active bleaching clay mine, used for filtering, vitric tuff lenses in Bidahochi Form.
DIATOMITE E½ 12N-26E	Hunt 15'	Concho Creek	Diatomite bed capped by basalt.
GARNET 9 mi. SW of Mexican Water	Dinnehotsso 15'	Garnet Ridge	Pyrope garnets in vol- canic breccia pipe.
3 mi. W of Mexican Water	Mexican Water 7½'	Mexican Water	Garnet-bearing material in alluvium.
approx. sec. 30, 3N-5W, sec. 13,26 3N-6W Nav. B.L.	Buell Park 15'	Buell Flat	Pyrope garnets in kim- berlite tuff, some olivine.
LIMESTONE 2 mi. SW of Dinnehotsso	Dinnehotsso 15'	Dinnehotsso	Limestone lenses within Navajo sandstone.

APACHE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
LIMESTONE (Cont'd)			
2-3 mi. NW Chinle Wash Bridge	Mexican Water 7½'		Limestone interbedded with Navajo sandstone.
1 mi. S. of Chinle Wash Bridge	Mexican Water 7½'		Cherty limestone out- crops.
PUMICE GROUP			
sec. 31 proj. 26N-24E		Sunrise Area	Pumicite.
sec. 12 proj. 23N-28E			Pumicite.
S½ 21N-29E		Bluebird Well Area	Pumicite.
NW¼ 26N-26E		Ganado Area	White pumicite bed in rhyolite.
SW¼ 22N-26E		Padre Mesa	Whitish-gray pumicite, Bidahochi Form. (Pliocene).
sec. 2,4,7,8,10, 12,16,22,35 8N-24E	McNary 15'	McNary Area	Cinder cones.
sec. 1,2,5,8,10, 12,13,14,16,18 8N-25E	Horseshoe Cienega 7½'		Cinder cones.
sec. 32,33,34,35 9N-25E	Boundary Butte 7½'		Cinder cones.
sec. 19,28,30,35 8N-26E	Horseshoe Cienega 7½', Greens Peak 7½'		Cinder cones.
sec. 30 8N-26E	Horseshoe Cienega 7½'	Cinder Mtn.	Cinder cone.
sec. 2 7N-26E	Greens Peak 7½'		Cinder cone.
sec. 26,35 7N-24E	Hawley Lake East 7½'		Cinder cone.

APACHE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
PUMICE GROUP (Cont'd)			
sec. 11 5N-24E	Corn Creek Palteau 7½'	East Fork, White River	Cinder cone.
sec. 6 9N-28E	Springerville NW 7½'		Active cinder pit; basalt cinders, scoria, used for concrete aggre- gates and roads.
sec. 34 10N-27E	Springerville NW 7½'		Cinder pit.
sec. 29 10N-27E	Springerville NW 7½'		Cinder pit.
SAND (SPECIALTY)			
NE¼ 23N-27E		Wide Ruins Area	Past production, hydro- frac sands, Bidahochi Form.
sec. 7,9,18,25 29 proj. 22N-29E		Burntwater Mine	Active mine, hydrofrac sands used by oil well industry.
NE¼ 23N-26E			Silica sand, Bidahochi Form.
NE¼ 24N-26E		Klagetoh	Silica sand, Bidahochi Form.
NW¼ 22N-26E		Tanner Springs Area	Silica sand.
sec. 26 proj. 21N-26E		Graywater Wash	Hydrofrac sands in Bidahochi Form.
SE¼ proj. 36N-29E	Lukachukai 15'	Lukachukai Mtns.	Silica sand, Chuska Form.
5 mi. E. of Rough Rock	Rough Rock 7½'		Silica sand, Cow Springs Form.
6 mi. N. of Black Mtn.			Silica sand, Morrison Form.
8 mi. NW of Ganado			Quartzose sands, Caramel Formation.

APACHE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>ZEOLITE</u>			
sec. 2,15,16 6N-30E	Alpine 15'	Nutrioso Area	Analcime, clinoptilolite in sandstone.
sec. 11 5N-30E	Alpine 15'	Alpine	Clinoptilolite in tuff.

COCHISE COUNTY

<u>ASBESTOS</u>			
sec. 34 17S-23E	Pearce 15'	Abril Zinc Mine	Chrysotile asbestos occurrence in limestone (Permian), zinc-copper ores.
<u>BARITE</u>			
sec. 13 14S-20E	Dragoon 15'	American Shaft	Barite, fluorite, quartz, specularite in granodiorite (Pre-Camb.)
sec. 23 15S-22E	Dragoon 15'	Mammoth Mine Area	Barite in quartz veins with pyrite, galena, chalcopyrite.
sec. 23,24 18S-23E	Pearce 15'	Head Center, Johnnie Boy No.1, Standard Tungsten Mine	Barite pods and schee- lite in limestone (Miss. or Penn.)
sec. 15 20S-22E	Tombstone 7½'	Cuss Mine	White barite crystals, manganese oxides.
sec. 22 20S-22E	Tombstone 7½'	Ground Hog Mine	White barite veinlets in faulted limestone, minor fluorite.
sec. 30 21S-24E	Potter Mtn. 7½'	Gadwell Canyon, Ramirez, Gila Monster, Corri- ne	Barite, galena, lead vein along fault in Morita Form. sandstone.
sec. 4 22S-23E	Tombstone SE 7½'	Hopeful Claim	Barite vein in Horquilla limestone (Penn.).
sec. 16 23S-24E	Bisbee 7½'	Mammoth Claim	Barite gangue with man- ganese oxides in Naco limestone (Penn.).

COCHISE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>BARITE</u> (Cont'd)			
sec. 30 23S-25E	Bisbee 15'	Gold Hill	Barite gangue with manganese oxides in Naco limestone (Penn.-Permian).
<u>CLAYS</u>			
sec. 35 (?) 17S-19E	Benson 15'	Whetstone Mtns.	Black graphitic clay, used for brick lining of smelter converters.
sec. 20,21 17S-20E	Benson 15'	Benson	Bentonitic clay, gypsum lenses.
<u>DIATOMITE</u>			
sec. 27 17S-20E	Benson 15'	Post Ranch	Diatomite, past production for lt.-wt. aggregate and scouring powder.
sec. 17 18S-21E	St. David 15'	Curtiss	Horizontal diatomite bed interbedded with volcanic ash.
<u>FLUORSPAR</u>			
sec. 34 13S-27E	Luzena 15'	Buckeye Canyon Prospect	Fluorspar veinlets in granite (Pre-Camb.) cut by rhyolite dikes.
sec. 13 14S-20E	Dragoon 15'	American Mine, War Eagle, LA Ventia	Fluorite-barite gangue, metallic sulphides in granodiorite (Pre-Camb.).
sec. 23 15S-22E	Dragoon 15'	Peabody Mine	Fluorite-quartz gangue, copper-zinc ores in limestone (Penn.).
sec. 17 16S-30E	Cochise Head 15'	Indian Creek, Pague Prospect	Fluorspar vein in faulted limestone (Penn.).
sec. 1 16S-22E	Dragoon 15'	Banks Mine	Fluorite gangue, scheelite, huebnerite in quartz monzonite.
sec. 5 16S-22E	Dragoon 15'	Homestake Prospect	Fluorite-quartz associated with scheelite, gold-copper ores in Pinal schist (Pre-Camb.)

COCHISE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
FLUORSPAR (cont'd)			
sec. 3,9 16S-22E	Dragoon 15'	Bluebird, Little Fanny Mine, Last Chance, Alvera Extension	Past production, fluor- spar-quartz-beryl, tung- sten ores in quartz monzonite.
sec. 12,13 16S-22E	Dragoon 15'	Mt. Allen, Higgins Estate	Fluorite gangue, copper oxides, scheelite in quartz monzonite.
SW¼ 16S-23E	Dragoon 15'	Dragoon Mtns.	Fluorspar veins, replace- ments in limestone (Carboniferous).
sec. 24 17S-22E	St. David 15'		Fluorspar stringers in limestone (Paleozoic) near granite intrusion.
sec. 34,35 17S-25E	Pearce 15'	Fluorine Hill, Cartmill	Past production, purple fluorspar, uranium minerals in silicified rhyolite.
sec. 12 proj. 17S-30E	Portal 15'	Paradise Area	Past production fluor- spar and quartz veins, in faulted granite.
sec. 26, 35 18S-19E	Benson 15'	Lone Star Mine	Past production, output for metall. flux, banded fluorspar, quartz veins in schist (Pre-Camb.) intruded by aplite dikes and alaskite stock.
sec. 11 20S-22E	Tombstone 7½'	Empire Mine	Green and purple fluor- spar, lead values in silicified limestone and shale.
sec. 3 14S-19E	Happy Valley 15'	Driscoll Mtn. Prospect	Green fluorspar veins in limestone (Devonian- Miss.) porphyritic rhyo- lite dikes.
N½ 21S-23E	Tombstone 15'	Government Draw Area	Purple fluorite crystals associated with quartz veins in limestone.

COCHISE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>FLUORSPAR</u> (Cont'd)			
sec. 21 22S-23E	Tombstone SE 7½'	Stout Prospect	Fluorite-quartz veins in porphyritic granite.
sec. 33 22S-23E	Hereford 7½'	Capt Prospect	Fluorspar vein in limestone (Carboniferous ?) intruded by porphyritic granite.
<u>GRAPHITE</u>			
sec. 21 14S-27E	Dos Cabezas 15'	Mascot Canyon	Graphitic shales (Cret.).
<u>GYPSUM</u>			
sec. 2,11,12,13, 14,15, 24S-28E	College Peaks 15'	D Hill Area	Past production, gypsum blocks and plaster, gypsum and gypsite overlying clay and shale (Cenozoic).
sec. 32,33 19S-19E, sec. 4,5,9,10, 15,16, 20S-19E	Mustang Mtns. 7½'	Southern Whetstone Mtns.	Gypsum beds interbedded with siltstone and Epitah dolomite (Permian).
sec. 30,32 18S-19E	Benson 15'	Whetstone Mtns.	Gypsum in Epitah dolomite (Permian).
sec. 19 18S-21E	St. David 15'	Land	Gypsum beds interbedded with clay, caliche, sandstone (Cenozoic).
sec. 4 18S-26E	Squaretop Hills 15'	Turkey Ridge Creek	Gypsum beds, interbedded sediments (Cenozoic).
18S-28E	Squaretop Hills 15'	along Turkey Creek	Gypsum within lake beds (Cenozoic).
sec. 20,21 17S-20E	Benson 15'	Benson	Gypsum lenses, selenite crystals, interbedded bentonitic clay.
<u>LIMESTONE-DOLOMITE</u>			
E½ 20S-22E	Tombstone 7½'	Tombstone District	Massive dolomitic limestone-shale in Naco Form. (Permian-Penn.).
sec. 28,29 16S-30E	Cochise Head 15'	Cochise Marble	Dolomitic marble in Escabrosa Limestone (Miss.).

COCHISE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
LIMESTONE-DOLOMITE (Cont'd)			
sec. 31 23S-21E sec. 36 23S-20E	Sunnyside 15'	Stump Canyon	Escabrosa limestone and marble (Miss.).
sec. 7 24S-26E	Paul Spur 7½'	Paul's Lime Quarry	Active mine, limestone output for metall. flux, lime, mineral food, Mural limestone (Cret.). ✓
sec. 14 24S-25E	Bisbee 15'		Dolomitic limestone, Martin Form. (Devonian).
sec. 12 16S-22E	Dragoon 15'	Centurion Prospect	Dolomitic marble.
sec. 27,35 16S-23E	Cochise 15'	Ligier Marble Quarries, Dragoon Marble Quarries	Past production, white dolomitic marble-limestone (Miss.) for terrazo, crushed stone. ✓
sec. 20 15S-29E	Cochise Head 15'	Pavonazzo & Pentelicus Quarries	Past production, dolomitic marble (Penn.). ✓
sec. 28,29 16S-30E	Cochise Head 15'	Whitetail Canyon, Cochise Marble	Escabrosa limestone-dolomitic marble (Miss.).
MICA			
sec. 23 14S-28E	Cochise Head 15'	Beryl Hill, Live Oak	Mica, beryl, quartz in pegmatite, past production of beryl.
sec. 36 20S-21E	Fairbank 7½'	Charleston Mine	Past production of scrap mica, sericite bodies in faulted volcanic rocks.
PUMICE GROUP			
sec. 34 21S-30E	Pedregosa Mtns. 15'		Volcanic cinders.
sec. 22 22S-30E	Pedregosa Mtns. 15'	Bernardino	Scoria-volcanic cinders.
sec. 8, 17 23S-30E	College Peaks 15'	Cinder Hill Quarry	Past production, volcanic cinders and scoria output for building blocks.

