UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION
WASHINGTON 25, D. C.

March 2, 1849, New Customhouse
Denver 2, Colorado

November 15, 1951

Memorandum

To: Executive Secretary, Defense Minerals Administration

From: DMA Field Team, Region IV

Subject: Final Report, DMA Docket 454, General Mining and Development Corporation, applicant; Rio Grande Lead-Zinc-Copper Mine, Clear Creek County, Colorado

Enclosed herewith are the original and two copies of the report on the subject docket.

We concur with the conclusions and recommendations of the examining team that the development loan of $65,000 be denied.

The brochure is enclosed.

Paul Mallamer
for J. H. East, Jr.

A. H. Koschmann
A. H. Koschmann

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Mining Division
Region IV

November 15, 1951

Memorandum

To: DMA Field Team, Region IV

From: Chief, Mining Division, Region IV

Subject: Final Report, DMA Docket 454, General Mining and Development Corporation, applicant; Rio Grande Lead-Zinc-Copper Mine, Clear Creek County, Colorado

The application of the subject docket was for a development loan of $65,000.

The purpose of this loan was to drive an intermediate level and exploit lead-zinc-copper-gold-silver ore. The mine has been explored by the Colorado and Amy adits, which are accessible.

Galena, sphaterite, chalcopyrite, and pyrite, with gold and silver, occurs in small lenticular bodies within a branching vein structure in Silver Plume granite-gneiss.

Past production from four small stopes on the Colorado adit level and one small stope on the Amy adit level has amounted to 2,977 tons with an average recoverable unit content of 0.05 ounces gold, 0.71 ounces silver and 0.14 percent lead, 0.19 percent zinc and 0.008 percent copper.

Measured, indicated and inferred reserves amount to only 150 tons with an average grade of 0.16 ounces gold and 4.0 ounces silver per ton and 2.5 percent lead and 2.0 percent zinc. The geologic evidence does not indicate that further exploration would result in discovery of appreciable quantities of ore.

The examining team recommends denial of the loan, with which we concur.

Paul T. Allsman

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS ADMINISTRATION
WASHINGTON 25, D. C.

200 New Customhouse
Denver 2, Colorado

December 12, 1951

Memorandum

To: DMA Field Team, Region IV

From: A. H. Koschmann

Subject: DMA Docket 454, General Mining and Development Corporation, Rio Grande Mine, Griffith Mining District, Clear Creek County, Colorado

Attached are 8 copies of the geologic report by Truman H. Kuhn covering subject docket--General Mining and Development Corporation (Rio Grande Mine), Clear Creek County, Colorado.

The Rio Grande property (mine) is explored by the Amy and the Colorado tunnels, which lie, respectively, at altitudes of 9310 and 9613 feet. The applicant proposes to further develop the property by means of another tunnel (crosscut) at an altitude of 9479 feet. The workings on the Amy level explore several mineralized faults in pre-Cambrian granite, gneiss and schist. Pyrite with minor amounts of galena and sphalerite occur like as isolated and discontinuous veinlets and small masses. The Colorado tunnel also explores several small branching and discontinuous veins and fault zones with disseminated sulfides: pyrite, sphalerite, and galena with quartz.

There are no measurable ore reserves and the indicated and inferred ore reserves do not exceed a few hundred tons of low grade ore. Past production was negligible. Geologic evidence does not indicate that further exploration work will find an appreciable quantity of ore. Kuhn therefore recommends that the application for a development loan be denied, and recommends further that if application is made for an exploration loan, it also be denied.

I concur with his recommendations.

A. H. Koschmann
A. H. Koschmann
Supervising Geologist
Colorado-Wyoming

Enclosures (8)

UNITED STATES
DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

DENVER, COLORADO

Mining Division
Date Rec'd.

