

NEW MEXICO
BUREAU OF MINES AND MINERAL
RESOURCES

A DEPARTMENT OF THE SCHOOL OF MINES

Annual Report 3

FOR THE FISCAL YEAR JULY 1, 1947—JUNE 30, 1948
(Includes Annual Report of State Inspector of Mines)

by
E. C. ANDERSON
Director



SOCORRO
1948

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LETTER OF TRANSMITTAL

To the Honorable Board of Regents
of the New Mexico School of Mines

Gentlemen:

In compliance with the requirements of Section 3, Chapter 115 of the session laws of the 8th State Legislature, approved March 4, 1927, I submit herewith the report of the Director of the State Bureau of Mines and Mineral Resources for the fiscal year ending June 30, 1948.

In this report we have attempted to give you complete information as to the activities of the Bureau and the services rendered during the past year. Also, we present an outline of proposed activities during the coming year.

The most recent report of the State Inspector of Mines is included and made a part of this report.

Respectfully submitted,

E. C. ANDERSON,
Director.

NEW MEXICO
BUREAU OF MINES AND MINERAL
RESOURCES

E. C. ANDERSON
Director

A DEPARTMENT OF
THE SCHOOL OF MINES

E. J. WORKMAN
President

BOARD OF REGENTS

HONORABLE THOMAS J. MABRY, *Governor of New Mexico,*
ex-officio ----- Santa Fe

CHARLES L. ROSE, *Superintendent of Public Instruction,*
ex-officio ----- Santa Fe

J. H. RUSSELL, *President* ----- Santa Fe

T. M. CRAMER, *Secretary and Treasurer* ----- Carlsbad

T. E. DABNEY ----- Socorro

COOPER SHAPLEY ----- Deming

G. T. HARLEY ----- Carlsbad

BUREAU PERSONNEL

Eugene C. Anderson—Director

Robert L. Bates ¹	Chief, Oil and Gas Division
Theodore D. Benjovsky ²	Chief, Mining Division
Raymond N. Lamb	Field Petroleum Engineer
Richard C. Northup	Petroleum Geologist
Donn M. Clippinger	Mining Engineer
Philip F. McKinlay	Mining Geologist
Richard A. Matuszeski	Metallurgist and Assayer
Eugene L. Murusky ³	Office Engineer
Mrs. Marian R. Burks	Office Manager and Editor
Mrs. Betty L. Ferranti—	Assistant Office Manager and Accountant
Mrs. Carol A. Chenot	Stenographer
Mrs. Helen A. Watson	Stenographer
Charles F. Park, Jr. of Stanford University	Consultant, Basic Geology Survey
Roy L. Griggs ⁴	Geologist, Ground Water Survey
Gerth E. Hendrickson ⁴	Geologist, Ground Water Survey
Robert S. Jones ⁴	Geologist, Ground Water Survey

PART-TIME STUDENT ASSISTANTS

Milton H. Barber
 Cecil V. Coffey
 Jack H. Hunt
 Arthur S. Lees

¹ Resigned, August 1, 1947.

² Deceased, August 19, 1947.

³ Resigned, September 1, 1947.

⁴ On loan to Bureau from U. S. Geological Survey.

NEW MEXICO'S MINING INDUSTRY

A VERY GENERAL REVIEW

The year covered by this report, July 1, 1947, to June 30, 1948, saw increased activity and interest in the entire mining industry of the State, with the exception of the manganese and iron branches.

Reports received from the operators over the State indicate a very substantial overall increase in the value of the ores and minerals recovered this year as compared with the preceding like period. This increase is noted in both the metallic and nonmetallic fields.

Copper led the metallics again this year, with a gross value of \$29,875,899.08, as compared with a total reported value of \$20,404,404.95 last year. Potash production increased some 390,000 tons to show an increase in value of approximately \$3,500,000, while the production and value of pumice and scoria increased over 300 percent. Fluorspar production increased over 10,000 tons and showed a gain of over \$105,000 in value.

Coal production decreased slightly in tonnage but the value of the coal sold increased over \$700,000.