COCHISE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
SILICA-QUARTZ			
sec. 31 13S-23E	Winchester Mtns. 15'	Hearst Mine	Past production, argen- tiferous silica flux, limestone (Paleozoic), jasperoid masses.
sec. 25,26,35 15S-22E	Dragoon 15'	Burro Pit, Chicora, Mine, Strong and Harris	Past production, output for smelter flux, Bolsa quartzite (Cambrian), copper mineralization.
sec. 11,14 15S-23E	Cochise 15'	Red Bird Mine, Gold Coin	Past production, quartz veins with gold-silver values.
sec. 17,20 16S-30E	Cochise Head 15'	Indian Creek	Quartz masses.
sec. 24 18S-19E	Benson 15'	Ricketts Quarry	Past production, bull quartz masses in alaskite and quartz monzonite.
sec. 28 19S-25E	Pearce 15'	Nancy Group	Producing mine, Bolsa quartzite (Cambrian) used for smelter flux.
sec. 14 23S-20E	Sunnyside 15'	Tungsten Reef Mine	Quartz veins with gold- silver values.
sec. 21 23S-24W	Bisbee 7½'	Wade Hampton Mine	Past production of silica flux, siliceous Abrigo limestone (Cam- brian), copper-lead ores.
sec. 17 23S-25E	Bisbee NE 7½'	Easter Sunday Mine	Past production output for flux, quartzite (Cretaceous).
sec. 3,9 16S-22E	Dragoon 15'	Bluebird Mine	Quartz crystals.
SILLIMANITE GROUP			
sec. 15 13S-25E	Willcox 15'	Drury	Dumortierite vein in schist.
WOLLASTONITE			
sec. 12 20S-22E	Tombstone 7½'	Silver Thread, West Side Mines	Wollastonite fibrous masses.

COCHISE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
ZEOLITE			
sec. 1,2 12S-29E	Bowie 15'	San Simon Creek	Chabazite, analcime, clinoptilolite, eronite in lacustrine volcanic tuff (Cenozoic).
sec. 12 15S-24E	Cochise 15'	Willcox Playa	Analcime in mudstone (Pleistocene).
sec. 14 23S-19E	Sunnyside 15'	Eureka Canyon	Reported occurrence of leonhardite.

COCONINO COUNTY

CLAYS

sec. 1,12,13,23, 24,26,31,32 39N-7E	Lees Ferry 15', Tanner Wash 15'	Foot of Echo Cliffs	Grayish-green bentonite beds in Chinle Form. (Triassic).
3 mi. SE of Cedar Ridge	Shinumo Altar 15'	Paint Pots	Olive-green bentonitic clay, Chinle Form. (Triassic).
E½ 38N-7E	Tanner Wash 15'	Echo Cliffs	Bentonite in Chinle Form. (Triassic).
sec. 2,11 proj. 32N-9E	Moa Ave NW 7½'	Willow Springs Area	Grayish-green bentonitic shale in Chinle Form.
sec. 3,10,15 proj. 30N-9E	Cameron 15'	Moenkopi Wash	Grayish-green bentonitic shale.
30N-13E	Coal Mine Mesa 7½'	Coal Mine Canyon	White kaolinized sand- stone (Cow Springs Form.) at contact with Dakota Form. sandstone.
N½ proj. 22N-13E	Leupp 15'	Leupp Area	Grayish bentonitic clay, Chinle Form.
sec. 31,32 21N-6E	Bellemont 15'	Rogers Lake	High-silica clay derived from decomposed andesite and basalt.
NW¼ proj. 28N-10E	Cameron 15'	Black Point	Bentonitic clay in Chinle Form.

COCONINO COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>CLAYS (Cont'd)</u>			
N $\frac{1}{2}$ proj. 26N-10E	Wupatki SE 7 $\frac{1}{2}$ '		Bentonitic clay in Chinle Form.
NE $\frac{1}{4}$ proj. 31N-9E	Moa Ave. SW 7 $\frac{1}{2}$ '		Bentonitic clay.
<u>GYPSUM</u>			
sec. 32 proj. 25N-11E	Standing Rocks 7 $\frac{1}{2}$ '	Central Wash	Gypsum beds, gypsite in Moekopi shale (Triassic).
<u>LIMESTONE-DOLOMITE</u>			
1 mi. SW of Goldtooth	Goldtooth 7 $\frac{1}{2}$ '		Limestone lenses in Navajo sandstone.
8 mi. NW of Tonalea			Limestone lenses in Navajo sandstone.
11 mi. NE of Cow Springs	Shonto 7 $\frac{1}{2}$ '		Bluish-gray limestone lenses in Navajo sand- stone.
$\frac{1}{2}$ mi. W. of Cow Springs	Cow Springs 7 $\frac{1}{2}$ '		Limestone lenses in Navajo sandstone (Jurassic).
sec. 20, 29 22N-7E	Sunset Crater West 7 $\frac{1}{2}$ '		White limestone and marble, Redwall Form.
approx. sec. 25 21N-8E	Flagstaff East 7 $\frac{1}{2}$ '		Kaibab limestone (Permian).
approx. sec. 2,3 20N-7E	Flagstaff West 7 $\frac{1}{2}$ '		Kaibab limestone (Permian).
<u>PUMICE GROUP</u>			
W $\frac{1}{2}$ proj. 30N-9E	Cameron 15'	Little Shadow Mtn.	Pumicite.
approx. sec. 32 25N-9E	Wupatki SW 7 $\frac{1}{2}$ '		Cinder pit.
approx. sec. 16 23N-2E	Williams 15'	Red Lake	Cinder pit.
NW $\frac{1}{4}$ 23N-4W		Mt. Floyd	Pumicite.

COCONINO COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
PUMICE GROUP (Cont'd)			
sec. 19 23N-8E	Sunset Crater West 7½'	Sugarloaf Peak	Past production of rhyolitic pumice used for pozzolan.
sec. 2,11 13N-6E	White Horse Hills 7½'	White Horse Hills	Cinder pit.
sec. 10 23N-8E	O'Leary Peak 7½'	O'Leary Peak	Rhyolitic pumice.
sec. 31 23N-8E	Sunset Crater West 7½'	Bosley Deposit	Decomposed rhyolitic pumice.
sec. 13,14,23,24 23N-7E	Sunset Crater West 7½'	Sugarload Mtn. Area	Rhyolitic pumice.
approx. sec. 28 24N-10E	Roden Crater 7½'		Cinder pit.
NW¼ proj. 30N-9E	Cameron 15'	Shadow Mtn.	Volcanic cinders, past production for road aggregate.
sec. 9,10 24N-8E	O'Leary Peak 7½'	Cedar Ridge	Red cinders.
approx. sec. 26 22N-2E	Williams 15'		Cinder pit.
NE¼ 22N-4E	Parks 7½'	North of Parks	Cinder pit.
sec. 27 22N-4E	Parks 7½'	Parks	Volcanic cinders.
NW¼ 22N-11E	Merriam Crater 7½'		Cinder cone.
sec. 13 proj. 22N-15E		Bird Springs Wash	Pumicite.
sec. 3,4 21N-2E	Bill Williams Mtn. 15'	Arizona Mine	Past production of rhyo- litic pumice for building blocks.
approx. sec. 5 21N-5E	Garland Prarie 7½'	Volunteer Mtn.	Cinder cones.

COCONINO COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
PUMICE GROUP (Cont'd)			
sec. 7 21N-9E	Winona 7½'	Wildcat Hill	Active cinder pit.
sec. 2,11 21N-9E	Winona 7½'	Darling Cinder Pit	Active cinder pit, used for cinder blocks, aggregates and ballast.
sec. 15 21N-2E	Bill Williams Mtn. 15'	Sevier Flat	Cinder pit.
sec. 14 20N-2E	Bill Williams Mtn. 15'		Cinder pit.
sec. 16 20N-3E	Bill Williams Mtn. 15'	Perkins Knoll	Cinder pit.
sec. 4,9,10 23N-8E	O'Leary Peak 7½'	Robinson Crater Area	Pumice.
sec. 2,3,11,12 24N-8E	O'Leary Peak 7½'	Deadman Wash Area	Pumice and cinders.
approx. sec. 3,12 22N-2E	Williams 15'		Cinder pits.
approx. sec. 1 23N-10E	Roden Crater 7½'		Volcanic cinders.
sec. 14,23 20N-2E	Bill Williams Mtn. 15'		Cinder pits.
sec. 23 20N-3E	Bill Williams Mtn. 15'	Hill 1	Cinder pit.
sec. 10 21N-9E	Winona 7½'		Active cinder pit.
sec. 14,23 21N-9E	Winona 7½'	Winona	Active cinder pit.
sec. 32 22N-2E	Bill Williams Mtn. 15'	Williams	Cinder pit.
approx. sec. 2 20N-10E	Angell 7½'		Volcanic cinders.
approx. sec. 10 21N-10E	Angell 7½'		Volcanic cinders.

COCONINO COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
SAND (SPECIALTY) NW $\frac{1}{4}$ proj. 32N-11E	Tuba City 7 $\frac{1}{2}$ '	Tuba City Area	Sand dunes.
sec. 16,17,20 25N-14E	Garces Mesa 7 $\frac{1}{2}$ '	Red Lake	Quartz sand deposit.
N $\frac{1}{2}$ proj. 22N-13E	Leupp 15'	Leupp Area	Quartz sand.
2 mi. E. of Goldtooth	Goldtooth 7 $\frac{1}{2}$ '		Sand deposit (Pleistocene).
sec. 24 19N-12 $\frac{1}{2}$ E	Meteor Crater 7 $\frac{1}{2}$ '	Barringer	Past production, fused silica in Coconino sandstone shipped for glass and foundry uses.
SHALE (EXPANSIBLE) SE $\frac{1}{4}$ proj. 23N-13E	Leupp 15'		Purplish bloating clay-shale, Chinle Form.

GILA COUNTY

ALUNITE sec. 23,24 1N-15E	Globe 7 $\frac{1}{2}$ '	Old Dominion Mine	Reported alunite, kaolinite masses, some halloysite in fractured quartz monzonite.
ASBESTOS sec. 34,35 8N-14E	Mc Fadden Peak 15'	Cherry Creek, Buckhorn	Past production, chrysotile veins in Mescal limestone.
sec. 19,20,29,30 8N-15E	Young 15'	Walnut Creek, Wilson Creek, Arizona Asbestos Group, Tony, Wolf Spring Group	Past production, chrysotile asbestos veins in Mescal limestone (Pre-Camb.) intruded by diabase sills.
sec. 27,35 8N-15E	Mc Fadden Peak 15', Young 15'	Sloan Creek Group, Kyle Asbestos	Past production.

GILA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
ASBESTOS (Cont'd)			
sec. 24 proj. 7N-15E	Mc Fadden Peak 15'	White Hill	Past production.
sec. 13 proj. 7N-15E	Mc Fadden Peak 15'	Double Buttes	Past production.
sec. 14 7N-15E	Mc Fadden Peak 15'	Tank House Creek	
sec. 21 proj. 7N-12E	Picture Mtn. 7½'	Independent	
sec. 4,5 proj. 7N-14E	Mc Fadden Peak 15'	Bore Tree Saddle, Ash Creek	Past production.
sec. 10,11,14,15 7N-15E	Mc Fadden Peak 15'	A.F.C. Group, Rock House, King, May, Montezuma	Past production.
sec. 10 7N-15E	Mc Fadden Peak 15'	Pierce Mine	Past production.
sec. 15 7N-15E	Mc Fadden Peak 15'	May Mine	Past production.
sec. 7,8,17,18 6N-14E	Mc Fadden Peak 15'	Rosa Group	
sec. 15 6N-14E	Mc Fadden Peak 15'	Lucky Strike, Metate Mine	Past production.
sec. 22 6N-14E	Mc Fadden Peak 15'	Pueblo	Past production.
sec. 21 6N-14E	Mc Fadden Peak 15'	Reynolds Creek, Reynolds Fall	
sec. 29,30 proj. 5N-19E	Carrizo SE 7½'	Stansbury Mine, K & M Lease	Past production, asbestos veins in Mescal lime- stone, adjacent to diabase sill.
sec. 7,8 proj. 5N-17E	Blue House Mtn. 15'	Apache Mine	Past production, chrysotile asbestos veins in lime- stone near diabase sill.

GILA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>ASBESTOS</u> (Cont'd)			
sec. 8 proj. 5N-17E	Blue House Mtn. 15'	Apache Extension	Asbestos-bearing serpentine in limestone.
sec. 8 proj. 5N-17E	Blue House Mtn. 15'	Loey & Lena	Asbestos bearing zone, algal limestone.
sec. 13 proj. 5N-16E	Blue House Mtn. 15'	Fiber King, Salt Bank, Riverside	Past production, asbestos zone in massive bedded limestone, Mescal Form.
sec. 19,20 5N-14E	Mc Fadden Peak 15'	Asbestos Peak, Pocket Creek, Loafer Claim, Zimmerman Dome, Old Knighton Property	Past production, asbestos veins in algal Mescal limestone.
sec. 32 5N-14E	Rockinstraw Mtn. 15'	Globe and Miami Group	Past production.
sec. 24 proj. 5N-16E	Blue House Mtn. 15'	Regal Group, Corral Creek	Past production, asbestos bearing zones within Mescal limestone.
sec. 32 proj. 5N-16E	Haystack Butte 7½'	Little Favor Group	
sec. 34 proj. 5N-17E	Blue House Mtn. 15'	Phillips Mine, Grandview Mine	Active Mine.
sec. 28 proj. 5N-17E	Blue House Mtn. 15'	Canadian, Ladder	Past production.
sec. 21 proj. 4½N-17E	Chrysotile 7½'	Victory Mine, El Dorado Mine, Chrysotile Mines	Active mine, chrysotile veins within serpentine layers of Mescal dolomitic limestone.
sec. 25,26 proj. 5N-17E	Blue House Mtn. 15'	Bluff Mine	Asbestos bearing zones in Mescal limestone beneath diabase sill.
sec. 22,23 proj. 5N-17E	Blue House Mtn. 15'	Enders Mine, Horseshoe, White Tail	Asbestos veinlets in serpentine zone of Mescal limestone intruded by diabase sill.