OCT 26 1951

BUREAU OF MINES
Denver, Colorado

Region IV

Building 20
Denver Federal Center
October 25, 1951

Memorandum

To: Chief, Mining Division, Region IV

From: Chief, Colorado Branch, Mining Division

Subject: DMA 454, General Mining and Development Corporation, Rio Grande Lead-Zinc-Copper Mine, Clear Creek County, Colorado

Please find enclosed the original and seven copies of the "Summary, Conclusions, and Recommendations", by Kuhn and Harrer, and the same number of copies of Harrer's engineering report on the above docket.

Minable ore reserves are negligible and likely to be low grade. The examining engineer concludes that the additional development proposed by the applicant would not serve to outline any appreciable quantities of ore and recommends the direct loan for $65,000.00 be denied. It is presumed that an exploration loan request would not receive favorable consideration either. I agree with the recommendations.

The brochure and correspondence concerned with it are also returned herewith.

for W. M. Traver, Jr.
W. M. Traver, Jr.

enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
OSCAR L. CHAPMAN, SECRETARY

DEFENSE MINERALS ADMINISTRATION

REPORT OF EXAMINATION BY FIELD TEAM
REGION IV

DMA-454, General Mining and Development Corporation

Rio Grande Lead-Zinc-Copper Mine

Clear Creek County, Colorado

Lead-Zinc-Copper

Truman H. Kuhn, Geologist
U. S. Geological Survey

C. M. Harrer, Mining Engineer
Bureau of Mines

October 25, 1951

GENERAL MINING AND DEVELOPMENT CORPORATION
RIO GRANDE LEAD-ZINC-COPPER MINE
CLEAR CREEK COUNTY, COLORADO

Summary, Conclusions, and Recommendations

By Truman H. Kuhn
Geologist
U. S. Geological Survey

and

C. M. Harrer
Mining Engineer
Bureau of Mines

GENERAL MINING AND DEVELOPMENT CORPORATION
RIO GRANDE LEAD-ZINC-COPPER MINE
CLEAR CREEK COUNTY, COLORADO

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

By Truman H. Kuhn and C. M. Harrer

The General Mining and Development Corporation, in Clear Creek County, Colo., has applied for a $65,000.00 development loan on its Rio Grande mine to drive an intermediate level and mine and concentrate any lead-zinc-gold-silver ore encountered. Two accessible adits, the Colorado and the Amy, explore the property.

Small, isolated lenses and stringers of low-grade galena-and sphalerite-bearing ore have been mined from weak and discontinuous faults and fault zones cutting pre-Cambrian granite-gneiss, granite, and schist.

Negligible ore reserves do not justify approval of this application for a $65,000.00 development loan.

Past production indicates that all material mined from this property was very low grade.

It is recommended that this application for a development loan of $65,000.00 by the General Mining and Development Corporation, Defense Minerals Administration Docket 454, be denied. In addition, geologic evidence does not indicate that further exploration work will find appreciable quantities of ore.

GENERAL MINING AND DEVELOPMENT CORPORATION

RIO GRANDE MINE

GRIFFITH MINING DISTRICT

CLEAR CREEK COUNTY, COLORADO

DMA DOCKET 454

Geology

Truman H. Kuhn, Geologist
U. S. Geological Survey

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GENERAL MINING AND DEVELOPMENT CORPORATION
CLEAR CREEK COUNTY, COLORADO

INTRODUCTION

The General Mining and Development Corporation--William B. Moore, P. O. Box 335, Georgetown, Colorado, President--has applied for a $65,000 development loan for its Rio Grande Mine (DMA Docket 454) to drive an intermediate level, and mine and concentrate any lead-zinc-gold-silver ores encountered. Two accessible adits, the Colorado and the Amy, explore the property.

The five claims (Rio Grande, Amy, Zeda, Weedy, and Dorothy) controlled by the corporation are located about one airline mile east of Silver Plume, Colorado, and about one airline mile southwest of Georgetown, Colorado, on the northwest slope of Leavenworth Mountains. They are in sec. 19, T. 4 S., R. 74 W., Griffith Mining District, Clear Creek County, Colorado. A road built on the right of way of the abandoned Argentine Central Railroad gives easy access to the property from Silver Plume, Colorado.

