



## **CONTACT INFORMATION**

Mining Records Curator  
Arizona Geological Survey  
1520 West Adams St.  
Phoenix, AZ 85007  
602-771-1601  
<http://www.azgs.az.gov>  
[inquiries@azgs.az.gov](mailto:inquiries@azgs.az.gov)

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07/25/97

ARIZONA DEPARTMENT OF MINES AND MINERAL RESOURCES FILE DATA

PRIMARY NAME: PUEBLO

ALTERNATE NAMES:

GILA COUNTY MILS NUMBER: 335

LOCATION: TOWNSHIP 6 N RANGE 14 E SECTION 22 QUARTER NE  
LATITUDE: N 33DEG 51MIN 13SEC LONGITUDE: W 110DEG 54MIN 02SEC  
TOPO MAP NAME: MCFADDEN PEAK - 15 MIN

CURRENT STATUS: PAST PRODUCER

COMMODITY:

ASBESTOS SHORT FIBER  
IRON MAGNETITE  
GEMSTONE

BIBLIOGRAPHY:

USGS MCFADDEN PEAK QUAD  
ADMMR PUEBLO MINE FILE  
HARRER C M RECONN IRON RESOURCES AZ USBM  
IC 8236 1964  
STEWART L A CHRYS-ASB DEPTS AZ USBM IC 7706  
1955 P 79  
ADMMR ASBESTOS MINES OF AZ FILE  
USGS MF 1162-B, MF 1162-H

PUEBLO MINE

GILA COUNTY

ABM Bull. 126

IC 7706 p. 78

IC 8236 p. 52 - magnetite

Asbestos Mines of Arizona (file)

REPORT ON THE KYLE GROUP OF ASBESTOS MINES

BY

J. S. COUPAL, MINING ENGINEER.

Covering the Miami Asbestos Mines,  
The Pueblo Group, The Sloan Creek Group  
and The Kyle Asbestos Mill.

SUMMARY AND CONCLUSIONS. With proper equipment, management and systematic development and operation this group of asbestos claims should produce in excess of 3,000 tons of asbestos per year. It should be possible to more than double this production and maintain the increased production for many years if the continuity of the ore bearing zones persist, as is indicated, and is proven by future development.

The question may be reasonably asked, "Why has it not been done before?" The answer is simple and obvious when some of the factors are considered. Roger Q. Kyle, the owner, started from scratch on these claims. The production has paid for the development without the use of outside capital. This has necessarily limited the work to the most accessible areas for quick production and has not permitted the extensive preparatory work necessary for large scale operations. Most of the mining has been done by hand steel.

Another factor which permits a production of 3,000 tons or more per year as estimated is the increased yield and the handling of lower grade ores which has been made possible by the mechanical cobbing and segregating process developed by Mr. Kyle. A permit for the use of this patented process is granted for the operation of the properties covered by this report. A description of the process is made a part of the report.

MIAMI ASBESTOS MINES

LOCATION. The property consists of seven unpatented mining claims, located in the southern foothills of the Sierra Ancha Mountains at an elevation of about 5,000 feet above sea level. It is reached by  $1\frac{1}{2}$  miles of mine road from the Globe-Pleasant Valley highway at a point 42 miles in a northerly direction from Globe. The highway is a county graded road and the property can be reached direct by car.

The claims are located, as is customary in the Globe asbestos area, with the long axis of the claims on the dip and at right angle to the strike of the outcrop. Six of the claims side line each other and thus cover a distance of 3,600 feet along the outcrop. The seventh claim is for camp purpose and its side line adjoins the end line of the northern claims. The discovery hole on the claim is usually located on the outcrop and about 200 feet from the end line, so as to provide dump space on the claim, and thus give about 1300 feet in length along the dip. Located in this manner no conflicts occur on extra lateral rights as the end line limitations are vertical planes.

Title to the claims are in the name of Roger Q. Kyle of Globe, Arizona and are recorded in the Gila County Recorder's Office, Globe, Arizona.

HISTORY OF PRODUCTION. Mr. Kyle reports a production of 45 tons of asbestos from this property of which four tons were No. 1 crude, 25 tons of No. 2 crude and the balance No. 3 and No. 4.

ORE OCCURRENCE. The general geology is typical of the Globe-Asbestos area with a basement of a diabase sill under the serpentized mesal limestone. This group is located about  $1\frac{1}{2}$  miles from the property known as the American Ores or International Asbestos Group at an elevation of several hundred feet below the main workings of the American Ores property. The occurrence of this same ore horizon is reported on the American Ores property, at approximately 500 feet lower than the main workings, but has not been developed on that property.

On the Miami Asbestos group there are six ore horizons, the lower one occurring about one foot above the diabase sill and the others spaced at from 3 to 5 feet intervals above it. This makes an ore horizon of from 20 to 25 feet in thickness. The limestone is thin bedded in structure and the serpentized ore strata vary from 6 inches to 18 inches in thickness.

The development work is limited to the two lower ore strata which are exposed in the three tunnels. The bedding of the lime and the ore strata dip from 12 to 18 degrees

and the tunnels follow this dip into the hill. On claim No. 3 the tunnel is 80 feet long and a small amount of stoping has been done. The stoped area is irregular and covers not more than 1000 square feet beyond the tunnel.

On No. 4 claim is another tunnel of about 35 feet in length, following the two lower ore strata. On No. 5 claim is a 40 foot tunnel.

On the other claims only location and discovery holes have been opened up on the outcrop of the lower strata.

In all workings the strata show the occurrence of asbestos to be continuous and in no instance has the serpentized asbestos bearing area pinched out. The fiber varies from knife blade thickness to  $1\frac{1}{2}$  inches in each one of the strata. It is sometimes concentrated in one streak and in other places distributed in closely spaced gash veinlets from knife blade thickness to  $1/8$  inch and larger.

In the area exposed by the tunnels, the stopes and on the shallow surface cuts an average total length of fiber in any one of the six ore bearing strata would be between  $1/2$  and  $3/4$  of an inch. The outcrop is continuous for the 3600 feet in length and shows the irregular surface erosion typical of the serpentine zones.

From the limited development it is impossible to estimate tonnage. The three tunnels are spaced about 500 feet apart and were naturally started on good surface showings. The persistence of the ore bearing zone is well established but there is no way, without extensive development of showing whether or not the whole area can be profitably mined.

The average of  $1/2$  to  $3/4$  of an inch of asbestos in each of the six ore bearing strata is conservative. This would give a production of from  $12'' \times 12'' \times 3$  to  $4\frac{1}{2}$  inches of asbestos for each square foot of surface and to recover it would call for the excavation of 20 to 25 cubic feet of rock. A square foot of asbestos 1 inch in thickness will weigh approximately 12 pounds, in place. Assuming the ore zones to be continuous and to maintain the averages shown in the exposures accessible an estimate of the possible tonnage of asbestos in the six claims reaches the fantastic figure of from 84,000 to 126,000 tons.

Just what factor to apply to such an estimate is impossible to determine. It is my belief that the property should be capable of producing at least 500 tons per year. There are so many factors involved in any estimate and such limited data to base figures on that the 500 tons per year is ~~not~~ much more than a guess, but seems within reasonable attainment, and may by intensive development and operation greatly exceed this amount.

The work on this property has all been done by hand drilling and chiefly as assessment, hence the limited production. The percentage of No. 3 crude asbestos is larger in this property than in any of the others. The problem of mining a 20 to 25 foot thickness of rock presents no serious difficulties if properly directed and engineered.

#### PUEBLO ASBESTOS GROUP

The Pueblo Group consists of 14 claims on the east slope of Center Mountain. They are reached by 5 miles of trail, from the end of a three mile mine road which starts east from the Globe-Pleasant Valley highway at a point 55 miles northeily from Globe. The first three miles of mine road can be made by car. The trail is made by horseback and the asbestos and supplies are packed in by burro.

A mine road for cars and trucks can be made direct to the camp on the Pueblo Group at comparatively low cost. With the exception of two or three short stretches each of from 100 to 200 feet in length the road making can be done by bulldozer. The short stretches mentioned will call for rock work with drilling and blasting. Proper grades can be established for hauling heavy loads. The first  $3\frac{1}{2}$  miles of trail to the summit of a saddle can be easily made and the rock cuts will be on balance of  $1\frac{1}{2}$  miles to camp. Center Mountain which is a quartzite mesa has an elevation of 7600 feet and the main workings of the Pueblo claims are at about 6500 feet elevation.

Title to the claims are held by Roger Q. Kyle of Globe and records of location are on file in the Gila County Recorder's Office at Globe, Arizona. A map is available showing the relative location of the claims.

PRODUCTION. The production from this group as reported by the owner, Roger Q. Kyle, is in excess of 300 tons, of which 25 per cent was No. 1 crude and 75 per cent No. 2 crude.