GILA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
ASBESTOS (Cont'd)			
sec. 19 proj. 5N-18E	Blue House Mtn. 15'	Roadside Mine, Prochnow	Asbestos veinlets in algal Mescal limestone adjacent to diabase sill.
sec. 25 proj. 5N-17E	Blue House Mtn. 15'	Snake Hill Mine	
sec. 29 proj. 5N-18E	Beckers Butte 15'	Wonder Claims	
SW¼ 5N-18E	Beckers Butte 15'	Silk Claims	
sec. 31 proj. 5N-18E	Beckers Butte 7½'	I.S. Hole Canyon	
sec. 35 proj. 5N-17E	Blue House Mtn. 15'	Great View Mine	
sec. 25 proj. 5N-17E	Blue House Mtn. 15'	Salt River Group, Dream Girl, Sorsen- Williams	
sec. 35 proj. 5N-17E	Blue House Mtn. 15'	Emsco	Past production.
sec. 26 proj. 5N-17E	Blue House Mtn. 7½'	Pinetop Mine	Active mine, harsh fiber asbestos lenses, Mescal limestone.
sec. 30 proj. 4½N-18E	Beckers Butte 7½'	Sulphur Springs Claim	
sec. 20 proj. 4½N-18E	Beckers Butte 7½'		
sec. 11 proj. 2N-19E	Cassadore Spring 7½'	Bear Canyon Mine	Past production, asbestos bands in limestone, over and underlain by diabase sills.
sec. 30 2N-19E	Natural Corral 7½'	Cassadore Property, Black Mesa	

GILA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>ASBESTOS</u> (Cont'd)			
sec. 2 proj. 2N-19E	Cassadore Spring 7½'	Upper Bear Creek	Asbestos bearing lime- stone bounded by dia- base.
sec. 17 proj. 2N-20E	Sowtag Creek 7½'		Chrysotile veinlets in Mescal limestone.
sec. 24 proj. 1N-18E	Natural Corral 7½'	Oak Creek	Asbestos occurrence in limestone.
sec. 19,30 proj. 1N-17E	Dourine Canyon 7½'	Apache Claims	Past production, asbestos zone in Mescal limestone underlain by diabase sill.
sec. 7,8 proj. 1N-16E	Cammerman Wash 7½'	G & H Prospect	Asbestos serpentine zone within limestone.
approx. sec. 3,4 2N-14E	Inspiration 7½'	Chuckwalla	
sec. 1 1N-13E	Haunted Canyon 7½'	North American	
sec. 17 proj. 2S-17E	Cutter 7½'	Chiricahua Prospect	Asbestos serpentine zone parallel to Mescal lime- stone bedding.
sec. 17 proj. 2S-17E	Cutter 7½'	Mystery Pros- pect	Asbestos serpentine zone in Mescal limestone.
sec. 20 proj. 2S-17E	Mescal Warm Spring 7½'	Red Whiskers Spring	Asbestos outcrops in algal Mescal limestone.
sec. 26 proj. 5N-16E	Blue House Mtn. 15'	Fourth of July	Past production, asbestos veins in algal limestone.
<u>BARITE</u>			
sec. 15 10N-15E	Diamond Butte 15'	Baronite Group	Iron-stained barite stringers in granite.
sec. 1 proj. 9N-9E	Payson 15'	Zulu & Green Valley	Parallel barite veins in quartz-diorite (Pre- Cambrian).
sec. 4 9N-10E	Payson 15'	Gilmore Spring Prospect	Minor barite veinlets in quartz diorite.

GILA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
BARITE (Cont'd)			
sec. 5 9N-10E	Payson 15'		Barite veinlets.
sec. 6 9N-10E	Payson 15'	Grey Fox Group	Barite stringers in diorite (Pre-Cambrian).
sec. 7 9N-11E	Payson 15'	Gisela (Spook) Deposit	Barite vein in fractured granite.
sec. 31 proj. 8N-12E	Picture Mtn. 7½'	Top Hat Group	Barite vein in faulted quartzitic schist (Pre-Cambrian).
sec. 35 7N-9E	Reno Pass 7½'	Lone Pine Claim	Barite vein in pyroxenite(?).
sec. 7,8 proj. 2N-16E	Rockinstraw Mtn. 15'	Richmond Basin	Barite veins.
sec. 29 proj. 1N-14E	Inspiration 7½'	Castle Dome Mine	Barite-fluorite mineralization, copper ores within quartz monzonite.
CLAYS			
sec. 20,29 8N-10E	Payson 15'	Quintonite	Active clay mine.
approx. sec. 28 7½N-9E	Pine 15'	Pine Area	Kaolinitic clay, calcite.
sec. 27 7N-23E	Rount Top Mtn. 7½'	North Fork, White River	Kaolinite in sandstone.
sec. 24 (?) 1N-15E	Globe 15'	Weary Lode	Past production, kaolinitic clay in altered granitic rocks, used for tiles, pond linings, ceramicware.
sec. 11 3S-13E	Sonora 7½'	No. 1 Mine	Kaolinite in altered granitic porphyry.
DIATOMITE			
sec. 26 proj. 1N-18E	Natural Corral 7½'	Skeleton Wash	Diatomite interbedded with limestone within lake sediments.

GILA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>FELDSPAR</u> approx. sec. 32 1S-15E	Pinal Peak 7½'	Signal Peak Area	Feldspar and sillimanite in schist.
<u>FLUORSPAR</u> sec. 32 10N-10E	Payson 15'	Ox Bow Mine, Osborn Prospect	Fluorspar veinlets with epidote, gold, silver in hornblende diorite.
W½ 7N-11E	Picture Mtn. 7½'	Quartz Ledge Prospect	
sec. 9 6N-11E	Greenback Creek 7½'	Tonto Basin, Packard Claims, Walnut, Blue- bird Claims	Past production for acid- grade concentrates, fluor- spar-quartz lenses and veins in granite (Pre- Cambrian).
sec. 2 6N-14E	Mc Fadden Peak 7½'	Cherry Creek	Brecciated white fluorite, copper minerals, bornite in Mescal limestone.
sec. 29 proj. 1N-14E	Inspiration 15'	Castle Dome Copper Mine	Fluorspar, barite, copper sulfides in fractured quartz monzonite.
<u>GARNET</u> NE¼ 8N-13E	Young 15'		Brown garnet bed asso- ciated with magnetite.
approx. sec. 30 4S-16E	Christmas 7½'	Dripping Springs Mtns.	Massive andradite beds, wollastonite.
<u>GYPSUM</u> sec. 14,17 7N-21E	Cedar Creek 7½'	Middle & East Cedar Creeks	Gypsum beds in Supai Form (Permian).
sec. 4 7N-20E	Cibecue Peak 7½'		Gypsum beds in Supai Form. (Permian).
sec. 16 7N-22E	Round Top Mtn. 7½'	C Dart Spring Area	White-gray gypsum, interbedded siltstone.
sec. 8 6N-21E	Cone Butte 7½'		

GILA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
GYPSUM (Cont'd) sec. 16 proj. 1S-18E	Bucket Mtn. 7½'	Gilson Wash Area	Granular gypsum inter- bedded with mudstone in lake sediments (Cenozoic).
LIMESTONE-DOLOMITE sec. 31,32 proj. 8N-21E	Picture Mtn. 7½'	Chalk Mtn. Area, Grant- ham-Withers Property	Limestone.
sec. 17,20 proj. 5N-18E	Beckers Butte 7½'	Flying V Canyon	Kaibab and Fort Apache limestone (Permian).
sec. 28,29 proj. 4½N-21E	Forks Butte 7½'	Horse Mesa	Naco limestone (Penn.).
sec. 9,10 1N-15E	Globe 7½'	Hoopes Lime Pit, Moore	Active quarry, lime and metall. flux produced from Escabrosa limestone (Miss.).
sec. 24 1N-15E	Globe 7½'	Limestone Quarry	Naco limestone (Penn.).
sec. 11 5S-15E	Hayden 7½'	Hayden Quarry	Active quarry, lime and metall. flux produced from Escabrosa limestone (Miss.).
PERLITE approx. sec. 27, 28, 4S-15E	Hayden 7½'	Dripping Springs Mtn.	Perlite occurrence.
PUMICE GROUP NE¼ 11N-9E	Pine 15'		Basalt.
sec. 2 proj. 1S-18E	San Carlos 7½'		Pumiceous tuff.
SILICA-QUARTZ sec. 15 1N-15E	Globe 7½'	Copper Hill Mine, Moore's Silica	Active mine, Troy quartzite (Cambrian) used for smelter flux.
sec. 22 4S-15E	Hayden 7½'	Chillito Mine	Active mine, copper-silica flux.

GILA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
SILLIMANITE GROUP (See FELDSPAR)			
WOLLASTONITE (see GARNET)			

GRAHAM COUNTY

BARITE (Also see
FLUORSPAR)

sec. 19 4S-20E	San Carlos Reservoir 15'	Barium King Group, Mitchell Barite	Barite vein with fluorite in trachyte.
sec. 28,29 4S-19E	San Carlos Reservoir 15'	Copper Reef Mine, North Star, Colorado Group	Barite vein, fluorite in limestone (Carboniferous), lead-copper ores.
sec. 12 proj. 5S-19E	San Carlos Reservoir 15'	Silver Star Prospect, Little Mule Group	Barite veins in fractured diorite.
sec. 20 8S-22E	Sierra Bonita Ranch 15'	Graham Prospect	Barite vein with fluorite in granite.
sec. 13 8S-21E	Sierra Bonita Ranch 15'	Kinney Kye Mine, Marcotte Group	Barite veins with fluorite, copper oxides in volcanic agglomerate.

DIATOMITE

sec. 33 proj. 1S-19E	San Carlos 7½'		
sec. 1,11 proj. 2S-19E	Mt. Triplet 7½'	Triplets Wash	Diatomite overlain by alluvium.
sec. 24 4S-23E	Ft. Thomas 15'		Impure diatomite.
sec. 21,22,23,26, 27,28, 8S-28E	Dry Mtn. 7½'	Whitlock Deposit	Impure diatomite beds and volcanic ash.

GRAHAM COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
DIATOMITE (Cont'd) approx. sec. 19 6S-27E	Safford 15'	Solomon Deposit	Diatomaceous beds inter- bedded with clay and alluvium.
FLUORSPAR (Also see BARITE)			
sec. 19 4S-20E	San Carlos Reservoir 15'	Barium King Mine	Fluorite, barite, calcite vein in brecciated trachyte.
sec. 28,29 4S-19E	San Carlos Reservoir 15'	Coronado Group	Fluorite, barite, quartz vein in limestone.
sec. 12 proj. 5S-19E	San Carlos Reservoir 15'	Little Mule Group, Silver Spar Prospect	Vein of fluorite, barite, quartz, lead-silver values in latite or andesite breccia.
sec. 29 5S-20E	Klondyke 15'	Landsman Group	Purple fluorite stringers, lead-silver values in faulted limestone.
sec. 6 6S-22E	Jackson Mtn. 15'	Mt. Jackson, Rhodes Spar	Past production, purple- green fluorspar veins in granite (Pre-Camb.).
sec. 29 6S-20E	Klondyke 15'	Grand Reef Mine	Fine-grained brecciated fluorite, quartz, lead- silver values in schist intruded by rhyolite dikes.
sec. 22 7S-21E	Jackson Mtn. 15'	Edith 1 & 2	Fluorspar veinlets in granite (Pre-Camb.).
sec. 13 8S-21E	Sierra Bonita Ranch 15'	Marcotte Claims	Veins of barite, fluorite, calcite, silver-gold values in volcanic agg- lomerate.
sec. 20 8S-22E	Sierra Bonita Ranch 15'	Graham Prospect	Barite, fluorite, copper oxides in granite (Pre- Camb.).
GARNET			
sec. 36 4S-19E	San Carlos Reservoir 15'	Quartzite Mtn.	Andradite garnet in meta- morphosed limestone (Paleozoic).