The property was examined on September 15, 1951, accompanied by William B. Moore and C. M. Harrer, engineer for the U. S. Bureau of Mines. The workings were further examined and mapped on September 22 and 23, 1951.

Geology of the general Silver Plume area has been discussed by Spurr, Garrey, and Ball (1908), Lovering and Goddard (1950, pp. 138-156), and Vanderwilt (1947, pp. 302-306).

GENERAL GEOLOGY

The earliest rocks of the district are pre-Cambrian gneiss and schist of the Idaho Springs formation which have been cut by irregular stock-like bodies and dikes of pre-Cambrian Silver Plume granite and its associated pegmatites and aplites. Dikes of Tertiary age cut the pre-Cambrian rocks.

Ore deposits are of two types: (1) silver-lead-zinc veins, and (2) pyritic gold veins. In the very productive area just north of Silver Plume, the veins contain silver, lead, and zinc almost to the exclusion of gold. The Central Colorado lode, approximately a quarter of a mile northeast of the Rio Grande group, is the closest described by Spurr, Garrey, and Ball (1908, pp. 274-275). It is a northeasterly trending vein consisting either of a single narrow fracture or a series of small or tight fractures. The ore in the Central Colorado lode is mainly gold-bearing and consists chiefly of pyrite.

RIO GRANDE MINE

Two accessible workings--the Amy Tunnel, at an altitude of 9310 feet, and the Colorado Tunnel, at an altitude of 9613 feet--partially explore the Rio Grande property. The Lake Superior and Zeda shafts, now caved, also explored the veins on the Rio Grande group. A crosscut, at an altitude of 9479 feet, has been proposed by the General Mining and Development Corporation to further develop the property.

Amy Tunnel: From the portal, the Amy Tunnel follows a narrow zone made up of a series of more or less parallel, but weak and discontinuous

faults. Sulphide mineralization is very slight. At a few places in the drift, a zone up to 1 foot wide was noted which contains an aggregate of 1 or 2 inches of sulphides, principally pyrite with minor amounts of galena and sphalerite. The sulphide minerals where present occur as isolated and discontinuous veinlets and small masses. Some copper staining is present. The average strike of the zone is about N. 80° E. and the dip varies from 45° to 75° N. The rock exposed along the drift walls is mainly a medium-grained granite somewhat altered in the vicinity of the mineralized fracture.

At approximately 800 feet from the portal, a crosscut was driven to the southwest. At about 50 feet another and stronger vein, which probably follows a fault, was cut. This vein was explored by drifting, but because of caving only about 50 feet of the vein is now exposed; this portion strikes N. 50° E. and dips 75° S. The vein is 4 to 5 feet wide and is composed of gouge, breccia, and quartz, with scattered veinlets and small masses of pyrite and even lesser amounts of galena and sphalerite. The north wallrock is medium-grained granite; the south wallrock is mainly gneiss and schist.

Colorado Tunnel: The upper or Colorado Tunnel crosscuts a zone approximately 100 feet wide containing several small vein structures. Drifting was carried out along some of the individual veins, and a small amount of stoping has been done. The veins branch and, in general, are short and discontinuous.

The strongest fracture of the zone has been explored for about 400 feet, and in the exposed portion varies between 0.5 feet and 5 feet in width. It branches at several points, and the branches weaken rapidly.

Sulphide mineralization is scattered and scant. The strike of this fracture varies from N. 55° E. to N. 20° E., and the dip is between 75° S. and 85° N. From the limited exposure, there is indication that the wider portion of the vein and the stronger sulphide mineralization occurs where the strike is between N. 40° E. and N. 50° E.

The largest stope on this level is in the vicinity of the winze, and mining has been carried out both above and below the level. Near the winze, the vein is essentially vertical and is composed of a crushed and broken zone up to 5 feet wide. The zone contains crushed gneiss and schist, gouge, and small veinlets and sparse disseminations of pyrite, galena, and sphalerite.