Employment in the industry showed an increase of 471 persons over the preceding year. Also payrolls were increased very substantially.

The total value of production for the period amounted to \$92,693,429.64, as compared with \$75,160,232.23 for the preceding year.

Expenditures for plant improvements and new equipment amounted to \$3,080,258, an increase of \$1,202,288 over last year.

Much new prospecting is going on and a large number of old mines and prospects are being reopened for more careful examination. At least two new companies have been drilling in the potash fields, and indications are that new development and production will come into the picture during the next year.

Several out-of-state firms have requested information regarding our coal deposits and two companies have had representatives in the State.

At the close of the year the production of perlite is at last becoming a reality, and the operators are predicting a very rapid and healthy growth for that industry.

NEW MEXICO BUREAU OF MINES AND MINERAL RESOURCES

GENERAL STATEMENT

The Bureau of Mines and Mineral Resources entered the 36th fiscal year with total appropriations by the legislature amounting to \$70,000, and anticipated an income of \$4,000 from the sale of publications and services during the year.

Of the monies appropriated, \$10,000 was earmarked for ground water investigations and geological surveys, and \$10,000 was for basic geological surveys and mapping in the igneous, intrusive, and volcanic areas of the State. The remaining \$50,000 was for general use by the Bureau in carrying through projects and work already underway and the activating of new work.

The Bureau budgets as approved by the State Board of Finance called for the expenditure of approximately \$40,000 for salaries, and \$30,000 for printing and publishing, office rental and supplies, field expenses, and other miscellaneous items necessary to the operation of the Bureau.

At the beginning of the year there were five projects underway, two projects planned and ready to activate as soon as funds became available, and three projects in the process of being planned.

The projects underway were:

1. The report on pumice in New Mexico and its uses as a light-weight concrete aggregate. This report was completed and released as Bulletin 28 early in October 1947.

2. The so-called "Clay Project"—an examination and study of the clay deposits of the State to determine their suitability and availability for the ceramics industry, the petroleum industry, the building and other industries using clay. This project has developed into a job of unexpected magnitude.

3. The New Mexico oil and gas production report for the entire State, exclusive of Lea County, was being compiled by our Artesia office personnel in cooperation with the Conservation Commission. This report was completed and released as Circular 16 in September.

4. The "Caprock Pool Statistical Report," giving statistical data on well drillings, well completions, and production in the Caprock Pool area of Lea and Chaves counties, was also being prepared in cooperation with the State Oil Conservation Commission. This report was released in January as Circular 17.

5. The corrosion studies which were begun in 1946 were being continued. The Bureau's part in these studies is principally that of a service agency devoted to collecting, compiling, and releasing information regarding corrosion problems and what is being done to overcome them in the oil fields.

The two projects ready for activating were:

(1) The Ground Water Survey—a cooperative project with the U. S. Geological Survey, and (2) the Basic Geological Survey—also a cooperative undertaking with the U. S. Geological Survey.

Both these surveys are long-range projects and have been planned as such. It is hoped the increased funds for these works can be had from the 19th Legislature so the work may be speeded up. The ground water situation in the State is rapidly becoming acute, while the need for general basic geological mapping of our old mining districts has long been recognized.

Both these projects were activated last summer as scheduled. The ground water investigations are being carried out under the direct supervision of Dr. C. V. Theis, Regional Geologist, Ground Water Division of the U. S. Geological Survey, and we were fortunate in securing the services of Dr. Charles F. Park, Jr., Professor of Geology at Stanford, and former Chief of the Metals Section, U. S. Geological Survey, in helping plan the basic geological project and in supervising the work in the field the first season. Dr. Park has agreed to continue as consultant on this project and will give us whatever time he can spare in actual field work.

In the ground water survey, field work has been completed in San Miguel County and is nearing completion in Eddy County. A Colfax County report, prepared by the U. S. Geological Survey and the State Engineer's Office, at the request of the City of Raton and the Colfax County Commissioners, will be published by the Bureau. The San Miguel County report is being completed and will be published at an early date.

The first field season in the basic geology work resulted in a brief report on the Red River and Twining districts which has been released as Circular 18. This report is strictly preliminary and will be included in a broader and more detailed report to be released following a second season in the field.