GRAHAM COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
PERLITE approx. sec. 8 6N-27E	Safford 15'	Gila Mtns.	
PUMICE GROUP sec. 23 6N-27E	Safford 15'	Haigler Claims	Past production, pumicite with zeolitized volcanic ash.
sec. 28,29 6S-29E	Guthrie 15'	Pumice, Blue Bird, Triangle Claims	Past production, pumicite for cinder blocks and aggregates.
SILICA-QUARTZ sec. 17 6S-20E	Klondyke 15'	Tenstrike Group	Quartz crystals in vein druses.
ZEOLITE 11S-29E	Bowie 15'	Arizona Chabazite Mine, E-Z Claims, San Simon Creek	Past production of chabazite from vitric tuff (Cenozoic).

GREENLEE COUNTY

CLAY sec. 17 4S-29E	Clifton 15'	Copper Mtn.	Kaolinite.
DIATOMITE sec. 12 8S-31E	Duncan 15'	Duncan	Horizontal diatomite bed interbedded with clay in Gila Formation.
sec. 22 8S-31E	Duncan 15'		Past production, diato- mite beds in Gila Form- ation.
FLUORSPAR sec. 3,10 17S-32E	York Valley 15'	Lucky No. 1,2	Past production, fluor- spar and quartz veins in faulted andesite por- phyry-rhyolite tuff.
sec. 4 17S-32E	York Valley 15'	Fourth of July Mine, Ellis Shaft	Past production, fluor- spar veins, quartz-calcite in rhyolite porphyry.

GREENLEE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
FLUORSPAR (Cont'd)			
sec. 5 17S-32E	York Valley 15'	Daniels Camp Mine	Past production, fluor-spar stringers in fractured andesite.
sec. 9 17S-32E	York Valley 15'	Polly Ann, Forbis Mine	Past production, fluor-spar veins in rhyolite tuff and andesite porphyry.
sec. 10 17S-32E	York Valley 15'	Goat Camp Mine	Past production.
sec. 15 17S-32E	York Valley 15'	Phillips Mine	Past production.
GARNET			
sec. 4 4S-29E	Clifton 15'	Shannon Mtn.	Andradite garnet in altered limestone.
LIMESTONE-DOLOMITE			
sec. 33 3S-29E	Clifton 15'	Morenci Quarry	Past production, Modoc limestone (Miss.) for smelter flux.
sec. 15 4S-29E	Clifton 15'		Blue-grey Modoc limestone, dolomite and quartzite.
sec. 27 4S-29E	Clifton 15'		Limestone-dolomite, Modoc Formation.
PERLITE			
S $\frac{1}{2}$ 1N-30E	Dutch Blue Creek 7 $\frac{1}{2}$ '	Rousensock Creek	Perlite, pumice in quartz latite and rhyolite.
sec. 10 3S-29E	Clifton 15'	Granville Area	Gray to black perlite and agglomerate.
PUMICE GROUP			
SW $\frac{1}{4}$ 4S-32E	Big Lue Mtns. 15'	Big Lue Mtns.	Pumice outcrops.
SILICA-QUARTZ			
sec. 28 3S-28E	Clifton 15'	Willis Mine, Harmony No. 1	Active mine, Coronado quartzite (Cambrian) used for smelter flux.
sec. 11 8S-30E	York Valley 15'	Ash Peak Mine	Silica-quartz.

GREENLEE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
ZEOLITE			
sec. 16 3S-29E	Clifton 15'		Clinoptilolite and mordenite in lapilli and tuff (Tert.).

MARICOPA COUNTY

BARITE (see FLUORSPAR)			
sec. 34 5N-10W	Lone Mtn. 15'	Princess Ann, Fay L	Past production, barite veins, fluorspar in volcanic conglomerate.
sec. 35 5N-10W	Lone Mtn. 15'	White Rock Claims, Blue Bird	Barite-fluorspar veins in basalt.
sec. 4 2N-7E	Granite Reef Dam 7½'	Granite Reef Mine, Macco, Arizona Barite, Christman	Past production for drilling mud, barium chemicals, barite veins in faulted conglomerate.
sec. 19 proj. 2S-6W	Woolsey Peak 15'	B&H Claim #6	Barite vein in biotite schist (Pre-Cambrian).
sec. 25 4S-8W	Dendora Valley 15'	Rawley Mine	Barite gangue, copper-gold ores within andesite.
DIATOMITE			
sec. 15 6N-1E	Biscuit Falt 7½'	Lake Pleasant Mine	Past production, diatomite beds in Cenozoic lake sediments interbedded bentonite.
FELDSPAR (see MICA)			
sec. 16 7N-3W	Red Picacho 7½'	Morning Star	Past production, potash feldspar pods, green muscovite, quartz, lithium minerals in pegmatite.
sec. 16 7N-3W	Red Picacho 7½'	Sunset	Potash feldspar, quartz, muscovite, in pegmatite within amphibole schist.
sec. 23 7N-3W	Red Picacho 7½'	Hertz, Weatherman	Pegmatite with feldspar, quartz.
sec. 4 or 5 2S-3W	Buckeye 7½'	Varnum Feldspar	

MARICOPA COUNTY (Continued)

<u>Location</u> FLUORSPAR (see BARITE)	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
sec. 2 6N-5W	Vulture Mtns. 15'	Contact Mine	Past production, fluor- spar vein in andesite.
sec. 4 6N-5W	Vulture Mtns. 15'	Big Spar Mine	Past production, fluor- spar veins in faulted andesite.
sec. 12 6N-5W	Wickenburg 7½'	Jumbo Mine, Union Hill	Past production, fluor- spar-quartz veins in andesite.
sec. 7 6N-4W	Wickenburg 7½'	Good Luck	
sec. 7 6N-4W	Wickenburg 7½'	Mammoth Spar, Luck Strike Mine	Past production.
sec. 7 6N-4W	Wickenburg SW 7½'	Lilly Belle Mine	Fluorspar veins in granite, trachyte and diorite.
sec. 22 6N-4W	Wickenburg SW 7½'	Cactus Queen, Texas Queen	
SW¼ 5N-8E	Adams Mesa 7½'	Muskog Claims	Fluorspar vein in granite (Pre-Cambrian).
sec. 17,20 5N-8W	Aguila 15'	Valley View Mine	Manganese ores with fluorite, barite, black calcite, chalcedony in andesite breccia.
sec. 29 5N-10W	Lone Mtn. 15'	Snowball Deposit	Past production for cement flux, fluorspar lenses- veins in faulted lime- stone cut by felsite dikes.
sec. 34 5N-10W	Lone Mtn. 15'	Princess Ann, Fay L	Fluorspar-barite stringers in volcanic agglomerate.
sec. 35 5N-10W	Lone Mtn. 15'	White Rock, Blue Bird	Barite-fluorspar stringers in fractured basalt.
approx. sec. 5 2N-3W	White Tank Mtns. SE 7½'	White Tank Mtns.	

MARICOPA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>FLUORSPAR (see BARITE)</u>			
(Cont'd)			
sec. 32 5N-5E	Mc Dowell Peak 7½'	White Quartz Quarry	Fluorspar associated with white quartz.
<u>GYPSUM</u>			
approx. sec. 26, 34, 7S-5W	Theba 15'	Black Gap	Gypsum beds, celestite interbedded in tuff (Tertiary).
<u>LIMESTONE-DOLOMITE</u>			
sec. 12 6N-6W	Vulture Mtns. 15'	Banker Property	Dolomitic marble.
sec. 17 4N-10W	Lone Mtn. 15'	Law Claims	Dolomitic marble.
sec. 15 6N-5E	Wildcat Hill 7½'	White Ledge Property	Dolomitic marble.
sec. 19 6N-5E	Cave Creek 7½'	Lone Mtn. Group, White Eagle Mine	Past production, stucco filler, dolomitic lime- stone.
<u>LITHIUM MINERALS</u>			
sec. 16 7N-3W	Red Picacho 7½'	North Morning Star Mine	Past production of spod- umene, amblygonite, zinnwaldite, white quartz, feldspar in pegmatite.
sec. 26 7N-5W	Wickenburg 7½'		Lepidolite reported.
sec. 36 6N-5W	Vulture Mtns. 15'	Vulture Mine	Past production of spodumene.
sec. 7 6N-4W	Wickenburg 7½'	Ambly	Grey lepidolite in pegmatite.
<u>MICA (see FELDSPAR)</u>			
sec. 17 7N-2W	Red Picacho 7½'	Morning Star, Sunset	Muscovite flakes, books, feldspar in pegmatite.
approx. sec. 26 3S-1E	Montezuma Peak 7½'	Hightower Property	Past production of ground mica, muscovite books, sericite in pegmatite.
sec. 20,29 1S-3W	Buckeye 7½'	Buckeye Hills	Active mine, sheet and scrap mica in pegmatite used for paints, roofing materials.

MARICOPA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
MICA (see FELDSPAR) (Cont'd)			
approx. sec. 5 6N-2W	Garfias Mtn. 7½'	Big Reef Mine	Past production of scrap mica, muscovite books in pegmatite.
sec. 36 1S-3W	Buckeye 7½'	Estermill Group	Muscovite books in schist.
PERLITE			
sec. 17 6N-7W	Aguila 15'	Black Butte	
sec. 14,15 4N-10W	Lone Mtn. 15'	Big Horn Mtns.	
approx. sec. 26 1S-5W	Buckeye 15'	Powers Butte	
PUMICE GROUP			
NE¼ 6N-1E	Biscuit Flat 7½' New River 7½'	Morgans Wash	Scoria.
sec. 5,6 6N-4E	New River Mesa 7½'		Scoria.
sec. 30 7N-6W	Vulture Mtns. 15'		Perlitic welded tuff, interbedded pumice.
sec. 3,4,5 2N-8W	Big Horn Mtns. 15'	Big Horn Mtns.	Pumicite.
SW¼ 2S-5W	Woolsey Peak 15'	Gillespie Dam Area	Basalt.
SILICA-QUARTZ			
sec. 14 or 15 6N-9E	Boulder Mtn. 15'	Harrison Deposit, Dixie Claims	Quartz veins.
SILLIMANITE GROUP			
sec. 35 3N-3E		Squaw Peak Area	Past production of kyan- ite, schist host rock.
STRONTIUM			
sec. 20 6N-7W	Aguila 15'	Black Butte	Celestite interbedded in shaly tuff (Tertiary).
approx. sec. 26, 34, 7S-5W	Theba 15'	Montezuma Claims	Celestite with gypsum in sandstone and con- glomerate.

MARICOPA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
VERMICULITE			
approx. sec. 21 7N-5W	Vulture Mtns. 15'	Bar FX Ranch	Vermiculite occurrence.
ZEOLITE			
sec. 3 proj. 7N-6E	Horseshoe Dam 7½'	Horseshoe Reservoir Area	Clinoptilolite in tuff of Verde Form. (Creta- ceous).

MOHAVE COUNTY

BARITE (see FLUORSPAR)			
sec. 20 20N-12W	Tin Mtn. 7½'	Rucker Group	Past production, barite veins and pods in granite. (Pre-Cambrian).
sec. 25 13N-15W	Castaneda Hills 15'	McCracken Lead Mine	Barite veins, quartz, galena carbonates.
CLAYS			
sec. 35 17N-19W	Yucca 7½'	Klaner & Doolin Pits	Past production, white kaolinite, quartz, cris- tobalite in hydrother- mally altered volcanic rocks.
sec. 6 approx. 14N-10W		Burro Creek	Past production, ben- tonite in rhyolite tuff.
CORUNDUM			
approx. sec. 14 34N-14W	Grand Gulch Bench 7½'	Red Lake District	Corundum and andalusite in pegmatite.
FELDSPAR (see MICA)			
sec. 29 proj. 38N-16W	Virgin Peak 15'	Hummingbird Group	Feldspar, kyanite, mus- covite, beryl, chryso- beryl in pegmatite within gneiss-schist.
approx. sec. 6 30N-22W	Hoover Dam 15'	Painted Desert	Feldspar, quartz in pegmatite.
sec. 26 28N-17W	Garnet Mtn. 15'	M and P Clams	Pegmatite with potassium feldspar, perthite, quartz- muscovite.

MOHAVE COUNTY (Continued)

<u>Location</u> FELDSPAR (see MICA) (Cont'd)	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
sec. 22 22N-17W	Stockton Hill 7½'	White Spar Mine	Past production, feldspar-quartz processed for use as abrasives, ceramics.
sec. 26 22N-17W	Stockton Hill 7½'	Taylor Mine	Active quarry, feldspar-quartz pegmatite, gray-white microcline pods, used in glass, enamels, pottery.
sec. 27 22N-17W	Stockton Hill 7½'	Hopkins Prospect	Feldspar-quartz pegmatite.
approx. sec. 6 21N-17W	Kingman NW 7½'	Cerbat Mtns.	Quartz core pegmatite with potassium feldspar.
sec. 21 16½N-12W	Tule Wash 7½'	Rare Metals Mine	Microcline in pegmatite with yttrotantalite, fluorite, quartz, muscovite, garnet.
sec. 24 18N-12W	Tom Brown Canyon 7½'	Silica Hill	Quartz core pegmatite with microcline.
FLUORSPAR sec. 28 20N-20W	Oatman 7½'	Mossback Mine, Moss Mine	Fluorite associated with quartz, gold-silver ores in quartz monzonite.
sec. 5 19N-20W	Oatman 7½'	Hardy Mine	Fluorite gangue associated with quartz vein, gold-silver ores.
sec. 9 19N-20W	Oatman 7½'	Times Mine	Fluorite gangue associated with gold-silver ores.
sec. 7 (?) 23N-13W	Valentine 7½'	Blue Daisy	Fluorspar veins in limestone.
sec. 18 18N-15W	Wabayuma Peak 7½'	Boriana Mine	Purple fluorspar, associated with tungsten-quartz veins in granite-phyllite schist cut by aplite dikes.