At the northeastern extremity of the mine workings, the main vein widens to 2.5 feet and is composed of a series of parallel veinlets which make up approximately one-third of the vein. Quartz, pyrite, sphalerite, and galena occur in the veinlets. A small stope has been started at this point.

Smaller non-commercial veins and branches have been explored in the Colorado level. These are not continuous, and it is not safe to project them more than about 25 feet, either horizontally or vertically.

None of the structures mapped on the Amy level correspond with the fractures and veins in the Colorado level.

The wallrock on the Colorado level is mainly gneiss with some granite and small amounts of pegmatite and schist.

Hall and Helmic Tunnels: The caved Hall and Helmic Tunnels are shown on a map by P. P. B. (P. P. Barbour) dated 5-8-37 and 2-9-38. This map was obtained from Mr. Moore. The Dorothy Drift of the Hall Tunnel, at

an altitude of 8816 feet, and the Dorothy Drift of the Helmic Tunnel, at an altitude of 9136 feet, have been driven into the area below the Colorado workings. There are no veins shown in the lower Hall and Helmic levels that can be considered reasonable projections of the structures mapped on the Colorado level.

PROPOSED WORK

A crosscut, at an altitude of 9479 feet, is proposed to cut the veins below the Colorado level and above the Amy level.

The zone followed by the Amy drift would not be cut by the proposed crosscut. The stronger fault in the Amy level could, if it continued another 450 feet in a southwesterly direction, be intersected by the proposed crosscut. No prediction can be made regarding the location of the intersection and the strength of the vein, if encountered.

The stronger fault and vein on the Colorado level could be expected to continue downward to the proposed crosscut. However, it is questionable if the ore on the Colorado level would continue downward to the crosscut level. Furthermore, as seen on the Colorado level, the ore, where present, is low grade and spotty and because of these characteristics, the presence of ore at or near the proposed level cannot be reasonably predicted.

ORE RESERVES

Since no structure can be projected with any degree of certainty from one tunnel level to another, the ore reserves of each vein must be evaluated solely on showings on the separate levels.

There are no measurable ore reserves.

The indicated ore reserves will not exceed a few tens of tons of low grade ore. The indicated ore is restricted to the major vein on the Colorado level.

The inferred ore reserves will not exceed a few hundreds of tons of low grade ore.

CONCLUSIONS AND RECOMMENDATIONS

It is recommended that the application for a development loan of $65,000 by the General Mining and Development Corporation (DMA Docket 454) be denied for the following reasons:

1. The ore structures seen in the accessible workings are weak, branching, discontinuous, and cannot be projected horizontally or laterally for any reasonable distance.

2. The ore mineralization seen in the accessible workings is weak. Discontinuous veinlets and small masses of pyrite, with minor amounts of sphalerite and galena, make up only a very small percentage of the vein structure.

3. The ore mined was very low grade, and the possible ore reserves will be very low grade.

4. Past ore production was negligible.

5. Ore reserves are negligible. There is no measured ore, and the inferred ore is in the magnitude of a few hundreds of tons.

6. The history of the immediate area is not favorable. Some low grade pyritic gold ore was produced from the one described mine in the immediate area.