Of the 25 per cent of No. 1 crude at least 50 per cent was three inch fiber. The reject containing the No. 3 crude went as <sup>WASTE</sup> reject - along with some No. 2 crude due to the costly burro pack to the main road.

ORE OCCURRENCE. The asbestos zone occurs in the mesal limestone just above the contact with the underlying diabase sill. The contact of the diabase and the limestone occurs on 11 of the claims. The total length of the exposure on the claims is about 7000 feet. Three of the claims are located off <sup>of</sup> the contact with their end lines adjoining so as to cover approximately 3000 feet along the dip of the ore horizon. The balance of the claims are located with side lines adjoining so that each claim covers 600 feet on the outcrop and 1300 feet on the dip, allowing 200 feet for dump.

There are three zones in the limestone in which the asbestos occurs. Most of the development and production has been on the lower zone. This consists of four strata, the lower one being from six to eight feet above the underlying diabase and the other three at intervals of from three to five feet above. The middle zone is about 150 feet above the lower zone and is partially developed by three tunnels. The third or upper zone is 50 feet above the middle and has had only a small amount of work done on it.

On No. 9 claim most of the mining and development occur. Here an irregular tunnel and stope extend 305 feet into the hillside from the outcrop. Three of the ore bearing strata in the lower zone have been worked from this tunnel. Other tunnels are located on No. 7, which is in about 90 feet; on No. 8 is a 30 foot tunnel and on No. 11 a 95 foot tunnel. All of these with the exception of the tunnel on No. 11 are in ore. The No. 11 tunnel is a development tunnel, driven through slide rock and soil in order to get into solid lime at a point near the diabase contact.

On No. 10 and No. 11 claims is an quarry cut, about 800 feet in length and showing three of the lower strata.

Several dikes of diabase cut across the bedding of the limestone, which dips at from 5 to 10 degrees from the horizontal into the mesa. The major diabase dike is located near the common side line between No. 6 and No. 7 claim. Near the diabase



dikes the occurrence of higher grade asbestos in the various strata is characteristic of this and the other mines.

At no place on the exposures of the various serpentine strata has the asbestos pinched out. The serpentine strata vary from 6 inches to three feet in thickness. The asbestos occurs in gash veinlets from knife blade thickness up to fiber lengths of three and four inches. The asbestos is usually concentrated in zones within the serpentine of from two to three inches in width which make hand cobbing of the serpentine effective.

The continuity of the asbestos cannot be definitely established due to the large area and the limited amount of development. The various zones, however, can be traced over the entire distance of the outcrop.

The Pueblo Group are located on the east side of the terraced area below Center Mountain Mesa. On the south side of the mesa, a distance of about 7500 feet from the Pueblo group is the Reynold Falls (Buffalo Asbestos) Group of claims. On the Reynolds Falls the diabase and the lower zone of asbestos production are at about the same elevation as on the Pueblo. Both contacts on the two groups show such persistence in length and continuity that it is reasonable to assume that at least the serpentized zone will be continuous between the two groups.

The prospective area thus is large and as developments proceed it may be advisable to locate additional claims, ending lining the present claims of the Pueblo group so as to cover the entire intervening area between the two groups.

From the limited amount of development it is impossible to estimate the probable tonnage which can be produced from this group. There undoubtedly will be some areas which will not be profitable to mine. Present developments and exposures do not show these, however, and, as in the other properties covered in this report, any estimate based on the average thickness of asbestos exposed by the development if applied to the entire area covering the serpentized zone would show such fantastic figures as to probable tonnage that they would justly be incredible.

OPERATION. The development of this property has been carried on from the returns obtained from asbestos produced and little or not outside capital has been spent. Hence the work has been limited to the readily accessible productive areas and no preparatory work or development work has been done. It is only within the past few months that any exploration work has been carried forward and that has been done on the 95 foot tunnel on the No. 11 claim. Throughout the entire district work has been limited to taking out ore from readily accessible and productive areas.

PROBABLE PRODUCTION. In the exposed workings the average amount of fiber in each one of the four strata of the lower zone will be from 1/2 to 3/4 inch. In the four strata the total would be from two to three inches of fiber in each square surface of area. This will call for the removal of excavation of 18 to 20 cubic feet of rock for each square foot of asbestos two to three inches in thickness. It calls for the excavation of approximately 90 tons of rock for each ton of asbestos produced. With in excess of 3600 feet of outcrop of probable productive area an annual production of 1000 tons asbestos, of all three grades, seems well within reason and attainable by proper equipment, preparation and development of the property. This calls for the excavation of about 300 tons of rock per day. As development proceeds this production may be increased several fold if the continuity persists, as is indicated by the present showings.

GENERAL OPERATING CONDITIONS. The operating conditions are favorable for year around work. Water is available for domestic and mine work from numerous springs and it is stated that their flow is continuous. Timber for mine use is abundant on the property. There are at present five camp buildings, which would serve for preliminary work but increased camp facilities would be necessary in order to step production up to the 1000 tons per year basis.

The road and trail are inadequate for enlarged operations. The cost of construction of a good road to the property would not be excessive and survey should be made for a road which would follow along the contact of the diabase and lime which would not only provide good operating facilities but would be productive of an appreciable tonnage of

of asbestos and would be a valuable piece of surface development of prospective ground.

A report by Smith-Emery Company, Chemists and Engineers, of 920 Santee Street, Los Angeles, California, field work by W. C. Bass, engineer, in July 1932, was submitted to me and checked on the ground. It has been found substantially correct in its details and repetition of the facts mentioned in the report are not deemed necessary in this statement.

#### SLOAN CREEK GROUP

The Sloan Creek Group of claims have been examined and accurately reported on by Dr. Eldred D. Wilson, Geologist, of the Arizona Bureau of Mines, on pages 73 to 76 of Bulletin No. 126, Asbestos Deposits of Arizona, published in 1929 by the Arizona Bureau of Mines, Tucson, Arizona. A copy of this Bulletin is available and repetitions of facts contained therein are not deemed necessary.

A report by Julius Sanchez, Mining Engineer, who at one time operated the property was made in May 1921 and has been checked on the property, and the statement of facts contained in the report have been found correct and accurate.

ORE OCCURRENCES. The area covered by the 12 claims making up the Sloan Group may be considered as three distinct mesas, formed by the erosion of Sloan Creek. On the north portion of the group Sloan Creek runs east and west along the common end lines of the American Beauty and the Turkey Track claims to the north and the Mitt and Bluejay claims to the south. Sloan Creek then flows south along the east side line of the Bluejay claim and the east end lines of the Jackrabbit and Asbestos Springs claims. On the east side of Sloan Creek are the Last Chance, Aileen, Cowboy, and Diabase claims whose west end lines are common with the side line of the Bluejay and the end lines of the Jackrabbit and Asbestos Springs. We may thus consider the three mesas as the North mesa which is made up of the American Beauty and the Turkey Track Claims, the West mesa, consisting of the Mitt, Bluejay, Manzanita, Jackrabbit, and Asbestos Springs claims and the East mesa covered by the Last Chance, Aileen, Cowboy, and Diabase claims. The other claim, known as the Turkey Track Campsite has been located for camp purposes.

The mesas are comparatively low and are from 75 to 125 feet above the bottom of Sloan Creek. Sloan Creek has cut through the limestone and into the underlying diabase and has left exposed on the side of the canyons the diabase contact and the various ores zones. The bedding planes of the limestones are practically level and the surface of the southern end of the east and west mesas have been eroded so that the surface of the mesas have a gentle slope to the south.

Three distinct ore bearing or serpentized zones have been exposed on the terraced sides of the canyon. The lower zone is from two to five feet above the underlying diabase sill; the middle zone is 12 to 15 feet above the lower zone and the upper zone is about 30 feet above the middle zone.

The major part of the development has been done on the middle zone which has three well defined asbestos bearing strata. These strata are from three to four feet apart and vary from 6 to 18 inches in thickness with layers or veins of asbestos fiber irregularly distributed through the serpentized limestone replacements. The asbestos ranges from gash veins of knife blade thickness to fibers of three and four inches in length as shown on the Cowboy claim.

Only a limited amount of development work has been done on the lower and upper zone but both of these zones are shown in numerous shallow opencuts.

On the north mesa are eight tunnels, in the middle zone, from 30 to 100 feet in length. On the west mesa there are four major tunnels, the longest being 150 feet in length, near the northern end. An opencut on the surface about the center of the Jackrabbit claim shows the serpentine exposure of the upper zone carrying asbestos. This is shown by an open pit and trench and is exposed on the surface due to the fact that the surface has been eroded in a gentle slope toward the south end of the mesa. The middle zone is opened up by two short tunnels at the southern end on the Asbestos Springs claim. The open pit and trench on the middle of the Jackrabbit claim has significance in showing the continuity of the serpentine zones carrying asbestos.