MOHAVE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
FLUORSPAR (Cont'd)			
sec. 34 17N-15W	Diamond Joe Peak 7½'	Craig Spar	Fluorspar vein in granite.
sec. 30 17N-14W	Diamond Joe Peak 7½'		Fluorspar vein in granite.
sec. 17 12N-14W	Artillery Peak 15'	Potts Mtn.	Fluorspar veins.
sec. 12 11N-13W	Artillery Peak 15'	Burro Wash Area, Red Hills Pros- pect	Fluorite-barite stringers with malachite, wulfenite in Artillery Form.
GRAPHITE			
sec. 20 23N-17W	Stockton Hill 7½'	Canyon Station Wash, Black- bird Mine	Graphite veins in schist (Pre-Cambrian).
GYPSUM			
41N-13W	Wolf Hole Mtn. NW 7½'	Black Rock Canyon	Gypsum lenses in Moenkopi shale (Triassic).
approx. sec. 3,4 41N-14W	Littlefield 15'	Beaver Dam Mtns.	Past production for agri- culture, gypsum lenses in limestone (Penn.).
40N-10W		Hurricane Cliff	Gypsum in Kaibab lime- stone (Permian).
E½ 40N-12W		Mokaac Wash Area AA	Past production for agri- culture use, gypsum lenses in red beds between limestone (Permian).
39N-12W		Black Rock Springs	Gypsum lenses in Moenkopi shale (Triassic).
SE¼ 39N-12W		Wolf Hole	Gypsum in Kaibab lime- stone (Permian).
E½ 38N-5W	Heaton Knolls 15'	Antelope Wash	Gypsum in Kaibab lime- stone.
sec. 26 proj. 36N-4W	Jumpup Canyon 15'	Hack Canyon	Gypsum lenses in lime- stone breccia, Kaibab Form.

MOHAVE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>GYPSUM (Cont'd)</u> 35N-7W	Mt. Trumbull NE 7½'	Toroweap Canyon	Gypsum lenses in Kaibab limestone.
NW¼ 30N-20W	Senator Mtn. 15'	Detrital Wash	Gypsum beds in Muddy Creek Form.
sec. 27 16N-13W	Tule Wash 7½'	Burro Wash	Gypsum in Cenozoic lake beds.
<u>LIMESTONE-DOLOMITE</u> W½ 32N-16W	Iceberg Canyon 15'	Tassai Ridge	Dolomitic limestone.
approx. sec. 19,30 25N-10W	Peach Springs 7½'	Peach Springs Area	Flat-lying Redwall dolomite (Miss.).
<u>MAGNESITE-BRUCITE</u> sec. 8 19N-20W	Oatman 7½'	Mag Group	Brucite beds in sedim. beds (Miocene) overlain by andesite.
sec. 17 19N-20W	Oatman 7½'	Midnight Group	White brucite layers overlain by andesite.
sec. 17,18,20 19N-20W	Oatman 7½'	White House Group, Martin	Past production of brucite.
sec. 21 19N-20W	Oatman 7½'	Pioneer Claims	
sec. 25 20N-21W	Oatman 7½'	Moss Wash Group	
<u>MICA (see FELDSPAR)</u> sec. 29 proj. 38N-16W	Virgin Peak 15'	Hummingbird Group	Past production of scrap mica, muscovite books, feldspar, sericite in pegmatite within schists.
sec. 26 28N-17W	Garnet Mtn. 15'	M & P Claims	Past production of sheet mica, flawed muscovite books, potassium feldspar, quartz in pegmatite.
sec. 10 19N-15W	Dean Peak 7½'	Mica Giant Mine	Past production sheet and scrap mica, muscovite books in pegmatite.

MOHAVE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
MICA (see FELDSPAR) (Cont'd)			
sec. 16 19N-15W	Dean Peak 7½'	Mica Hill (Merlo) Mine	Past production, scrap and sheet mica.
sec. 24 19N-17W	Kingman SE 7½'	Mica Ace	Muscovite in pegmatite.
PERLITE			
sec. 31 24N-20W	Grasshopper Jct NW 7½'	Black Mtns.	Perlite.
sec. 31 23N-19W	Grasshopper Jct 7½'	Middle Black Mtns.	Perlite outcrops.
sec. 2 22N-20W	Burns Spring 7½'		Perlite masses with latite in volcanic breccia overlain by tuff.
sec. 14 21N-20W	Union Pass 15'	Union Pass Area	Perlitic outcrops.
sec. 27,35 17N-18W	Yucca 7½'	Southern Black Mtns., Havi- land Area	Past production for fillers and expanded for insulation, perlite lenses intermixed with latite.
sec. 20 16½N-18W	Yucca 7½'		Perlite outcrops.
PUMICE GROUP NW½ 17N-18W	Yucca 7½'	Black Mtns.	Basalt.
SAND (SPECIALTY)			
sec. 24,25 16N-13W	Wikieup 7½'	Wikieup Area	Glauconitic green sand beds.
SILICA-QUARTZ (see FELDSPAR)			
sec. 28 20N-20W	Oatman 7½'	Mossback Mine	Quartz crystals.
SILLIMANITE GROUP (see CORUNDUM)			
sec. 29 proj. 38N-16W	Virgin Peak 15'	Hummingbird Group	Kyanite associated with feldspar, muscovite.

MOHAVE COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>SILLIMANITE GROUP</u> (see CORUNDUM)(Cont'd)			
sec. 10,15 19N-15W	Dean Peak 15'	Maynard Dis- trict	Sillimanite associated with quartz veins in schist.
sec. 3,4 17N-16W	Wabayuma Peak 7½'	Cedar District	Andalusite associated with quartz veins in schist.
sec. 13 11N-14W	Artillery Peak 15'	Cactus Queen Mine	Pyrophyllite.
NE¼ 17N-17W	Yucca SE 7½'		Pyrophyllite.
<u>VERMICULITE</u>			
sec. 10 (?) 19N-15W	Dean Peak 7½'		Vermiculite occurrence.
<u>ZEOLITE</u>			
sec. 11 21N-20W	Union Pass 7½'	Union Pass	Mordenite in tuff and Lapilli of Golden Door volcanics (Tertiary).
sec. 11 16N-13W	Wikieup 7½'	East of Big Sandy River	Analcmite, chabazite, erionite, phillipsite, clinoptilolite in lacustrine tuff (Pliocene).
sec. 24,25,26 16N-13W	Wikieup 7½'	Wikieup Area	Green analcmite in mud- stones, Big Sandy Form. (Pliocene).
sec. 18 15N-12W	Wikieup 7½'		Green analcmite chabazite erionite in Big Sandy Form., Lacustrine tuff (Pliocene).
sec. 29,30 15N-12W	Greenwood Peak 7½'		Yellow clinoptilolite in tuff within siltstone- sandstone.
sec. 6, 15N-12W, sec. 1,12 15N-13W	Wikieup 7½'	Sycamore Creek	Analcmite, chabazite, erionite in lacustrine tuff (Pliocene).
sec. 30,31 12N-13W	Artillery Peak 15'	Maggie Canyon	Analcmite in sandstone (Pliocene).

NAVAJO COUNTY

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>CLAYS</u>			
sec. 24 proj. 8N-20E	Show Low 15'		Kaolinite reported in sandstone.
sec. 19 proj. 8N-21E	Show Low 15'		Ceramic clay in Cretaceous shale.
NW¼ proj. 22N-16E		Bird Springs Wash Area	Kaoline reported.
	Boot Mesa 15'	base of Owl Rock	Bentonite in Chinle Form. (Triassic).
sec. 11 20N-17E	Winslow 15'		Bentonitic clay, Chinle Form. (Triassic).
sec. 7,8,18 21N-16E	Winslow 15'	Coyote Wash	Bentonitic clay, Chinle Form. (Triassic).
	Boot Mesa 15'	Along Skelton Mesa	Bentonitic clay, Chinle Form. (Triassic).
approx. sec. 9 10N-17E	Heber 15'	North Fork, Phoenix Wash	White refractory clay in sandstone overlying coal seams.
sec. 33 11N-16E	Heber 15'	Turkey Springs	Gray refractory clay associated with shaly coal seams.
<u>GYPSUM</u>			
sec. 15 19N-15E	Tucker Mesa 7½'	Toltec Divide	Former production for cement, plaster, agricultural purposes, alabaster-gypsum beds overlain by Moenkopi shale (Triassic).
S½ 13N-21E	Taylor 7½'	Snowflake	Gypsum in Moenkopi shale (Triassic).
approx. sec. 34 16N-22E	Ten Mile Cedars 7½'	Woodruff	Gypsum in Moenkopi shale (Triassic).
sec. 18 9N-20E	Show Low 15'	Hop Canyon	Gypsum in Supai Form. (Permian).
sec. 33 9N-21E	Show Low 15'		Gypsum in Supai Form. (Permian).
sec. 20 8N-19E	Cibecue 15'		

NAVAJO COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
LIMESTONE-DOLOMITE			
sec. 5,6,7 proj. 7N-20E	Cibecue 15'	Cedar Mesa Tank	Fossiliferous limestone (Penn.).
sec. 22 proj. 8N-22E	Show Low 15'	East Fought Ridge	Limestone overlain by sandstone (Permian).
sec. 23 proj. 8N-22E	Show Low 15'	West Fought Ridge	Kaibab limestone (Permian) outcrops.
11 mi. NE of Cow Springs	Shonto 7½'	Shonto Area	Bluish-grey limestone bed, interbedded sandstone.
2.3 mi. N. of Kayenta	Agathla Peak 15'		Bedded limestone beds in Navajo sandstone.
PUMICE GROUP			
sec. 11 proj. 23N-22E		Bidahochi	Volcanic ash.
sec. 1,11,12 proj. 25N-21E	White Cone 15'	White Cone Peak	Pumiceous tuff.
sec. 1,12 proj. 8N-22E	Mc Nary 15'		Cinders.
sec. 8,13,18, 22,23,24,27,33 8N-23E	Mc Nary 15'	Pines Area	Cinders.
sec. 3 proj. 9N-23E	Mc Nary 15'	Mc Nary	Cinders.
SAND (SPECIALTY)			
SW¼ 29N-17E	Oraibi 15'	Second Mesa	
NW¼ 28N-20E	Keams Canyon 15'		Sand lenses in Mesa Verde Form.
26N-16E 25N-15E	Tovar Mesa 15'	Polacca Wash	
SW¼ 23N-18E	Chimney Butte 7½'	Coyote Wash	Sand lenses in Wingate Form.
SW¼ 21N-18E		15 mi. SW of Dilcon	

NAVAJO COUNTY (Continued)

<u>Location</u> SAND (SPECIALTY) (Cont'd)	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
	Black Mesa Wash NE 7½'	20 mi. NE of Red Lake (Tonalea)	Sand lenses within Pleistocene terrace.
sec. 2 9N-20E	Cibecue 15'	Hop Canyon	White sandstone (Supai Form.).
sec. 24 8N-20E	Cibecue 15'		Sandstone (Cretaceous).
sec. 27 8N-20E	Cibecue 15'	Corduoy Creek Area	White quartzitic sand- stone (Supai Form.).
SILICA-QUARTZ sec. 27,34,35 10N-15½E	Chediski Peak 15'	Chediski Butte	Grayish-white quartzite.

PIMA COUNTY

ASBESTOS			
approx. sec. 26 17S-10E	Palo Alto Ranch 15'		Tremolite and actinolite associated with marble.
approx. sec. 28 17S-16E	Empire Mtns. 15'		Tremolite-actinolite. associated with marble.
sec. 31,17S-13E, sec. 6,18S-13E	Twin Buttes 15'	Twin Buttes	Tremolite and actinolite.
approx. sec. 12 18S-10E	Palo Alto Ranch 15'		Tremolite and actinolite.
sec. 14,23 18S-15E	Sahuarita 15'	Sahuarita	Tremolite and actinolite associated with marble.
approx. sec. 29 18S-16E	Empire Mtns. 15'	Rosemont	Tremolite and actinolite associated with marble.
BARITE (see FLUORSPAR)			
sec. 33 11S-8E	Vaca Hills 15'	Silver Bell	Barite prospect.
sec. 11,15 11S-8E	Vaca Hills 15'	Silver Bell	Barite gangue within copper ores in altered quartz monzonite.