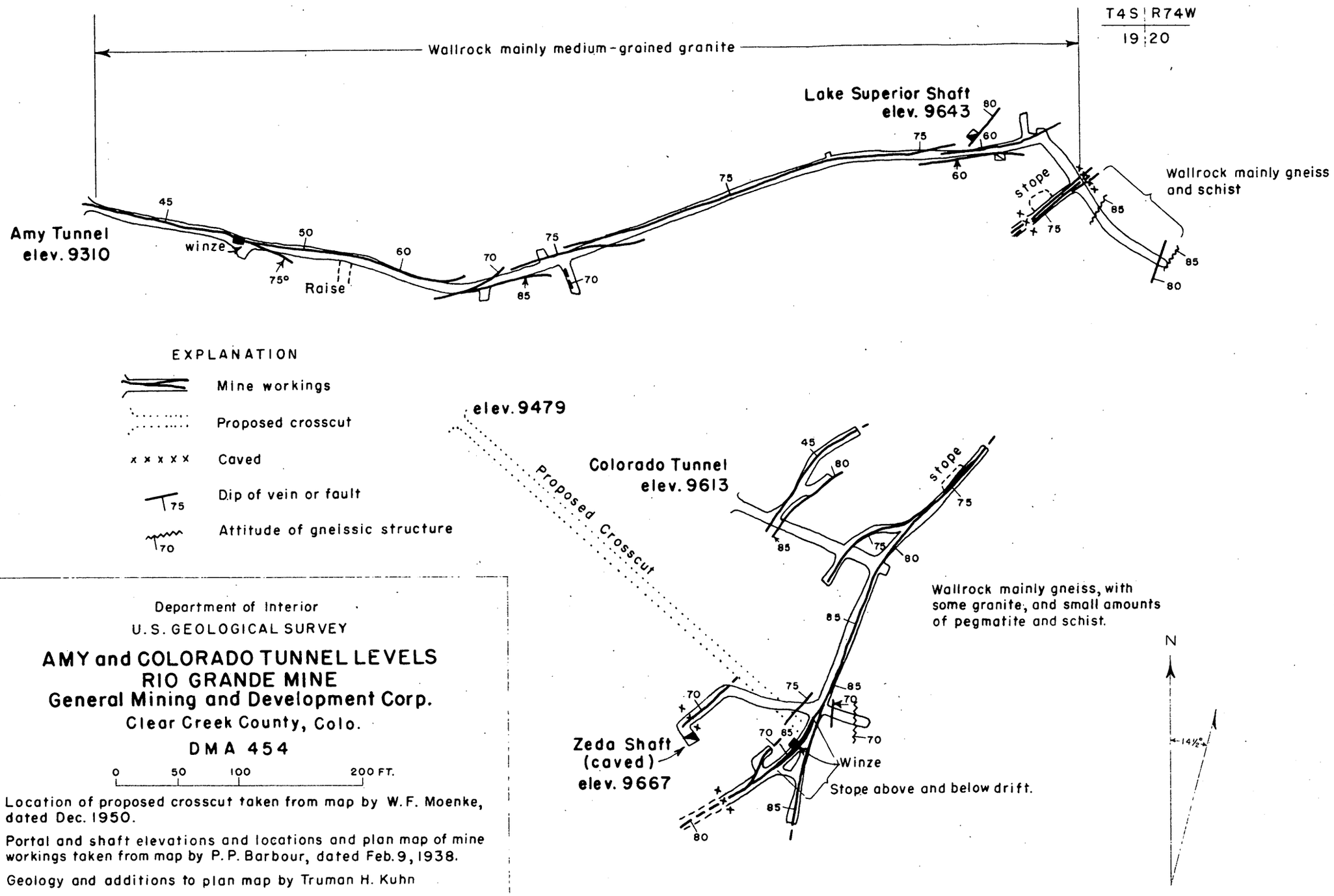
Geologic evidence does not indicate that further exploration work will find appreciable quantity of ore. If application is made for an exploration loan, it is recommended that it also be denied.

REFERENCES

Lovering, T. S., and Goddard, E. N., 1950, Geology and ore deposits of the Front Range, Colorado: U. S. Geol. Survey Prof. Paper 223, pp. 138-156.

Spurr, J. E., Garrey, G. H., and Ball, S. H., 1908, Economic geology of the Georgetown quadrangle, Colorado: U. S. Geol. Survey Prof. Paper 63, pp. 274-275.

Vanderwilt, John W., 1947, Mineral resources of Colorado: State of Colorado Mineral Resources Board, pp. 302-306.



Department of Interior
U.S. GEOLOGICAL SURVEY

AMY and COLORADO TUNNEL LEVELS
RIO GRANDE MINE
General Mining and Development Corp.
Clear Creek County, Colo.

DMA 454

0 50 100 200 FT.

Location of proposed crosscut taken from map by W.F. Moenke, dated Dec. 1950.