The east mesa has had the major development with nine tunnels on the west terraced slope, two tunnels on the south and two tunnels and a long open quarry cut on the east

end of the Cowboy claim. The major part of this work is on the middle zone.

On this group of claims there is approximately 9000 feet in length of outcrop on the middle zone alone exposed. The location of the tunnels show a wide and fairly uniform distribution of asbestos bearing serpentinized strata. An average expected yield per square foot of surface is most impossible. At one point on the Cowboy claim, on a quarry cut, 6 x 18 feet, a production of 5200 pounds of three to four inches high-grade silky fibre asbestos was produced.

From the middle zone alone, on the east mesa, which is the portion on which the major development has been performed, an average length of fiber in the faces exposed will show from one inch to one and one-half inch. To recover this fiber an excavation of approximately nine cubic feet of rock for each square foot of <sup>ASBESTOS</sup> one inch to one and one-half inch in thickness. This calls for approximately 72 to 50 tons of rock to be moved or excavated for each ton of asbestos production.

Whether or not the average thus exposed in the present workings will be maintained and persist throughout the entire area is of course problematic.

The production from the Slean Creek Group has been 525 tons of asbestos. Of this 20 per cent has been No. 1 crude; 50 per cent No. 2 crude and the balance 30 per cent made up of No. 3 and No. 4. The bonanza found on the quarry cut on the Cowboy claim so influenced this average that it cannot be considered an average expectancy. It indicated, however, that on this group a large percentage of No. 1 and No. 2 may be expected in general operations.

PRODUCTION. With 9000 feet of outcrop exposed and readily accessible with a minimum amount of work this property should be able to reach a production of 2000 tons of asbestos per year at a minimum expense. If the continuity persists, as indicated, this yearly tonnage could be increased several fold,, and maintained for many years to come.

This group can be easily put into large scale operation. The topography is gentle and the entire outcrop can be opened up by surface or quarry cuts so as to provide truck access to all parts of the outcrop and in making the cut a valuable piece of development work will be accomplished and a sizable production of asbestos made at the same time.

The

The bed of the opencut will serve as a road. From indication it is very probable that other bonanza or high-grade sections will be exposed by such work and from starting points for early good sized production.

With the entire outcrop opened up working places would be provided for a large number of efficient and productive starting points for production.

Operating conditions are ideal. Timber is available nearby, water is ample for both domestic and mining use, hauling will be over good roads and climate conditions most favorable.

#### KYLE ASBESTOS MILL

The Kyle Asbestos Mill is located on a 5-acre mill site claim, about 1/2 mile from the business district of Globe, on a side hill which affords gravity flow for handling the products. The mill building is 20 x 40 feet, of framed timber construction with corrugated iron siding and roof. At the foot of the mill is a warehouse 50 x 80 feet, of steel framing with corrugated iron siding and roof and a cement floor.

The flow sheet consists of a crude ore bin for storage, with road so that ore trucks can dump direct into the bin; a 5 x 10 inch Dodge Jaw Crusher set to break to  $1\frac{1}{2}$  inch size; a set of El Paso Mine and Smelter Supply Co. rolls 20 x 12 inch set at 1/2 inch and followed by a similar set of rolls set at 1/16 inch; the product from the second set of rolls feeds direct to an impact screen with three screening areas, each 30 x 60 inches, which discharge into floor bins giving four products.

The first screen is 3/16 inch mesh which separates out a product called No. 4 or a middling product which must be retreated; the second screen area has a 1/4 inch screen which gives the No. 3 crude; the last screen area has a 5/8 inch screen through which the No. 2 crude passes and the oversize from this screen passes over the end and gives the No. 1 crude.

The No. 1, 2 and 3 crudes are free from serpentine, rock and dust. The No. 4 contains the fine fibers of asbestos, the crushed serpentine, other rock and dust and is conveyed to a bin which feeds direct to a swing hammer Grindler, which rotates at 3600 RPM by a direct drive motor. The discharge from the Grindler is picked up by

a No. 5 exhauster and feed to a cyclone separator which discharges the air; the solid discharge from the cyclone goes to another impact screen fitted with a 20 mesh screen 30 inches wide which separates the fiberized fiber and the ground waste material. The fiberized fiber product, called No. 4 meets the Canadian screen standard 0-0-14-2 which on a pound sample shows nothing on a 1/2 inch screen, nothing on a 1/4 inch screen 14 ounces on a 1/8 inch screen and 2 ounces through the 1/8 inch screen.

The mill is electrically driven throughout and has a capacity of 20 tons of feed per eight hour shift. Mr. Kyle claims that by replacing the present crusher with a 10 x 12 inch crusher the mill capacity can be stepped up to 100 tons of feed per 24 hour running. Automatic sacking equipment should also be added.

This mill is claimed to be the first mechanical cobbing and segregating mill and is covered by U. S. Patent No. 1790429, "Cleaning, Classifying and Grading Apparatus for Asbestos and Other Minerals." Application for patent was made in 1928 and the patent granted in 1931. The development of this process was started in 1922 by Mr. Kyle when the ore was crushed by hammer and then screened. The results obtained were such that it was decided to screen mechanically. The first mill was constructed in 1923 with jaw crusher, rolls and mechanical screening and the fiberizing of the No. 4 product followed in the same year.

From the first hand screening Mr. Kyle was able to establish a No. 3 crude which was the fiber passing through a 1/4 inch screen and contained the fiber which was too short to hand cob and gave a product free from waste. The first No. 3 crude was sold to Emsco Asbestos Company in 1922 and a new grade of asbestos was established.

Mechanically cobbled fiber is accepted by all spinners and manufacturers of asbestos products and complies with the Canadian standards. In hand cobbing the costs were formerly \$4 per 100 pounds of No. 2 crude. This made the bobbing cost \$80 per ton. With the mechanical cobbing the costs have been reduced to \$5 per ton. In addition to this reduction in cost the process established the No. 3 crude grade. In hand cobbing about 10 per cent of the No. 2 was lost in the reject, due to the fiber adhering to the waste rock and this is now recoverable. A market has also been developed for the No. 4 or fiberized fiber. In a number of the Arizona mines the

the No. 3 and No. 4 grades combined should amount to two to three times the combined amount of No. 1 and No. 2 production.

The process has made it possible to handle ore zones at a profit where the percentage of No. 1 and No. 2 products were so low that they were not considered commercial. It permits the working of larger areas and the development of ore zones at low cost. In addition there is an appreciable production of fiberized fiber which is not plainly visible in the serpentine. Some of the dumps are being tested for recovery of asbestos in the former rejects.

#### GENERAL COMMENTS

GRADE OF ASBESTOS. The asbestos produced from the Miami Group showed about 60 per cent crude of the product in No. 1 and No. 2 crude and 40 per cent in No. 3 and fiberized fiber.

The Pueblo Group produced only No. 1 and No. 2 crude, due to the fact that the long burro pack was too costly to ship the No. 3 and No. 4 crude, which went into the dump. The No. 1 crude was 25 per cent of the production and the No. 2 was 75 per cent.

It is estimated that with proper handling facilities the production from this group will be about 10 per cent No. 1 crude, 40 per cent No. 2 crude and 50 per cent No. 3 and No. 4. The increase in percentage of No. 2 will be accounted for by the recovery of a larger amount of No. 2 which formerly adhered to rock particles and was rejected and also a separation of the No. 3 which would furnish some additional No. 2.

The production of the Sloan Creek Group will be about the same as on the Pueblo.

NO. 4 FIBERIZED FIBER. There is a field for the use of No. 4 fiberized fiber which should be further developed on the Pacific Coast. This is a by-product coming from the cleaning and separation of the three standard grades and is one which will show a profit and ~~make~~ enable larger production and the handling of lower grade ore. Intensive work on the development of a market is recommended.

PRODUCTION. The Sloan Creek property offers the best opportunity to start to step up production, on a large scale and at a minimum cost. Next in line is the Pueblo group. The amount of capital available will determine the speed at which the 3000 tons or more per year production can be reached. Operations can be started on a modest scale,



but it will take a longer time to reach the maximum production.