PIMA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
BARITE (see FLUORSPAR) (Cont'd)			
sec. 16 14S-4W	Mount Ajo 15'	Gunsight Mine	Barite, quartz, calcite, metallic sulfides in granitic stock.
sec. 33 14S-13E	Cat Mtn. 7½'	Old Mission Mine, Old Bat, Pellegrin	Barite gangue, copper oxides in rhyolite.
sec. 3 15S-12E	San Xavier Mission 7½'		Barite occurrence.
sec. 11 proj. 15S-2E	Quijotoa Mtns. 15'	White Prince	Barite vein minor fluorite in fault contact of limestone-andesite.
sec. 35 proj. 15S-2E	Quijotoa Mtns. 15'	Peer & Peerless Groups	Barite gangue in silver-gold ores in rhyolite.
sec. 17 15S-9E	Cocoraque Butte 15'	St. Jude Mine	Barite gangue, silver-lead mineralization.
sec. 23,26 16S-4E	Comobabi 15'	Steppe Mine, Little Mary Mine	Barite, galena, quartz, silver-gold values in andesite.
sec. 8 16S-17E	Rincon Valley 15'	Heavy Boy Group	Barite stringers in cherty limestone (Paleozoic).
sec. 11 17S-12E	Twin Buttes 15'	San Xavier	Barite gangue, copper minerals.
sec. 12 18S-10E	Palo Alto Ranch 15'	Sunshine Mine	Barite gangue, lead-silver ores in limestone (Paleozoic).
sec. 26 19S-15E	Sahuartia 15'	Quebec Mine	Barite gangue in lead-silver ores adjacent to quartz latite stock.
sec. 4 12S-8E	Vaca Hills 15'	Mammoth Mine	Barite-fluorspar veinlets
CLAYS			
sec. 26 12S-11E	Avra 7½'	Rillito Mine	Active mine, clay-shale mined, used for making cement.

PIMA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>FELDSPAR</u> (see MICA)			
sec. 2,11 proj. 13S-7W	Ajo 15'	San Antonio Mine	Past production of feldspar and scrap mica, pegmatite dikes in granite, feldspar-silica mixture used for copper smelter flux.
<u>FLOURSPAR</u> (see BARITE)			
sec. 4 12S-8E	Vaca Hills 15'	Mammoth Mine	Fluorspar, barite associated with lead-silver ores in limestone (Paleozoic) contact with alkali porphyry.
sec. 15 13S-18E	Redington 15'	Sure Fire No. 1	Fluorspar, quartz, calcite veinlets, uranium minerals in schist and gneissic granite.
sec. 32 proj. 17S-7E	Baboquivari Peak 15'	Big Banana Mine	Fluorspar gangue within scheelite ores.
sec. 23 17S-10E	Palo Alto Ranch 15'	Black Dike Group	Fluorite, pyrite, pitchblende in contact zone of gneissic-granite with basalt dike.
sec. 5,8 17S-11E	Twin Buttes 15'	Neptune, Fluxore, Cardiella, Turtle Spar, Gunsight Mtn. Mine	Past production for steel flux, fluorspar veins in faulted schist and granite intruded by aplite dikes.
sec. 29 17S-16E	Empire Mtns. 15'		Fluorspar-quartz veins, lead ores in limestone-quartz monzonite contact.
<u>GARNET</u> (see WOLLASTONITE)			
<u>GYPSUM</u>			
sec. 3,4 13S-14E	Tucson North 7½'	Alamo Springs	Past production, gypsum calcined for plaster, gypsum beds in clay, shale, sandstone (Cenozoic?).

PIMA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>GYP SUM (Cont'd)</u>			
approx. sec. 12,13 16S-16E	Rincon Valley 15'	Vail	Gypsum and gypsite lenses in sediments (Cenozoic).
approx. sec. 2 17S-12E	Twin Butes 15'	San Xavier	Gypsum lenses in limestone (Permian).
sec. 19,28,29,30, 32,33, 17S-17E & sec. 3,4,8 18S-17E	Empire Mtns. 15'	Empire Mtns.	Irregular gypsum beds in marl, limestone (Permian).
sec. 13,14 18S-15E	Sahuarita 15'	Helvetia	Gypsum beds in Epitah dolomite (Permian).
<u>LIMESTONE-DOLOMITE</u>			
sec. 26 12S-11E	Avra 7½'	Twin Peaks Quarry	Active quarry, Naco limestone (Penn.-Permian used for making cement).
sec. 11,14 18S-15E	Sahuarita 15'	Santa Rita Limestone Quarry	Active quarry, Escabrosa limestone (Miss.) used for lime products.
sec. 30-21 17S-17E 16E	Empire Mtns. 15'	Andrada Marble Quarry	Active quarry, dolomitic limestone (Miss.) processed for roofing granules, feed additives, and plaster flux.
sec. 21 17S-16E	Empire Mtns. 15'	Serasio, Blowout Marble	Dolomitic marble.
sec. 17,18 16S-17E	Rincon Valley 15'	Aqua Verde	Epitah dolomite and Colina limestone (Permian).
sec. 19 17S-17E	Empire Mtns. 15'	Burris Marble, Hamill Marble	Dolomitic marble.
sec. 27 17S-16E	Empire Mtns. 15'	Empire Mtns.	Limestone.
sec. 14 18S-11E	Twin Butes 15'	Jay Jay Claims	Marble.

PIMA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
LIMESTONE-DOLOMITE (Cont'd)			
sec. 19 18S-11E	Palo Alto Ranch 15'	Marble Top	Escabrosa limestone (Miss.).
sec. 7 14S-6W	Kino Peak 15'	Lime Hill	Limestone (Miss.- Devonian).
LITHIUM MINERALS approx. sec. 30 17S-11E	Twin Butes 15'		
MICA (see FELDSPAR) sec. 2,11 proj. 13S-7W	Ajo 15'	San Antonio Mine	Past production, flake and ground mica for drilling mud and roofing material.
PERLITE sec. 7,17,18 20S-11E	Arivaca 15' & Tubac 15'	Cerro Colo- rado Mtns.	Gray-pinkish perlite in rhyolite vitrophyre.
SILICA-QUARTZ (see FELDSPAR) approx. sec. 29 14S-2W	Pisinimo 15'		Quartz veins.
sec. 18 14S-6W	Kino Peak 15'	Little Chief Mine	Active mine, quartzite used for copper smelting flux.
sec. 18,19 14S-13E	Cat Mtn. 7½'	Battle Axé Mine	Past production, quartz veins with gold-silver values used for smelter flux.
sec. 33 proj. 18S-17E	Baboquivari Peak 15'	Allison Mine	Quartz lenses, silver- gold values, past pro- duction of silica flux.
SW¼ 18S-8E, NW¼ 19S-8E	Baboquivari Peak 15'	Baboquivari Mtns.	Quartz lenses.
sec. 34, 17S-11E	Twin Butes 15'	Fresnal Canyon	Quartz veins.

PIMA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
WOLLASTONITE			
sec. 17,18,19,20 14S-6W & sec. 13,14 14S-7W	Kino Peak 15'	Scarface Mtn. Area	White wollastonite lenses in altered limestone, garnet, copper minerals.
sec. 25,36 18S-15E	Sahuarita 15'	Santa Rita Mtns.	Wollastonite and garnet in metamorphosed lime- stone.
sec. 35 16S-12E	Twin Butes 15'	Mineral Hill	Minor wollastonite in metamorphosed limestone.

PINAL COUNTY

ASBESTOS			
sec. 14 proj. 1N-12E	Haunted Canyon 7½'	Kennedy Ranch	
sec. 18,19 1N-12E	Iron Mtns. 7½'		
sec. 13 proj. 1S-11E	Picketpost Mtn. 7½'	El Marmol Claims	
sec. 22 proj. 1S-11E	Picketpost Mtn. 7½'	Hewitt Canyon, Martinez Sand Wash	
sec. 13 2S-12E	Superior 7½'	Vesta	
approx. sec. 18 3S-14E	Sonora 7½'		
sec. 8 7S-16E	Lookout Mtn. 7½'	Putnam Wash	Chrysotile veins in Mescal limestone near diabase intrusion.
BARITE (see FLUORSPAR)			
sec. 9 2S-11E	Picketpost Mtn. 7½'	Gonzales Pass Deposit	Barite vein in Pinal schist (Pre-Cambrian).
sec. 15,22 7S-18E	Klondyke 15'	Table Mtn. Mine	Barite gangue in copper- gold ores.
sec. 10 8S-18E	Galivro Mtns. 15'	Old Reliable Mine	Barite gangue in copper ores.

PINAL COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>CORUNDUM</u> sec. 12 5S-5E	Gila Butte SE 7½'	Sacaton Mtns.	Irregular corundum masses with rutile and quartz in felsite dikes.
<u>DIATOMITE</u> sec. 19,9S-18E sec. 24,9S-17E	Clark Ranch 7½'	White Cliffs Mine	Past production for fillers and filter aids, horizontal diatomite beds beneath clay.
sec. 26 6S-16E	Saddle Mtn. 7½'	Feldman	Active gypsum mine, some diatomite interbedded with gypsum beds.
<u>FELDSPAR</u> sec. 7,8 4S-2E	Enid 7½'	Sierra Estrella	Microcline, muscovite, quartz in pegmatite.
<u>FLUORSPAR</u> sec. 26 8S-16E	Mammoth 7½'	Mammoth Mine, St. Anthony	Fluorspar-barite gangue, lead-zinc-copper sulfides, quartz monzonite host rock.
<u>GYPSUM</u> sec. 25 5S-15E	Winkelman 7½'	Winkelman	
sec. 2,11 5S-16E	Christmas 7½'	Ash Creek	Gypsum in andesite flows.
sec. 23 6S-16E	Saddle Mtn. 7½'	Crystal Cove	White massive gypsum beds.
sec. 26,27 6S-16E	Saddle Mtn. 7½'	Feldman, Winkelman Gypsum Pit	Active quarry, massive gypsum beds in lake sediments (Cenozoic), processed into plaster board, agric. applications.
sec. 26,35,36 6S-16E	Lookout Mtn. 7½'	Arizona Gypsum	Active mine, gypsum beds in lake sediments (Cenozoic), for agricultural use and cement retarder.
sec. 13,14 7S-16E	Lookout Mtn. 7½'	Pinal Mammoth Gypsum	Active mine, gypsum interbedded with silt.

PINAL COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>GYPSUM (Cont'd)</u>			
sec. 10,14 7S-16E	Lookout Mtn. 7½'	Garcia Gypsum	Past production, agricultural use, gypsum beds in lake sediments.
sec. 1,2,3,4 7S-16E	Lookout Mtn. 7½'	North of Aravaipa Creek	Gypsum beds.
sec. 26 10S-18E	Galiuro Mtns. 15'	Reddington	Gypsum beds in lake sediments (Cenozoic).
<u>LIMESTONE-DOLOMITE</u>			
sec. 36 1S-12E	Superior 7½'	Superior	Dolomite in Martin Form. (Devonian).
sec. 7 5S-6E	Gila Butte SE 7½'	Sacaton Mtns.	Limestone (Devonian).
approx. sec. 33 10S-13E	Tortolita Mtns. 15'	Tortolita Mtns.	White Escabrosa limestone and marble.
sec. 19 10S-18E	Peppersauce Wash 7½'	Black Hills	Active mine, Escabrosa limestone (Miss.) used for smelter flux.
sec. 28,33,34 10S-16E	Campo Bonito 7½'	Santa Catalina Mtns.	Escabrosa limestone (Miss.).
<u>MICA</u>			
sec. 19 2S-2E	Montezuma Peak 7½'	Butterfly Mtn. Area	Muscovite books, quartz in pegmatite.
sec. 23 3S-3E	Pima Butte 7½'	North Spur of Pima Butte	Flaky muscovite, feldspar, quartz in pegmatite within schist.
sec. 7,8 4S-2E	Enid 7½'	Eastern Estrella Mtns.	Past production of sheet and scrap mica, muscovite books in pegmatite, sericite in schist.
<u>PERLITE</u>			
sec. 8 or 9 2S-12E	Picketpost Mtn. 7½'	Mary Ann Mine, Chemi-cote Mine	Active mine, glassy perlitic flows underlying rhyolite, used for soil conditioners, lt.-wt. aggregate, plaster mix and expanded for use as insulation material.