Portal and shaft elevations and locations and plan map of mine workings taken from map by P.P. Barbour, dated Feb. 9, 1938.

Geology and additions to plan map by Truman H. Kuhn

Truman H. Kuhn September 1951

Fig. 2

GENERAL MINING AND DEVELOPMENT CORPORATION
RIO GRANDE LEAD-ZINC-COPPER MINE
CLEAR CREEK COUNTY, COLORADO

Engineering Report

By C. M. Harrer
Mining Engineer
Bureau of Mines

GENERAL MINING AND DEVELOPMENT CORPORATION
RIO GRANDE LEAD-ZINC-COPPER MINE
CLEAR CREEK COUNTY, COLORADO

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GENERAL MINING AND DEVELOPMENT CORPORATION
RIO GRANDE LEAD-ZINC-COPPER MINE
CLEAR CREEK COUNTY, COLORADO

ENGINEERING REPORT

By

C. M. Harrer

INTRODUCTION

Examination of the Rio Grande lead-zinc-copper mine near Silver Plume, Colo., was made at the request of William B. Moore, president of General Mining and Development Corporation, in connection with a proposed development loan of $65,000.00, under the Defense Production Act of 1950, to equip the property preparatory to active mining; to drive a new level halfway between the Colorado and Amy levels, which are about 300 feet apart; and to start mining and milling ore as it is encountered.

The property was examined by the author and T. H. Kuhn, of the U. S. Geological Survey, on September 15, 1951, as Defense Minerals Administration Project 454.

ACKNOWLEDGMENTS

William B. Moore, representing the applicant company, spent most of Saturday, September 15, 1951, conducting the examining team over the property and furnished maps, smelter returns, and a report on the property by W. F. Moenke, consulting mining engineer of Denver, Colo., dated December 1950. His assistance is gratefully acknowledged.

Production statistics were furnished by the Economics Branch, Region IV, Bureau of Mines, Denver, Colo.

LOCATION, TOPOGRAPHY, AND PHYSICAL FEATURES

The property is in sec. 19, T. 4 S., R. 74 W., Griffith Mining District, Clear Creek County, Colo. (fig. 1), at altitudes ranging between 9,000 and 10,000 feet. The Colorado and Amy adit portals are on the northwest slope of Leavenworth Mountain, about 0.8 mile east of Silver Plume, on a well-graded road which once was part of the right of way of the abandoned Argentine Central Railroad. Silver Plume is on U. S. Highway 6, about 50 miles from Denver, Colo.

The terrain is steep and rugged and slopes are covered with pine and aspen. Year around operations could be maintained.

Electric power is readily available from the nearby lines of the Public Service Company of Colorado. Ample water supply is readily available from mine openings and Clear Creek.

Communication, supply, and transportation facilities are available through nearby Silver Plume and U. S. Highway 6.

HISTORY AND PRODUCTION

During 1933, the property was operated by J. Buckley, of Georgetown, Colo. During 1934-37, the property was leased to F. A. Maxwell, of Georgetown, Colo., by Buckley Brothers, of Silver Plume. Since 1947, the property has been controlled by General Mining and Development Corporation, of Georgetown, Colo.

Production statistics of the U. S. Bureau of Mines show 2,977 tons were mined and shipped partly as crude ore and partly as concentrates. The average recovered assay value, based on smelter returns, was 0.05 ounce gold and 0.71 ounce silver per ton, 0.14 percent lead, 0.19 percent zinc, and 0.008 percent copper. This includes the