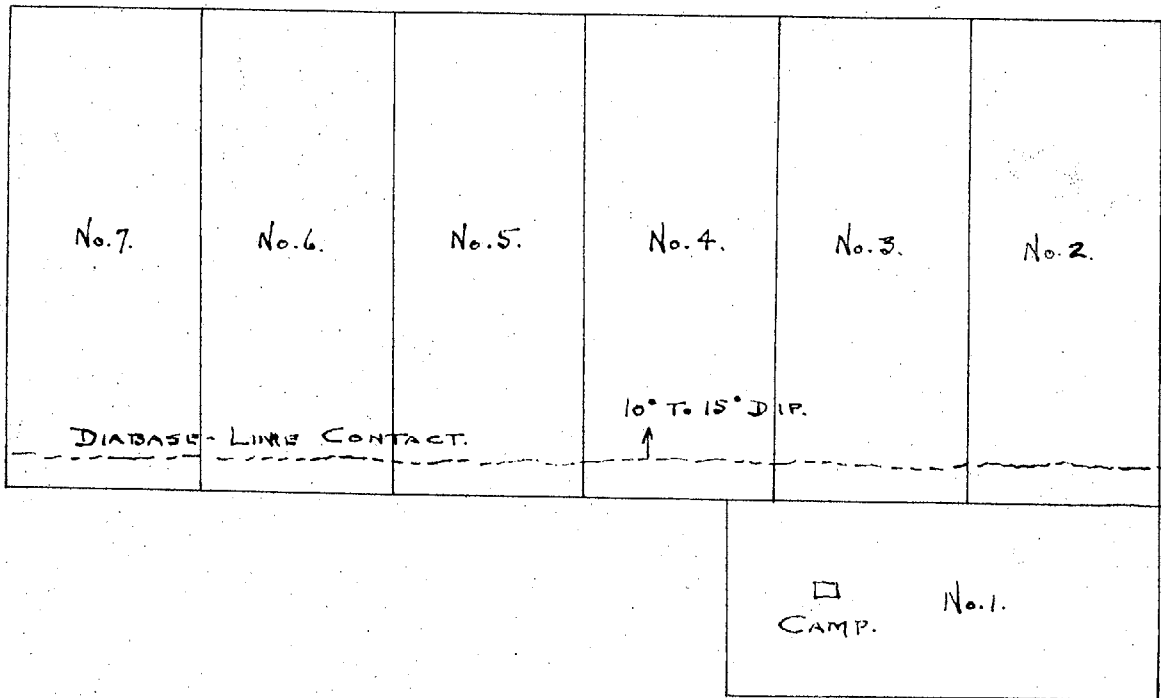
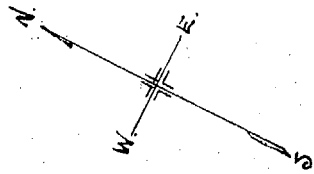
Proper engineering, planning and operation are essential to the maximum production. Ample labor is available for skilled miners from the Miami and other large mining districts.

Respectfully submitted

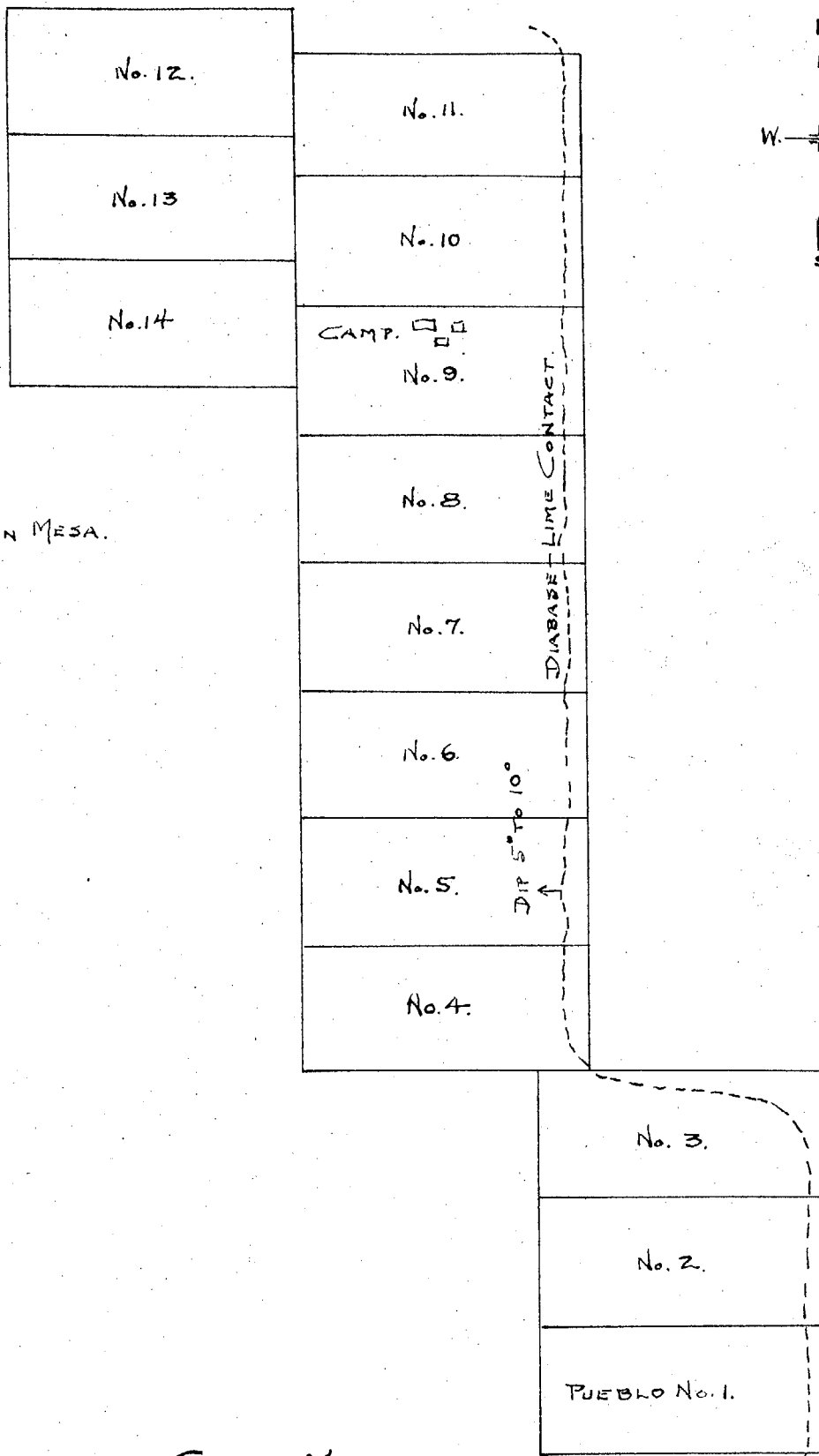


By J. S. Coupal, Mining Engineer.

Phoenix, Arizona  
July 9, 1941.



CLAIM MAP.  
MIAMI ASBESTOS MINES.  
SCALE 1" = 600 ft.

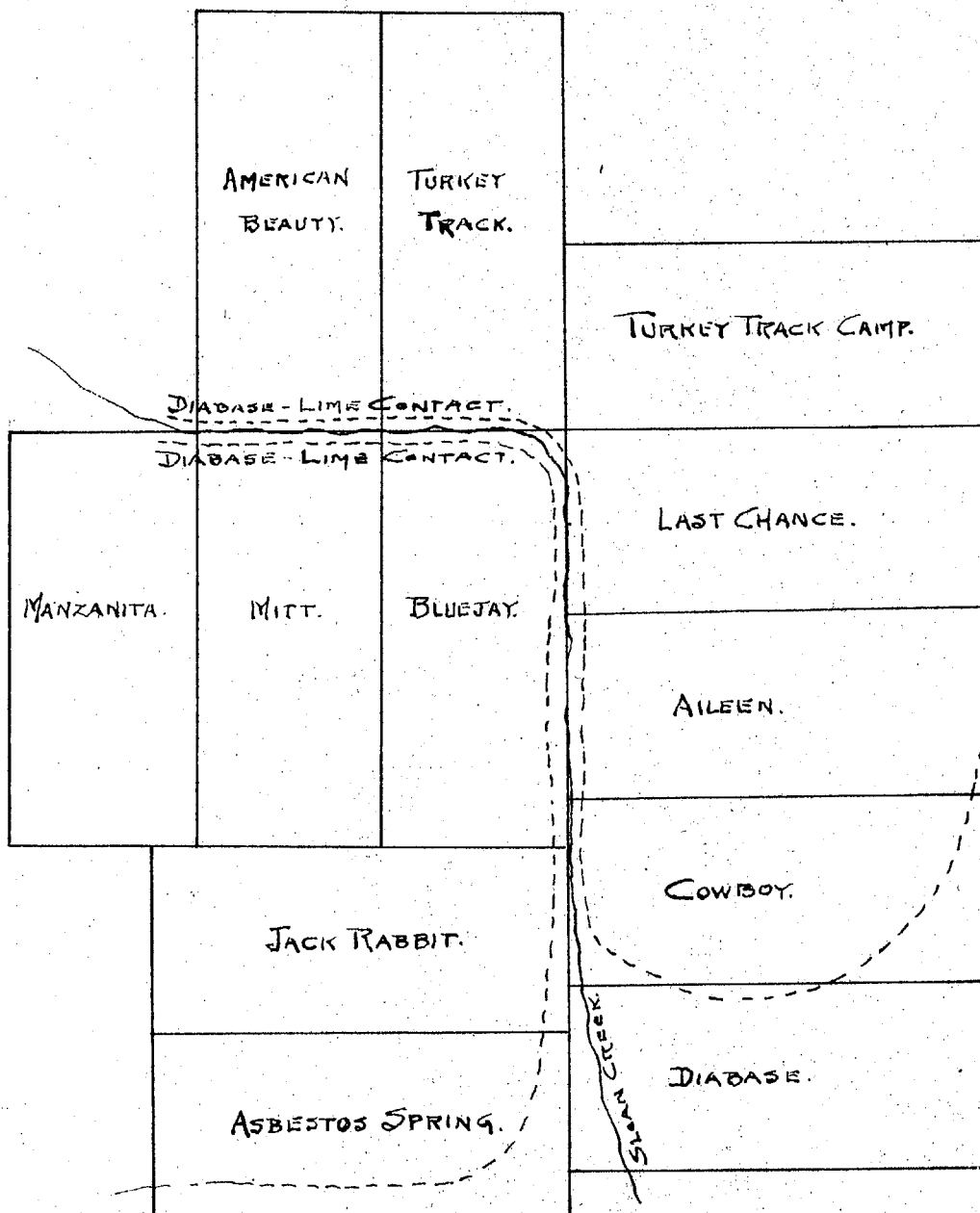
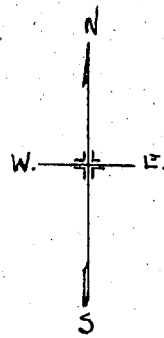