PINAL COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>PERLITE</u> (Cont'd)			
sec. 9 or 16 2S-12E	Picketpost Mtn. 7½'	Chicago Pit, Old Cluff	Active mine.
sec. 9 2S-12E	Superior 7½'	Adams Mine, Iberri Mine	Past production output for plaster mix, soil conditioner and lt.-wt. aggregate.
sec. 7,8,17 2S-12E	Picketpost Mtn. 7½'	Arnett and Telegraph Canyons	Perlite outcrops.
sec. 18 2S-12E	Picketpost Mtn. 7½'	Picketpost Mtn.	Glassy perlitic flows underlies glassy rhyolite and overlies tuff and breccia.
E½ 9S-5E	Silver Reef Mtns. 15'		Perlritic flows.
<u>SHALE (EXPANSIBLE)</u>			
sec. 26 3S-5E and sec. 29,3S-6E	Gila Butte 7½'	North Bank, Gila River	Illite bearing clay- shale.
sec. 3 4S-6E	Sacaton 7½'	North Bank, Gila River	Illite bearing clay- shale.
sec. 25,4S-7E sec. 30,4S-8E	Blackwater 7½'	North Bank, Gila River	Illite bearing clay- shale.
<u>SILICA-QUARTZ</u>			
sec. 8 7S-16E	Lookout Mtn. 7½'	Camp Grant	Past production, Troy quartzite (Pre-Camb.) used for smelter flux.
sec. 19 2S-2E	Montezuma Peak 7½'	Butterfly Mtn. Area	Pegmatitic quartz vein, muscovite books.
sec. 31 3S-2E	Enid 7½'	Sierra Estrella	Massive white quartz veins.
sec. 7 5S-6E	Gila Butte SE 7½'	Sacaton Mtns.	Lustrous white quartz outcrops and grayish- white quartzite (Cam- brian).
sec. 9 5S-6E	Sacaton 7½'	Five Mile Peak	Quartz vein.

PINAL COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
SILICA-QUARTZ (Cont'd)			
sec. 2,11 8S-18E	Klondyke 15'	Copper Creek District	Quartz crystals.
sec. 26 8S-16E	Mammoth 7½'	Tiger Mine Tailings	Active mine, silica- copper flux.
sec. 33 9S-15E	Oracle 15'	Gold Hill Mine	Active mine, silica- copper flux.
sec. 25,26 proj. 9S-4E	Silver Reef Mtns. 15'	Orizaba Silica Mine	Active silica mine.
sec. 30 5S-15E	Winkelman 7½'	Babbitt Claims, Winkelman Silica Mine	Active quarry, silica flux.
VERMICULITE			
sec. 10 (?) 10S-15E	Oracle 15'	Irene Wash	Vermiculite occurrence.
ZEOLITE			
sec. 25 7S-8E	Picacho Reservoir 7½'		Analcime in silty claystone (Tert.).

SANTA CRUZ COUNTY

ALUNITE			
sec. 36 22S-15E	Nogales 15'	Three R, Evening Star Prospect	Pinkish alunite, quartz, pyrite, chalcopyrite in pegmatitic granite.
BARITE			
approx. sec. 33 22S-16E	Lochiel 15'		Barite veinlets.
DIATOMITE			
approx. sec. 35 21S-18E	Pyeatt Ranch 7½'	Lyle Creek	Impure diatomite outcrops.
FLUORSPAR			
approx. sec. 8 23S-11E	Ruby 15'	Annie Laurie Claims	Purple fluorspar stringers, quartz, calcite, galena and sphalerite in granite.
sec. 3 proj. 23S-16E	Harshaw 7½'	Alta Mine	Reddish fluorite gangue, quartz, silver-lead values in quartz diorite cut by rhyolite dike.

SANTA CRUZ COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
LIMESTONE			
sec. 29,30,33 22S-18E and sec. 24,25 22S-17E	Canelo Pass 7½'	Canelo Hills	Limestone (Paleozoic) blocks interbedded in welded tuff.
sec. 15 proj. 23S-16E	Harshaw 7½'	Mowry Area	Limestone, Escabrosa (Miss.).
sec. 8,9 20S-12E	Tubac 15'	Amado Area	White limestone (Paleozoic).
sec. 13,20S-13E sec. 18,19 20S-14E	Mt. Wrightson 15'		Concha limestone (Permian).
PUMICE GROUP			
approx. sec. 24 23S-12E	Ruby 15'		Pumicite outcrops.

YAVAPAI COUNTY

BARITE			
sec. 2 12N-3W	Wilhoit 7½'	White Spar Claim	Barite veins in diorite (Pre-Cambrian).
sec. 29 9N-1W	Copperopolis 7½'	French Creek Deposit	Barite veins in faulted schist (Pre-Camb.).
sec. 20 13N-1E	Mt. Union 15'	Silver Belt Mine	Barite vein, ankerite, galena, sphalerite in schist (Pre-Camb.).
sec. 25 8N-4W	Sam Powell Peak 7½'	MGM Claims	Barite replacement lenses and breccia fillings in granite (Pre-Cambrian) and volcanic breccia.
CLAYS			
approx. sec. 18 16N-3E	Clarkdale 15'	Lakebed	Active clay-shale quarry, Verde form. (Cenozoic), used in making cement.
sec. 5 proj. 14N-10W		along Burro Creek, Little Jimmie Claim	Past production of ben- tonite, from rhyolitic tuff.

YAVAPAI COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
CLAYS (Cont'd)			
sec. 12 13N-6W	Bismarck Mesa 7½'	Lyles Deposit	Past production, lithium-magnesium bentonitic clay used for reservoir sealer, lake beds (Cenozoic) under basalt.
sec. 11 13N-5E	Camp Verde 7½'	Larson Quarry	Past production bentonitic clay associated with gypsum, used for iron ore pelletizing and canal-reservoir sealer.
sec. 21 proj. 8N-6E	Chalk Mtn. 7½'	Chalk Mtn.	Kaolin (?) reported.
SE¼ 9N-2E	Squaw Creek Mesa 7½'		Sepiolite reported, with magnesite.
DIATOMITE			
sec. 16 13N-5E	Camp Verde 7½'	Verde River	Diatomite beds interbedded with gypsum, clay and calcium carbonate.
FELDSPAR (see MICA)			
sec. 16 proj. 10N-1E	Crown King 7½'	Silver Christmas Mine	Orthoclase feldspar.
sec. 34 8N-3W	Red Picacho 7½'	Friction Mine	Perthite feldspar, quartz in pegmatite.
sec. 34 8N-3W	Red Picacho 7½'	Outpost Extension	Pegmatite bodies containing perthite, albite, massive quartz.
sec. 3 7N-3W	Red Picacho 7½'	Outpost Mine	Potash feldspar pods, muscovite, bismutite, quartz masses in pegmatite.
sec. 10 7N-3W	Red Picacho 7½'	Picacho Vien Mine	Potash feldspar pods, mica, quartz in pegmatite.

YAVAPAI COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
FLUORSPAR			
sec. 26,27 15N-9W	Bagdad 15'	Lawler Peak Area	Fluorite associated with bismutite in granite intruded by aplite dikes.
sec. 24 proj. 12N-2W	Mt. Union 15'	Venezia	Purple fluorite gangue, copper ores.
approx. sec. 16 10N-1W	Crown King 7½'	Springfield Group	Purple fluorite string- ers associated with copper oxides, pyrite, in granodiorite intru- ded by quartz dikes.
approx. sec. 7 9N-5W	Congress 7½'		Dodecahedral fluorite crystals in pegmatite.
sec. 12 8N-9W	Date Creek Ranch SW 7½'	Hatton (Harris) Mine	Fluorite, barite, black calcite associated with manganese oxides in andesite.
sec. 11 8N-3W	Morgan Butte 7½'	Abe Lincoln Mine	Fluorite veinlets along contact of basalt and trachyte dike in granite.
sec. 8 8N-2W	Copperopolis 7½'	Swallow Mine	Fluorite gangue, quartz calcite, copper ores in granite.
sec. 18 15N-7W	Bagdad 15'	Black Pearl	Fluorite gangue within tungsten-bismuth ores associated with quartz bodies in granite.
GYPSUM			
approx. sec. 18 14N-6E	Camp Verde 7½'		Gypsum beds in Verde Form. (Cenozoic).
sec. 1,12,13 13N-4E	Middle Verde 7½' Camp Verde 7½'		Gypsum beds in Verde Form. (Cenozoic).
sec. 22 13N-5E	Camp Verde 7½'	Wingfield- McLeod	Past production, agric. use gypsum beds in Verde Form. (Cenozoic).

YAVAPAI COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
GYPSUM (Cont'd)			
sec. 11 13N-5E	Camp Verde 7½'	Larson Quarry	Active operation, gypsum beds in mudstone facies of Verde Form. (Cenozoic), used for cement retarder and agricultural applications.
sec. 21,28 proj. 8N-6E	Chalk Mtn. 7½'	Chalk Mtn.	Gypsum beds in lake sediments.
LIMESTONE-DOLOMITE			
sec. 5,18N-1W & sec. 32,19N-1W	Paulden 15'	Drake	Active quarry, fresh water limestone (Tertiary), used for smoke-stack scrubbing.
sec. 26 25N-10W	Nelson 7½'	Nelson Quarry	Active quarry, Redwall limestone (Miss.) processed into hydrated lime and quicklime.
S½ 22N-6W			Dolomitic Redwall limestone (Miss.).
sec. 25,26,27 18N-2W	Paulden 15'	Upper Chino Valley	Redwall limestone (Miss.) and Martin limestone (Devonian).
sec. 11 16N-2E	Clarkdale 15'	Clarkdale Quarry	Active quarry, Redwall limestone (Miss.) processed for cement and sugar refining.
sec. 31,32 18N-2E	Clarkdale 15'	Perkinsville	Past production, Redwall limestone (Miss.) and dolomitic limestone.
NE½ 21N-7W	Turkey Canyon 15'	Juniper Mtns.	Dolomitic limestone (Miss.-Devonian).
sec. 34 18N-2W	Paulden 15'	Abra	Martin limestone (Devonian).
sec. 5,6,19N-1W sec. 1,19N-2W	Paulden 15'	Limestone Canyon	Redwall limestone (Miss.).

YAVAPAI COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
<u>LITHIUM MINERALS</u>			
S $\frac{1}{2}$ 15N-9W	Bagdad 15'		Lepidolite reported in pegmatite.
approx. sec. 2 11N-4W	Peeples Valley 7 $\frac{1}{2}$ '		Lithium minerals in volcanic ash.
sec. 30 8N-2W	Red Picacho 7 $\frac{1}{2}$ '	Lone Giant	Amblygonite, lepidolite, beryl, albite, perthite in pegmatite.
sec. 31 8N-2W	Red Picacho 7 $\frac{1}{2}$ '	Independence Gulch	Pegmatite with beryl spodumene, amblygonite.
sec. 31 8N-2W	Red Picacho 7 $\frac{1}{2}$ '	Midnight Owl Mine	Past production of spodumene, beryl from pegmatite, columbite-tantalite, perthite.
sec. 9 7N-3W	Red Picacho 7 $\frac{1}{2}$ '	Lower Jumbo Mine	Past production of spodumene from pegmatite with massive quartz, perthite.
sec. 10 7N-3W	Red Picacho 7 $\frac{1}{2}$ '	White Jumbo Mine	Pegmatite dikes containing spodumene, amblygonite, massive quartz.
sec. 10 7N-3W	Red Picacho 7 $\frac{1}{2}$ '	Sunrise Prospect	Amblygonite, lepidolite, massive quartz, feldspar muscovite in pegmatite.
MAGNESITE (see CLAY)			
MICA (see FELDSPAR, LITHIUM MINERALS)			
sec. 29 9N-1W	Copperopolis 7 $\frac{1}{2}$ '	Queen of Mica	Past production of muscovite, pegmatite within schist containing feldspar and quartz.
sec. 34 12N-5W	Weaver Peak 7 $\frac{1}{2}$ '	Dixie Queen	Past production of scrap mica from pegmatite.

YAVAPAI COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
MICA (see FELDSPAR, LITHIUM MINERALS) (Cont'd)			
sec. 19 proj. 10N-1E	Crown King 7½'	Black Magic Mine	Past production, mus- covite books in pegma- tite.
sec. 30,31 8N-2W	Morgan Butte 7½', Red Picacho 7½'	Long Dike Mine	Muscovite, quartz in pegmatites, past pro- duction of scrap mica.
sec. 31 8N-2W	Red Picacho 7½'	New Lookout	Muscovite, quartz pods, perthite in pegmatites.
sec. 26 (?) 11N-4W	Peeples Valley 7½'	Berrier Claims	Past production, mus- covite books in pegma- tites within schists.
PUMICE GROUP			
sec. 2,3,14N-9W sec. 34,35 15N-9W	Bagdad 15'	Sanders Mesa	Basalt and water trans- ported pumice.
N½ 22N-6W		along Chino Wash	Cinders.
approx. sec. 21,22 21N-2W	Ashfork 15'	Cruice Pit	Past production of basalt scoria for cinder blocks and aggregates.
NE¼ 20N-2W	Ashfork 15'	Meath	Olivine basalt.
approx. sec. 28 13N-4W	Kirkland 7½'	Kirkland	Pumicite.
SALT (ROCK)			
sec. 1 13N-4E	Camp Verde 7½'	Camp Verde	Past production of halite for cattle feed, with mirabilite and thenar- dite in old lake bed.
SILICA-QUARTZ			
sec. 32 15N-9W	Bagdad 15'	Niagara Creek	Vuggy quartz, quartz crystals in breccia pipes.
sec. 13 proj. 12N-2W	Mt. Union 15'	Cash Mine	Quartz crystals, adularia calcite in fractured granite.