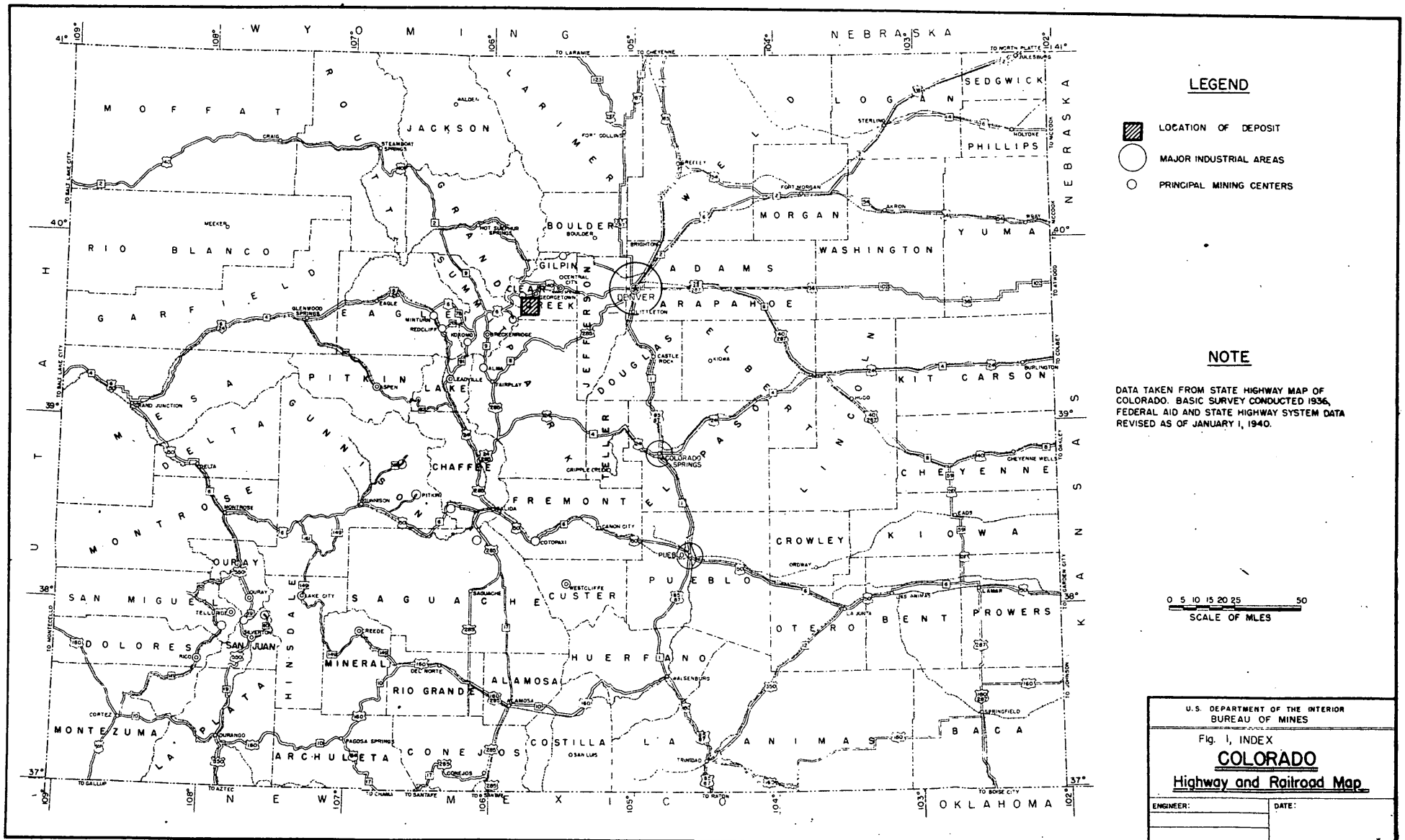

Fig. 1-GENERAL MINING & DEVELOPMENT CORP., GRIFFITH MINING DISTRICT, CLEAR CREEK CO., COLO. D.M.A.-454

production of 590 tons in 1950, which averaged a recovered 0.02 ounce gold and 0.79 ounce silver per ton, 0.24 percent lead, 0.2 percent zinc, and 0.01 percent copper.

Data on the last shipments sent to the American Smelting and Refining Company, at Leadville, are as follows:

Pounds Dry Wt.	Class	Ounces/ton Au.	Ounces/ton Ag.	Percent Pb.	Percent Cu.	Percent Zn.	Date
446	Crude	0.24	108.5	20.4	2.95	13.05	12-30-50

This crude ore was obviously very closely hand sorted.