CENTER MOUNTAIN MESA.

CLAIM MAP.

PUEBLO ASBESTOS GROUP.

SCALE 1" = 800 ft.



CLAIM MAP.  
SLOAN CREEK GROUP.  
SCALE 1" = 600 ft.

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BY

J. S. COUPAL, MINING ENGINEER

Covering the Miami Asbestos Mines,  
The Pueblo Group, the Sloan Creek  
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Another factor which permits a production of 3,000 tons or more per year as estimated is the increased yield and the handling of lower grade ores which has been made possible by the mechanical cobbing and segregating process developed by Mr. Kyle. A permit for the use of this patented process is granted for the operation of the properties covered by this report. A description of the process is made a part of the report.

### MIAMI ASBESTOS MINES

LOCATION The property consists of seven unpatented mining claims, located in the southern foothills of the Sierra Ancha Mountains at an elevation of about 5,000 feet above sea level. It is reached by  $1\frac{1}{2}$  miles of mine road from the Globe-Pleasant Valley highway at a point 42 miles in a northerly direction from Globe. The highway is a county graded road and the property can be reached direct by car.

The claims are located, as is customary, in the Globe asbestos area, with the long axis of the claims on the dip and at right angle to the strike of the outcrop. Six of the claims side line each other and thus cover a distance of 3,600 feet along the outcrop. The seventh claim is for camp purpose and its side line adjoins the end line of the northern claims. The discovery hole on the claim is usually located on the outcrop and about 200 feet from the end line, so as to provide dump space on the claim, and thus give about 1300 feet in length along the dip. Located in this manner no conflicts occur on extra lateral rights as the end line limitations are vertical planes.

Title to the claims are in the name of Roger Q. Kyle of Globe, Arizona and are recorded in the Gila County Recorder's Office, Globe, Arizona.

HISTORY OF PRODUCTION Mr. Kyle reports a production of 45 tons of asbestos from this property of which four tons were No. 1 crude, 25 tons of No. 2 crude and the balance No. 3 and No. 4.

ORE OCCURRENCE The general geology is typical of the Globe-Asbestos area with a basement of a diabase sill under the serpentinized mesal limestone. This group is located about  $1\frac{1}{2}$  miles from the property known as the American Ores or International Asbestos Group at an elevation of several hundred feet below the main workings of the American Ores property. The occurrence of this same ore horizon is reported on the American Ores property, at approximately 500 feet lower than the main workings, but has not been developed on that property.

On the Miami Asbestos group there are six ore horizons, the lower one occurring about one foot above the diabase sill and the others spaced at from 3 to 5 feet intervals above it. This makes an ore horizon of from 20 to 25 feet in thickness. The limestone is thin bedded in structure and the serpentinized ore strata vary from 6 inches to 18 inches in thickness.

The development work is limited to the two lower ore strata which are exposed in the three tunnels. The bedding of the lime and the ore strata dip from 12 to 18 degrees and the tunnels follow this dip into the hill. On claim No. 3 the tunnel is 80 feet long and a small amount of stoping has been done. The stoped area is irregular and covers not more than 1000 square feet beyond the tunnel.

On No. 4 claim is another tunnel of about 35 feet in length, following the two lower ore strata. On No. 5 claim is a 40 foot tunnel.

On the other claims only location and discovery holes have been opened up on the outcrop of the lower strata.

In all workings the strata show the occurrence of asbestos to be continuous and in no instance has the serpentinized asbestos bearing area pinched out. The fiber varies from knife blade thickness to  $1\frac{1}{2}$  inches in each one of the strata. It is sometimes concentrated in one streak and in other places distributed in closely spaced gash veinlets from knife blade thickness to  $1/8$  inch and larger.

In the area exposed by the tunnels, the stopes and on the shallow surface cuts an average total length of fiber in any one of the six ore bearing strata would be between  $1/2$  and  $3/4$  of an inch. The outcrop is continuous for the 3600 feet in length and shows the irregular surface erosion typical of the serpentine zones.

From the limited development it is impossible to estimate tonnage. The three tunnels are spaced about 600 feet apart and were naturally started on

good surface showings. The persistence of the ore bearing zone is well established but there is no way, without extensive development, of showing whether or not the whole area can be profitably mined.

The average of  $1/2$  to  $3/4$  of an inch of asbestos in each of the six ore bearing strata is conservative. This would give a production of from  $12'' \times 12'' \times 3$  to  $4\frac{1}{2}$  inches of asbestos for each square foot of surface and to recover it would call for the excavation of 20 to 25 cubic feet of rock. A square foot of asbestos 1 inch in thickness will weigh approximately 12 pounds, in place. Assuming the ore zones to be continuous and to maintain the averages shown in the exposures accessible an estimate of the possible tonnage of asbestos in the six claims reaches the fantastic figure of from 84,000 to 126,000 tons.

Just what factor to apply to such an estimate is impossible to determine. It is my belief that the property should be capable of producing at least 500 tons per year. There are so many factors involved in any estimate and such limited data to base figures on that the 500 tons per year is not much more than a guess, but seems within reasonable attainment, and may by intensive development and operation greatly exceed this amount.

The work on this property has all been done by hand drilling and chiefly as assessment, hence the limited production. The percentage of No. 3 crude asbestos is larger in this property than in any of the others. The problem of mining a 20 to 25 foot thickness of rock presents no serious difficulties if properly directed and engineered.

#### PUEBLO ASBESTOS GROUP

The Pueblo Group consists of 14 claims on the east slope of Center Mountain. They are reached by 5 miles of trail, from the end of a three mile mine road which starts east from the Globe-Pleasant Valley highway at a point 55 miles northerly from Globe. The first three miles of mine road can be made by car. The trail is made by horseback and the asbestos and supplies are packed in by burro.

A mine road for cars and trucks can be made direct to the camp on the Pueblo Group at comparatively low cost. With the exception of two or three short stretches each of from 100 to 200 feet in length the road making can be done by bulldozer. The short stretches mentioned will call for rock work with drilling and blasting. Proper grades can be established for hauling heavy loads. The first  $3\frac{1}{2}$  miles of trail to the summit of a saddle can be easily made and the rock cuts will be on balance of  $1\frac{1}{2}$  miles to camp. Center Mountain which is a quartzite mesa has an elevation of 7600 feet and the main workings of the Pueblo claims are at about 6500 feet elevation.

Title to the claims is held by Roger Q. Kyle of Globe and records of location are on file in the Gila County Recorder's Office at Globe, Arizona. A map is available showing the relative location of the claims.

PRODUCTION The production from this group as reported by the owner, Roger Q. Kyle, is in excess of 300 tons, of which 25 per cent was No. 1 crude and 75

per cent No. 2 crude. Of the 25 per cent of No. 1 crude at least 50 per cent was three inch fiber. The reject containing the No. 3 crude went as waste - along with some No. 2 crude due to the costly burro pack to the main road.

ORE OCCURRENCE The asbestos zone occurs in the mesal limestone just above the contact with the underlying diabase sill. The contact of the diabase and the limestone occurs on 11 of the claims. The total length of the exposure on the claims is about 7000 feet. Three of the claims are located off of the contact with their end lines adjoining so as to cover approximately 3000 feet along the dip of the ore horizon. The balance of the claims are located with side lines adjoining so that each claim covers 600 feet on the outcrop and 1300 feet on the dip, allowing 200 feet for dump.