YAVAPAI COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
SILICA-QUARTZ (Cont'd)			
sec. 21 15N-9W	Bagdad 15'		Quartz veins.
sec. 3 7N-3W	Red Picacho 15'		Quartz masses, feldspar associated with pegmatite.
SILLIMANITE GROUP			
approx. sec. 26 15N-4W	Iron Springs 15'	Granite Mtns.	Andalusite-kyanite reported in schist.
approx. sec. 17 16N-6W	Camp Wood 15'		Sillimanite, andalusite in schist.
sec. 33, 15N-9W	Bagdad 15'	Copper Creek	Sillimanite in mica schist (Pre- Cambrian).
approx. sec. 6 11N-1E	Mt. Union 15'	Mule Canyon	Andalusite.
N $\frac{1}{2}$ 10N-1E	Mayer 7 $\frac{1}{2}$ '		Andalusite.
SODIUM SULFATE			
sec. 1 13N-4E	Camp Verde 7 $\frac{1}{2}$ '	Camp Verde	Past production, flat bedded deposit of thenardite, mirabilite, gypsum, glauberite, halite clay in Verde Form. (Cenozoic).
approx. sec. 19 13N-5E	Horner Mtn. 7 $\frac{1}{2}$ '		Past production, thenardite in Verde Form. (Cenozoic).

YUMA COUNTY

ALUNITE			
sec. 3 3N-20W <i>La Puz</i>	Middle Camp Mtn. 7 $\frac{1}{2}$ '	Sugarloaf Peak	White alunite veins in schistose dacite.
ASBESTOS			
NW $\frac{1}{4}$ 5N-20W <i>LP</i>	Moon Mtn. SE 7 $\frac{1}{2}$ '	Bowyer	Amphibole and actinolite reported.
NE $\frac{1}{4}$ 1S-12W <i>Y</i>	Eagle Tail Mtns. 15'	Cemetery Ridge	Actinolite veinlets, chlorite reported in schist.

YUMA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
BARITE (see FLUORSPAR) sec. 34 8N-17W LP	Bouse 15'	Black Mtn. Group	Past production, barite veins with fluorite in volcanic agglomerate.
sec. 7 proj. 7N-16W LP	Utting 15'	Happy Day No. 1	Barite-fluorite miner- alization in volcanic rocks.
sec. 12,13 7N-17W LP	Utting 15'	White Christ- mas Group	Barite-fluorite veins in volcanic breccia.
sec. 17,20 7N-17W LP	Bouse 15'	White Rock, White Eagle	Barite veins in frac- tured rhyolite and lime- stone, some fluorite and copper oxides.
sec. 29 7N-17W LP	Bouse 15'	Pay Day	Barite veins, fluorite, hematite in fractured volcanic rocks.
sec. 30 7N-17W LP	Bouse 15'	Happy Day No. 4, Halsted	Barite veins, fluorite, hematite in fractured volcanic rocks.
sec. 31 7N-17W LP	Bouse 15'	Happy Day No. 3, Black Mule	Barite veins in frac- tured rhyolite porphyry.
sec. 31 7N-17W LP	Bouse 15'	Monarch No. 1	Barite vein in rhyolite porphyry.
sec. 32 7N-17W	Bouse 15'	Morning Sun, Greasewood No. 1	Barite veinlets in volcanic rocks.
sec. 20 7N-17W	Bouse 15'	Burro Barite Nos. 6,8	Barite veinlets in vol- canic agglomerate, copper and manganese oxides, some fluorite.
sec. 6 6N-17W	Bouse 15'	Black Stud No. 6	Barite veinlets in fractured volcanic agglomerate.
sec. 29,30 6N-17W	Bouse 15'	Burro Barite Group	Banded barite veins, fluorite, quartz, copper oxides in volcanic agglo- merate.

YUMA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
BARITE (see FLUORSPAR) (Cont'd)			
sec. 31,32 6N-17W LP	Bouse 15'	Red Chief	Parallel barite veins, quartz, copper and manganese oxides in volcanic agglomerate.
sec. 3 proj. 6N-13W	Salome 15'	Sterling No. 1 Claim	Barite vein, copper oxides, quartz in faulted diorite.
sec. 6,7 proj. 6N-13W	Salome 15'	Cottonwood Pass	✓ Past production, iron-stained barite in faulted schist.
sec. 1 proj. 6N-14W	Salome 15'	Hall	✓ Past production, barite veins in gneiss and schist (Pre-Cambrian).
sec. 15 proj. 5N-17W	Bouse 15'	Keiser Deposit, Sierra Blanca	✓ Past production, barite vein in faulted volcanic rocks.
sec. 31 5N-10W LP	Lone Mtn. 15'	Norps Group	Barite, fluorite vein, iron and manganese oxides in granite-gneiss (Pre-Cambrian).
sec. 1 1S-15W Yuma	Kofa Butte 15'	Sheep Tanks Mine	Barite gangue in lead-silver-gold ores.
sec. 1 4S-23W LP	Picacho 7½'	Silver King, Princess	Barite, fluorite, quartz, wulfenite reported.
sec. 2 4S-23W LP	Picacho 7½'	Red Cloud Mine	Barite, fluorite, maniferous calcite.
sec. 11,12 8S-15W Yuma	Mohawk 7½'	Renner Mine	✓ Past production, barite vein in faulted granitic gneiss.
approx. sec. 22 9S-17W Yuma	Tacna 7½'	Baker Peaks	
sec. 15 4S-15W Yuma	Engessner Pass 15'	Nottbusch Mine, Silver Prince, Addie	Barite, fluorspar, silver-lead ores in faulted schist.
CLAY (see ZEOLITE)			
sec. 24 7N-17W LP	Utting 15'	Bouse area	Bentonitic clay, volcanic ash.

YUMA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
CLAY (see ZEOLITE) (Cont'd) SW $\frac{1}{4}$ 5N-10W LP	Lone Mtn. 15'	Yellow Flower Mine	Past production of diopside ($\text{CaMgSi}_2\text{O}_6$), used in ceramics.
FLUORSPAR (see BARITE) sec. 7 (?) 10N-17W LP	Black Peak 15'	Osborne Wash	Fluorspar veinlets in fractured basalt.
approx. sec. 6 10N-16W LP	Swansea 15'	Planet area	Green fluorspar, copper minerals, in fault contact of limestone and granite (Pre-Cambrian).
sec. 11,12 proj. 8N-15W LP	Swansea 15'	Mammoth, Chicago, Copper Glance	Fluorite, barite, quartz, copper oxides in sheared gneiss-schist.
sec. 5 proj. 9N-13W LP	Ives Peak 15'	Ives Peak area	Fluorspar veins in sheared granite-gneiss.
sec. 31 6N-17W LP	Bouse 15'	Red Chief	Veins of fluorite, barite, calcite, quartz in volcanic agglomerate.
sec. 25,36 proj. 4S-19W Yuma	Castle Dome Mtns. 15'	Castle Dome District, Senora Claims, Hull, DeLuce, Little Dome, Big Dome	Past production, fluorspar-galena veins in shale (Cret.) cut by diorite porphyry dikes, output for steel flux.
sec. 15 2S-11W Yuma	Eagletail Mtns. 15'	Yellow Brest Prospect	Green fluorite, galena wulfenite, quartz veins in schist.
sec. 15 4S-15W Y	Engesser Pass 15'	Nottbusch Mine, Silver Prince	Vein of amber fluorite, barite, black calcite, gypsum in schist.
sec. 1 2S-16W Y	Kofa Butte 15'		Fluorite, calcite, lead ores in vaulted schist near monzonite dike.

YUMA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
FLUORSPAR (see BARITE) (Cont'd)			
sec. 1 4S-23W LP	Picacho 7½'	Silver King, Princess	Fluorite, barite, galena wulfenite, iron-oxide in fractured andesite.
sec. 2 4S-23W LP	Picacho 7½'	Red Cloud	Fluorite, barite, mangan- ese, calcite.
GYPSUM			
sec. 7 proj. 6N-17W LP	Bouse 15'	✓ Blue Moon, Townsend	Past production for agri- cultural uses, gypsum beds in Permian limestone.
sec. 2 4N-12W LP	Lone Mtn. 15'	✓ Harquahala Gypsum	Past production for agri- cultural uses, gypsum beds in Permian limestone.
sec. 24 4S-19W Y	Castle Dome Mtns. 15'		Gypsum reported.
LIMESTONE-DOLOMITE			
sec. 35,36 10N-16W LP	Swansea 15'	Buckskin Mtns.	Coarse crystalline lime- stone (Paleozoic) and marble.
sec. 3 proj. 8N-15W	Swansea 15'	Battleship Peak	Dolomitic limestone.
sec. 6 10N-16W	Swansea 15'	Planet Mine ✓	Past production, lime- stone processed for smelter flux.
sec. 30 5N-11W	Lone Mtn. 15'	Harquahala Mtns. ✓	Past production, white Paleozoic limestone, marble, quartz.
SW¼ 5N-11W	Lone Mtn. 15'	Bracken Marble Claims	Marble.
sec. 7,18,19 5N-10W	Gladden 15'	Blue Tank Canyon	Dolomitic marble.
sec. 9 5N-11W	Gladden 15'	White Marble Mine ✓	Active operation, white marble (Paleozoic) pro- cessed for roofing gran- ules, limestone for min- eral food and fillers, quartz for terrazzo and tiles.

YUMA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
LIMESTONE-DOLOMITE (Cont'd)			
sec. 23 4N-18W	Quartzite 15'	Grace 1 & 2	Limestone and marble (Paleozoic).
sec. 5 4N-12W	Hope 15'	Thompson Group	Dolomite.
sec. 27 proj. 4N-13W	Hope 15'	Martin Peak area	Dolomitic limestone.
MICA			
sec. 36 proj. 1S-17W	Kofa Butte 15'		Muscovite reported.
NW¼ 5N-20W	Moon Mtn. SE 7½'	Dome Rock Mtns.	Past production of scrap mica from flaky muscovite, sericite in quartz mica schists.
approx. sec. 15 10S-20W	Fortuna Mine 7½'	Gila Mtns.	Flaky muscovite, seri- cite in pegmatites cutting schist.
SW¼ 12S-15W	Cabeza Prieta Peak 15'	Cabeza Prieta Mtns.	Black mica books in pegmatite cutting granite.
PERLITE			
approx. sec. 16 3S-22W	Hidden Valley 7½'	Trigo Mtns.	Perlite.
PUMICE GROUP			
sec. 1 4N-15W	Vicksburg 15'	Hope	Past production, cellu- lar gray pumicite over- lain by basalt.
sec. 24,25 7N-17W	Utting 15'	Blackbird Deposit	Past production of pumicite.
NE¼ 9N-19W	Black Peak 15'	Black Peak area	Massive scoria-basalt.
SHALE (EXPANSIBLE)			
sec. 36,7S-18W sec. 2,8S-18W	Red Bluff Mtn. 15'	Gila River area	Bentonitic clay-shale.

YUMA COUNTY (Continued)

<u>Location</u>	<u>Quadrangle Map</u>	<u>Known Names</u>	<u>Description-Comments</u>
SILLIMANITE GROUP			
sec. 8 3N-19E LP	Quartzite 15'	Quartzite, Bayles	Kyanite-dumortierite- pyrophyllite in quartz mica schist.
sec. 7 proj. 3S-23E LP	Picacho NW 7½'	Clip Wash	Blue dumortierite, kyanite in quartzose schist boulders.
N½ 1N-16W LP	Kofa Butte 15'	Alamo Springs area	Pyrophyllite veins.
WOLLASTONITE			
sec. 21 proj. 6N-14W LP	Salome 15'	Salome Peak area	Wollastonite in meta- morphosed limestone overlying schists.
ZEOLITE			
NE½ 8S-21W Y	Laguna 15'	Dome	Clinoptilolite asso- ciated with bentonite in lacustrine tuff (Tertiary).

ARIZONA DEPARTMENT OF MINERAL RESOURCES

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The Department was created to aid in the promotion, development, and conservation of the Mineral Resources of the State. Particular emphasis is placed on providing prospectors and small miners with semi-technical assistance and economic information.

The general goal of the Department is developed by working with the following objectives:

- Provide technical assistance to prospectors and operators of small mines.
- Disseminate comprehensive mining and mineral information to the citizens and government officials of Arizona counties.
- Study conditions retarding small mine activity and seek solutions of problems.
- Serve as the States public bureau of mining and mineral information.
- Maintain and expand the Department's mine file library.
- Provide educational services in the field of Mineral Resources and mining.
- Analyse proposed Federal and State administrative actions.
- Develop interagency cooperation between the Department and other local State and Federal offices.
- Gather all information available on mineral occurrences, prospects, partially developed properties and known mines in the State in order to promote further exploration.
- Provide publications in the form of mineral reports, annual directories, technical reports, annual mineral industry surveys, information circulars, and media articles.

Note: Map on front cover courtesy of Arizona Bureau of Geology and Mineral Technology.