OWNERSHIP AND EXTENT

General Mining Development Corporation controls five patented mining claims under a 5-year lease agreement with option to purchase with a 5-year renewal clause included. Royalties are scheduled at 10 percent of the net smelter returns, payable to Dorothy S. Hock and Edmund Buckley, equally.

The claims involved are:

Claim	U. S. Survey No.
Rio Grande	157
Amy	15078
Zeda	2368
Weedy	2368
Dorothy	2005-A

DESCRIPTION OF THE DEPOSITS

Ore occurs in small lenticular bodies as galena, sphalerite, chalcopyrite, and pyrite, with gold and silver, within a branching vein structure in Silver Plume granite-gneiss and has been intermittently mined in four small stull-supported stopes, both overhand and underhand, on the Colorado adit level, and in a small overhead stope on the Amy adit level, about 300 feet below.

MINABLE ORE RESERVES

Reserves are estimated at 10 tons measurable ore, 30 tons indicated, and 110 tons inferred ore. Total ore reserves are thus estimated at 150 tons averaging 0.16 ounce gold and 4 ounces silver per ton, 2.5 percent lead, and 2 percent zinc, when mined to workable stope limits. These reserves are entirely insufficient to justify a development loan on the property.

PRESENT STATUS

The Rio Grande mine is presently shut down. Recent work has been limited to roughing in an access road to the site of the proposed new adit level. The mine is accessible through the Colorado and Amy adit levels, about 300 feet apart, vertically. Only two stopes were accessible on the upper, Colorado level where clayey shear zones are exposed which enclose several veinlets of pyrite, galena, and sphalerite. These were the last source of ore, which, when very closely sorted, resulted in the small shipments of ore mentioned under "History and Production" for 1950-51. Another small showing of ore is indicated on the Amy level.

The property is equipped with a 12- x 25-foot compressor room and shop, which house a rented 250 c.f.m. Curtis air compressor. The mine has airline and track in the Colorado and track only in the Amy adit.

PROJECT PROPOSAL AND PRODUCTION PLAN

The General Mining and Development Corporation proposes to drive a new level at an altitude of 9,497 feet, halfway between the Colorado and Amy levels which are about 300 feet apart, vertically.

This new level will be advanced about 400 feet in its initial development, and is expected to reach completion in five months. Part of the initial level development is expected to be in ore. Five to six additional months are considered necessary to bring the property into regular production of 50 to 100 tons of mill ore per day. Mining would be carried on in customary, narrow vein stull stopes.

The Commonwealth flotation mill, one mile north of Georgetown, which is presently the property of the Lupton Mining Company, is subject to foreclosure by the Reconstruction Finance Corporation and is expected to be available on a lease basis. If this arrangement is not feasible, ore can probably be concentrated by local custom mills in the Georgetown-Idaho Springs area for $4.50 per ton. Crude ore can be trucked by contract to local mills for about $1.50 per ton. Concentrates can be trucked to the American Smelting and Refining Company smelter at Leadville for about $5.50 per ton.

PROPOSED FINANCING

The General Mining and Development Corporation has applied for a development loan of $65,000.00 to activate the property and hopes to repay the loan from proceeds derived from the sale of ores encountered in opening up a new level. The company is presently not in a position to develop the property on a contributing or exploration basis. This is inferred to be the chief incentive to secure a development type loan.

CONCLUSIONS

Past production records indicate that the larger masses of ore were generally very low-grade and have not proven profitable on any appreciable scale of operations.

Development on the Colorado and Amy adit levels is essentially exploratory and mining has been limited to four stope areas. Early exploration was chiefly for gold and silver.

No reserves of minable ore which would justify this application for a $65,00.00 development loan are indicated.

RECOMMENDATIONS

It is recommended that this request for a development loan of $65,000.00 by the General Mining and Development Corporation, docket DMA-454, be denied.

In addition, geologic evidence does not indicate that further exploration work will find appreciable quantities of ore.