There are three zones in the limestone in which the asbestos occurs. Most of the development and production has been on the lower zone. This consists of four strata, the lower one being from six to eight feet above the underlying diabase and the other three at intervals of from three to five feet above. The middle zone is about 150 feet above the lower zone and is partially developed by three tunnels. The third or upper zone is 50 feet above the middle and has had only a small amount of work done on it.

On No. 9 claim most of the mining and development occur. Here an irregular tunnel and stope extend 305 feet into the hillside from the outcrop. Three of the ore bearing strata in the lower zone have been worked from this tunnel. Other tunnels are located on No. 7 which is in about 90 feet; on No. 8 is a 30 foot tunnel and on No. 11 a 95 foot tunnel. All of these with the exception of the tunnel on No. 11 are in ore. The No. 11 tunnel is a development tunnel, driven through slide rock and soil in order to get into solid lime at a point near the diabase contact.

On No. 10 and No. 11 claims is a quarry cut, about 800 feet in length and showing three of the lower strata.

Several dikes of diabase cut across the bedding of the limestone, which dips at from 5 to 10 degrees from the horizontal into the mesa. The major diabase dike is located near the common side line between No. 6 and No. 7 claim. Near the diabase dikes the occurrence of higher grade asbestos in the various strata is characteristic of this and the other mines.

At no place on the exposures of the various serpentine strata has the asbestos pinched out. The serpentine strata vary from 6 inches to three feet in thickness. The asbestos occurs in gash veinlets from knife blade thickness up to fiber lengths of three and four inches. The asbestos is usually concentrated in zones within the serpentine of from two to three inches in width which make hand cobbing of the serpentine effective.

The continuity of the asbestos cannot be definitely established due to the large area and the limited amount of development. The various zones, however, can be traced over the entire distance of the outcrop.



The Pueblo Group are located on the east side of the terraced area below Center Mountain Mesa. On the south side of the mesa, a distance of about 7500 feet from the Pueblo group is the Reynold Falls (Buffalo Asbestos) Group of claims. On the Reynolds Falls the diabase and the lower zone of asbestos production are at about the same elevation as on the Pueblo. Both contacts on the two groups show such persistence in length and continuity that it is reasonable to assume that at least the serpentinized zone will be continuous between the two groups.

The prospective area thus is large and as developments proceed it may be advisable to locate additional claims, ending lining the present claims of the Pueblo group so as to cover the entire intervening area between the two groups.

From the limited amount of development it is impossible to estimate the probable tonnage which can be produced from this group. There undoubtedly will be some areas which will not be profitable to mine. Present developments and exposures do not show these, however, and, as in the other properties covered in this report, any estimate based on the average thickness of asbestos exposed by the development if applied to the entire area covering the serpentinized zone would show such fantastic figures as to probable tonnage that they would justly be incredible.

OPERATION The development of this property has been carried on from the returns obtained from asbestos produced and little or no outside capital has been spent. Hence the work has been limited to the readily accessible productive areas and no preparatory work or development work has been done. It is only within the past few months that any exploration work has been carried forward and that has been done on the 95 foot tunnel on the No. 11 claim. Throughout the entire district work has been limited to taking out ore from readily accessible and productive areas.

PROBABLE PRODUCTION In the exposed workings the average amount of fiber in each one of the four strata of the lower zone will be from 1/2 to 3/4 inch. In the four strata the total would be from two to three inch of fiber in each square surface of area. This will call for the removal or excavation of 18 to 20 cubic feet of rock for each square foot of asbestos two to three inches in thickness. It calls for the excavation of approximately 90 tons of rock for each ton of asbestos produced. With in excess of 3600 feet of outcrop of probable productive area an annual production of 1000 tons asbestos, of all three grades, seems well within reason and attainable by proper equipment, preparation and development of the property. This calls for the excavation of about 300 tons of rock per day. As development proceeds this production may be increased several fold if the continuity persists, as is indicated by the present showings.

GENERAL OPERATING CONDITIONS The operating conditions are favorable for year around work. Water is available for domestic and mine work from numerous springs and it is stated that their flow is continuous. Timber for mine use is abundant on the property. There are at present five camp buildings, which would serve

for preliminary work but increased camp facilities would be necessary in order to step production up to the 1000 tons per year basis.

The road and trail are inadequate for enlarged operations. The cost of construction of a good road to the property would not be excessive and survey should be made for a road which would follow along the contact of the diabase and lime which would not only provide good operating facilities but would be productive of an appreciable tonnage of asbestos and would be a valuable piece of surface development of prospective ground.

A report by Smith-Emery Company, Chemists and Engineers, of 920 Santee Street, Los Angeles, California, field work by W. C. Bass, engineer, in July 1932, was submitted to me and checked on the ground. It has been found substantially correct in its details and repetition of the facts mentioned in the report are not deemed necessary in this statement.

#### SLOAN CREEK GROUP

The Sloan Creek Group of claims have been examined and accurately reported on by Dr. Eldred D. Wilson, Geologist, of the Arizona Bureau of Mines, on pages 73 to 76 of Bulletin No. 126, Asbestos Deposits of Arizona, published in 1929 by the Arizona Bureau of Mines, Tucson, Arizona. A copy of the Bulletin is available and repetition of facts contained therein are not deemed necessary.

A report by Julius Sanchez, Mining Engineer, who at one time operated the property was made in May 1921 and has been checked on the property, and the statement of facts contained in the report have been found correct and accurate.

ORE OCCURRENCES The area covered by the 12 claims making up the Sloan Group may be considered as three distinct mesas, formed by the erosion of Sloan Creek. On the north portion of the group Sloan Creek runs east and west along the common end lines of the American Beauty and the Turkey Track claims to the north and the Mitt and Bluejay claims to the south. Sloan Creek then flows south along the east side line of the Bluejay claim and the east endlines of the Jackrabbit and Asbestos Springs claims. On the east side of Sloan Creek are the Last Chance, Aileen, Cowboy, and Diabase claims whose west end lines are common with the side line of the Bluejay and the end lines of the Jackrabbit and Asbestos Springs. We may thus consider the three mesas as the North mesa which is made up of the American Beauty and the Turkey Track Claims, the West mesa, consisting of the Mitt, Bluejay, Manzanita, Jackrabbit, and Asbestos Springs claims and the East mesa covered by the Last Chance, Aileen, Cowboy, and Diabase claims. The other claim, known as the Turkey Track Campsite has been located for camp purposes.

The mesas are comparatively low and are from 75 to 125 feet above the bottom of Sloan Creek. Sloan Creek has cut through the limestone and into the underlying diabase and has left exposed on the side of the canyons the diabase contact and the various ores zones. The bedding planes of the limestones are practically level and the surface of the southern end of the east and west mesas have been eroded so that the surface of the mesas have a gentle slope to the south.

Three distinct ore bearing or serpentized zones have been exposed on the terraced sides of the canyon. The lower zone is from two to five feet above the underlying diabase sill; the middle zone is 12 to 15 feet above the lower zone and the upper zone is about 30 feet above the middle zone.

The major part of the development has been done on the middle zone which has three well defined asbestos bearing strata. These strata are from three to four feet apart and vary from 6 to 18 inches in thickness with layers or veins of asbestos fiber irregularly distributed through the serpentized limestone replacements. The asbestos ranges from gash veins of knife blade thickness to fibers of three and four inches in length as shown on the Cowboy claim.

Only a limited amount of development work has been done on the lower and upper zone but both of these zones are shown in numerous shallow opencuts.

On the north mesa are eight tunnels, in the middle zone, from 30 to 100 feet in length. On the west mesa there are four major tunnels, the longest being 150 feet in length, near the northern end. An opencut on the surface about the center of the Jackrabbit claim shows the serpentine exposure of the upper zone carrying asbestos. This is shown by an open pit and trench and is exposed on the surface due to the fact that the surface has been eroded in a gentle slope toward the south end of the mesa. The middle zone is opened by two short tunnels at the southern end on the Asbestos Springs claim. The open pit and trench on the middle of the Jackrabbit claim has significance in showing the continuity of the serpentine zones carrying asbestos.

The east mesa has had the major development with nine tunnels on the west terraced slope, two tunnels on the south and two tunnels and a long open quarry cut on the east end of the Cowboy claim. The major part of this work is on the middle zone.

On this group of claims there is approximately 9000 feet in length of outcrop on the middle zone alone exposed. The location of the tunnels show a wide and fairly uniform distribution of asbestos bearing serpentized strata. An average expected yield per square foot of surface is most impossible. At one point on the Cowboy claim, on a quarry cut, 6 x 18 feet, a production of 5200 pounds of three to four inches high-grade silky fibre asbestos was produced.

From the middle zone alone, on the east mesa, which is the portion on which the major development has been performed, an average length of fiber in the faces exposed will show from one inch to one and one-half inch. To recover this fiber an excavation of approximately nine cubic feet of rock for each square foot of asbestos one inch to one and one-half inch in thickness. This calls for approximately 72 to 50 tons of rock to be moved or excavated for each ton of asbestos production.

Whether or not the average thus exposed in the present workings will be maintained and persist throughout the entire area is of course problematic.

The production from the Sloan Creek Group has been 525 tons of asbestos. Of this 20 per cent has been No. 1 crude; 50 per cent No. 2 crude and the balance 30 per cent made up of No. 3 and No. 4. The bonanza found on the quarry cut on the Cowboy claim so influenced this average that it cannot be considered an average expectancy. It indicated, however, that on this group a large percentage of No. 1 and No. 2 may be expected in general operations.

PRODUCTION With 9000 feet of outcrop exposed and readily accessible with a minimum amount of work this property should be able to reach a production of 2000 tons of asbestos per year at a minimum expense. If the continuity persists, as indicated, this yearly tonnage could be increased several fold, and maintained for many years to come.

This group can be easily put into large scale operation. The topography is gentle and the entire outcrop can be opened up by surface or quarry cuts so as to provide truck access to all parts of the outcrop and in making the cut a valuable piece of development work will be accomplished and a sizable production of asbestos made at the same time. The bed of the open cut will serve as a road. From indication it is very probable that other bonanza or high-grade sections will be exposed by such work and form starting points for early good sized production.

With the entire outcrop opened up working places would be provided for a large number of efficient and productive starting points for production.

Operating conditions are ideal. Timber is available nearby, water is ample for both domestic and mining use, hauling will be over good roads and climate conditions most favorable.

#### KYLE ASBESTOS MILL

The Kyle Asbestos Mill is located on a 5-acre mill site claim, about 1/2 mile from the business district of Globe, on a side hill which affords gravity flow for handling the products. The mill building is 20 x 40 feet, of framed timber construction with corrugated iron siding and roof. At the foot of the mill is a warehouse 50 x 80 feet, of steel framing with corrugated iron siding and roof and a cement floor.

The flow sheet consists of a crude ore bin for storage, with road so that ore trucks can dump direct into the bin; a 5 x 10 inch Dodge Jaw Crusher set to break to 1 1/2 inch size; a set of El Paso Mine and Smelter Supply Co. rolls 20 x 12 inch set at 1/2 inch and followed by a similar set of rolls set at 1/16 inch; the product from the second set of rolls feeds direct to an impact screen with three screening areas, each 30 x 60 inches, which discharge into floor bins giving four products.

The first screen is 3/16 inch mesh which separates out a product called no. 4 or a middling product which must be retreated; the second screen area has a 1/4 inch screen which gives the No. 3 crude; the last screen area has a 5/8 inch screen through which the No. 2 crude passes and the oversize from this screen passes over the end and gives the No. 1 crude.

The No. 1, 2 and 3 crudes are free from serpentine, rock and dust. The No. 4 contains the fine fibers of asbestos, the crushed serpentine, other rock and dust and is conveyed to a bin which feeds direct to a swing hammer Grundler, which rotates at 3600 RPM by a direct drive motor. The discharge from the Grundler is picked up by a No. 5 exhauster and feed to a cyclone separator which discharges the air; the solid discharge from the cyclone goes to another impact screen fitted with a 20 mesh screen 30 inches wide which separates the fiberized fiber and the ground waste material. The fiberized fiber product, called No. 4 meets the Canadian screen standard 0-0-14-2 which on a pound sample shows nothing on a 1/2 inch screen, nothing on a 1/4 inch screen, 14 ounces on a 1/8 inch screen and 2 ounces through the 1/8 inch screen.

The mill is electrically driven throughout and has a capacity of 20 tons of feed per eight hour shift. Mr. Kyle claims that by replacing the present crusher with a 10 x 12 inch crusher the mill capacity can be stepped up to 100 tons of feed per 24 hour running. Automatic sacking equipment should also be added.

This mill is claimed to be the first mechanical cobbing and segregating mill and is covered by U. S. Patent No. 1790429, "Cleaning, Classifying and Grading Apparatus for Asbestos and Other Minerals". Application for patent was made in 1928 and the patent granted in 1931. The development of this process was started in 1922 by Mr. Kyle when the ore was crushed by hammer and then screened. The results obtained were such that it was decided to screen mechanically. The first mill was constructed in 1923 with jaw crusher, rolls and mechanical screening and the fiberizing of the No. 4 product followed in the same year.

From the first hand screening Mr. Kyle was able to establish a No. 3 crude which was the fiber passing through a 1/4 inch screen and contained the fiber which was too short to hand cob and gave a product free from waste. The first No. 3 crude was sold to Emsco Asbestos Company in 1922 and a new grade of asbestos was established.

Mechanically cobbled fiber is accepted by all spinners and manufacturers of asbestos products and complies with the Canadian standards. In hand cobbing the costs were formerly \$4 per 100 pounds of No. 2 crude. This made the cobbing cost \$80 per ton. With the mechanical cobbing the costs have been reduced to \$5 per ton. In addition to this reduction in cost the process established the No. 3 crude grade. In hand cobbing about 10 per cent of the No. 2 was lost in the reject, due to the fiber adhering to the waste rock and this is now recoverable. A market has also been developed for the No. 4 or fiberized fiber. In a number of the Arizona mines the No. 3 and No. 4 grades combined should amount to two to three times the combined amount of No. 1 and No. 2 production.

The process has made it possible to handle ore zones at a profit where the percentage of No. 1 and No. 2 products were so low that they were not considered commercial. It permits the working of larger areas and the development of ore zones at low cost. In addition there is an appreciable production of fiberized fiber which is not plainly visible in the serpentine. Some of the dumps are being tested for recovery of asbestos in the former rejects.

GENERAL COMMENTS

GRADE OF ASBESTOS The asbestos produced from the Miami Group showed about 60 per cent of the product in No. 1 and No. 2 crude and 40 per cent in No. 3 crude and fiberized fiber.

The Pueblo Group produced only No. 1 and No. 2 crude, due to the fact that the long burro pack was too costly to ship the No. 3 and No. 4 crude, which went into the dump. The No. 1 crude was 25 per cent of the production and the No. 2 was 75 per cent.

It is estimated that with proper handling facilities the production from this group will be about 10 per cent No. 1 crude, 40 per cent No. 2 crude and 50 per cent No. 3 and No. 4. The increase in percentage of No. 2 will be accounted for by the recovery of a larger amount of No. 2 which formerly adhered to rock particles and was rejected and also a separation of the No. 3 which would furnish some additional No. 2.

The production of the Sloan Creek Group will be about the same as on the Pueblo.

NO. 4 FIBERIZED FIBER There is a field for the use of No. 4 fiberized fiber which should be further developed on the Pacific Coast. This is a by-product coming from the cleaning and separation of the three standard grades and is one which will show a profit and enable larger production and the handling of lower grade ore. Intensive work on the development of a market is recommended.

PRODUCTION The Sloan Creek property offers the best opportunity to start to step up production, on a large scale and at a minimum cost. Next in line is the Pueblo group. The amount of capital available will determine the speed at which the 3000 tons or more per year production can be reached. Operations can be started on a modest scale, but it will take a longer time to reach the maximum production.

Proper engineering, planning and operation are essential to the maximum production. Ample labor is available for skilled miners from the Miami and other large mining districts.

Respectfully submitted

/s/ J. S. Coupal

By J. S. Coupal, Mining Engineer

Phoenix, Arizona  
July 9, 1941

## Interview with Roger Kyle

Roger Kyle reported that he had a magnetite bed, 8-18 feet thick and extending over a considerable length of outcrops (at least 2000 feet). According to Kyle samples of the iron outcrop ran about 60 percent of iron. The Pueblo and Lucky Strike asbestos mines are in Secs. 15, 22, T6N, R14E. Kyle stated that the asbestos and iron deposits are for sale. LAS Memo 5-19-61

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Roger Kyle reported that Cerro Corp. and Colorado Fuel and Iron Co. had been quite interested, even though a considerable drilling program was indicated in order to establish reserve figures and average grade. Memo LAS 1-18-62

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Kyle reported that CF&I samples indicated that his iron deposit ran 51 percent iron, 0.05 percent Mn, 14.6 percent  $S_1O_2$ , 0.03 percent  $Al_2O_3$ , 0.010 percent phosphorous, and 0.01 percent  $S_1O_2$ .

ARC Laboratories, in Phoenix gave 66.56 percent of iron on one sample. According to Kyle the deposit could be made to produce 1000 tons per day. This estimate was made by a CF&I engineer.

Interview with Roger Kyle, owner 9-26-62 LAS Memo

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R. C. Brooks said CF&I had examined the iron ore exposures at the Lucky Strike and Pueblo mines and reported that the samples showed good grade (56-61 percent iron). Kyle stated that the potential reserves appeared to be large. The iron bed replaced a certain Mescal horizon near to a diabase sill.

Kyle said that the outcrop intermittently occurred over a length of several thousand feet around mesas that border a branch of Cherry Creek. He wishes to sell the properties but so far has not found a buyer.

Interview with R. C. Brooks and Roger Kyle 1-30-64 LAS

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Kyle reported the sale of 4 tons of crude filter grade fiber (No. 3) to John Manville, in January. He said that they had proposed buying 6 tons, 2 each from Jack Neal, Phillips, and Kyle. Phillips had none so Roger got 4 tons of sale. The price by Neal and Kyle was \$600 per ton. Roger plans to clean a few more tons, in case of further orders. Memo LAS 1-31-64

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Abstract from "Arizona Iron Ore Deposits" in IRON COMMODITY file: Pueblo and Lucky Strike Asbestos Mines, Gila County, are in the Sierra Ancha Mountains (Sec. 15,22, T6N, R14E). These have a magnetite bed which has replaced mesal limestone. Roger Kyle reports that the bed is 8 to 18 feet thick and extends intermittently over a considerable outcrop length. The material, according to him, assayed around 60 percent iron. Reserves are unknown. (Kyle Asbestos Mines of Arizona, P.O. Box 302, Globe, Arizona.)

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PUEBLO MINE

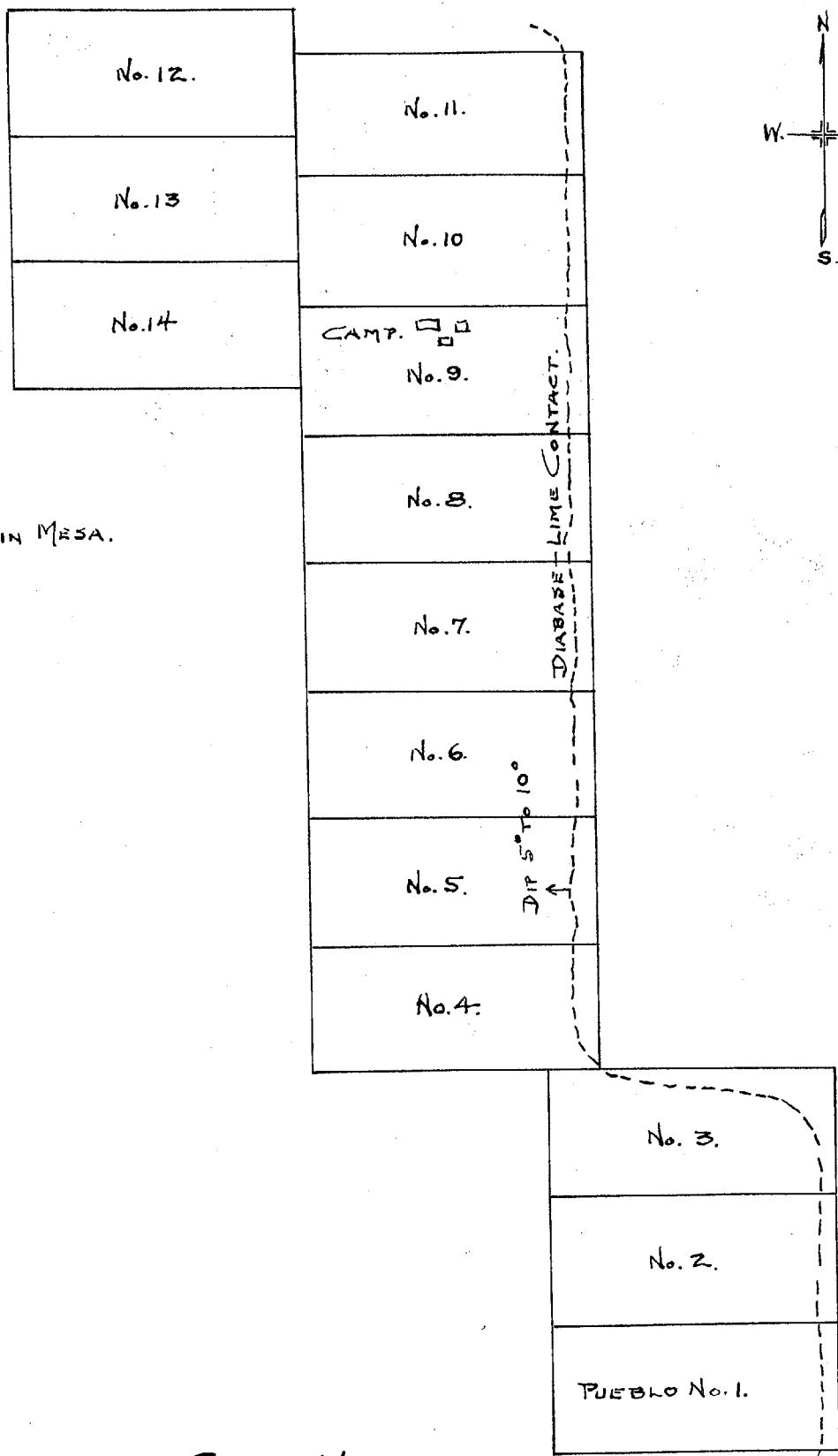
GILA COUNTY

Owner: Roger Q. Kyle  
Kyle Asbestos Mines of Arizona (Jan. 1958)  
Box 302  
Globe, Arizona

2-8-58

This property active March 17, 1960 - LAS Globe ASMOA





CENTER MOUNTAIN MESA.

CLAIM MAP.

PUEBLO ASBESTOS GROUP.

SCALE 1" = 800 ft.

**DEPARTMENT OF MINERAL RESOURCES**  
**STATE OF ARIZONA**  
**FIELD ENGINEERS REPORT**

Mine \_\_\_\_\_ Date August 9, 1944  
District \_\_\_\_\_ Engineer Andrew Macfarlane

Subject: Statement Supporting the Application of Roger Kyles of Globe, Arizona for the Extension of Access Road Designated DA-RM-79 from point marked "Rim" on Attached Sketch, to Reach the Asbestos Mines Called Pueblo and Lucky Strike.

The above named two asbestos mines cannot be placed in profitable production until they are served by a practical trucking road which reaches to the main openings of the mines.

At a past period immediately prior to 1941 an asbestos fiber production of approximately 300 tons No. 1 and No. 2 soft fiber was mined and transported over the mountain on pack animals to the trail connection of the Reynolds Falls trucking road, thence by truck to mill at Globe.

The foreign price then obtained for this fiber milled and graded was about double that obtainable since 1941 from domestic fabrication of asbestos goods, and labor and supply conditions were then normal.

The owner of these asbestos mines is now and has been for the past 30 years one of the main independent asbestos miners and millers of Gila County, Arizona and is anxious to place the above named mines again into operation on being given an access road to same. He owns a competent asbestos mill at Globe, Arizona and ample mining equipment to carry on the work of asbestos production.

It was understood by the applicant and the State Department of Mineral Resources that the former application, now docketed under heading DA-RM-79 and approved by all the Bureaus controlling access roads, that this road was authorized to start at Reynolds Falls Ranger Station junction, with the county and state highway, thence easterly by south over the Reynolds Falls road 2.2 miles, thence new road from old trail junction point to follow upwards and easterly to rim, thence southeasterly to Pueblo Mine, thence north about 1/2 to the Lucky Strike asbestos.

It is further declared that the Center Mountain belt, wherein are situated the Reynolds Falls asbestos mine on the south, the Pueblo on the east slope, and the Lucky Strike on the north slope, is an area favorable to the existence of important asbestos bodies and should afford future opportunities of gainfull employment. The road requested will make this region readily accessible to early production and needed future explorations for the fiber.

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The owner of these asbestos mines is now and has been for the past 30 years one of the main independent asbestos miners and millers of Gila County, Arizona and is anxious to place the above named mines again into operation on being given an access road to same. He owns a competent asbestos mill at Globe, Arizona and ample mining equipment to carry on the work of asbestos production.

It was understood by the applicant and the State Department of Mineral Resources that the former application, now docketed under heading DA-RM-79 and approved by all the Bureaus controlling access roads, that this road was authorized to start at Reynolds Falls Ranger Station junction, with the county and state highway, thence easterly by south over the Reynolds Falls road 2.2 miles, thence new road from old trail junction point to follow upwards and easterly to rim, thence southeasterly to Pueblo Mine, thence north about 1/2 to the Lucky Strike asbestos.

It is further declared that the Center Mountain belt, wherein are situated the Reynolds Falls asbestos mine on the south, the Pueblo on the east slope, and the Lucky Strike on the north slope, is an area favorable to the existence of important asbestos bodies and should afford future opportunities of gainfull employment. The road requested will make this region readily accessible to early production and needed future explorations for the fiber.