Other projects planned for the year were:

1. The mapping of the western slope of the Sacramento Mountains.

2. The revision of Bulletin 7, "The Metal Resources of New Mexico and their Economic Features."

3. The revision of Bulletin 23, "Stratigraphy and Oil-producing Zones of the Pre-San Andres Formations of Southeastern New Mexico—A Preliminary Report," which was released in 1945.

COOPERATION WITH OTHER STATE AGENCIES

The year saw the Bureau working very closely at all times with the State Oil Conservation Commission and the State Land Office. Cooperation was also given the State Planning Board, the State Tourist Bureau, and the State Tax Commission. The State Inspector of Mines department became very closely associated with the Bureau, an arrangement that has been mutually beneficial.

The Bureau cooperated with the U. S. Bureau of Mines and the U. S. Geological Survey, also with the Atomic Energy Commission and other Federal agencies.

PERSONNEL

During the year the personnel of the Bureau changed very materially. T. D. Benjovsky, chief of the mining section, died in August. Robert L. Bates, chief of the oil and gas section, resigned the first of August to take a teaching position. E. L. Murusky resigned September 1 to attend school. Philip McKinlay was employed as geologist on the new Basic Geology project, and Dr. Charles F. Park, Jr., of Stanford University was employed as a consulting and part-time chief geologist in the same project. R. L. Griggs, R. S. Jones, and G. E. Hendrickson were borrowed from the Ground Water Section of the U. S. Geological Survey and employed on ground water studies and geologic mapping. These men have not been employed continuously because of transfers in the service. At the end of the year only Hendrickson was on the payroll.

REPORT OF THE OIL AND GAS SECTION

SUBSURFACE GEOLOGY

The Bureau's files of well cuttings and plotted sample logs were considerably increased during the year. On July 1, 1948, cuttings from 1,539 wells were on hand, representing an increase of 163 wells over the preceding year. On the same date, 423 plotted sample logs were available, as compared to 280 on July 1, 1947, an increase of 143. The cuttings, mostly from wildcat tests, were examined under a binocular microscope and then plotted in graphic form on log strips. They represent a total of more than 370,000 feet in footage drilled. An effort was made to obtain samples from all wildcat tests drilled in New Mexico

during the year and, with only two or three minor exceptions, cuttings were received from all. No important tests were missed. A tabulation of plotted log strips on file is given below.

<i>State</i>	<i>Number</i>
New Mexico -----	382
Arizona -----	6
Colorado -----	13
Oklahoma -----	5
Texas -----	14
Utah -----	3
Total -----	423

The majority of the samples received reach the Bureau through the Hobbs Sample Cut, which covers all important wells drilled in southeastern New Mexico. In addition, a few wildcats in central and northeastern New Mexico are handled by the Amarillo Sample Cut Service. During the past year, samples from seven wildcats were obtained through this agency. A few operators forward samples directly from the wells as they are being drilled. In return for this consideration, the Bureau is glad to furnish the operator with a copy of the sample description at no cost. Upon completion of the well, the samples are forwarded to Hobbs for general distribution. Due to the growing interest in the San Juan Basin and the increase in wildcat activity there, a new sample cut for the Four Corners area was started in Farmington in June 1948. At present it is being sponsored by nineteen independent and major oil companies, in addition to the State Bureau of Mines, and is affording excellent service as a non-profit organization.

The mimeographed list of well samples, issued in 1947, was revised as of May 1. Additions will continue to be made from time to time.

The plotted log strips have become more and more in demand by geologists, as the amount of wildcat information at the Bureau has increased. By means of these strips, subsurface correlations between wells can be made, and they are an aid in the interpretation of structure and stratigraphy.

Electric logs are also very useful in providing subsurface data, and when available afford a good check on sample descriptions. In brief, these logs are recorded by lowering an electrode into a well, which measures the potential and electrical resistivity of the various strata. Through the efforts of the Artesia office, a small number of these electric logs are being acquired.

PUBLICATIONS

Two circulars were issued late in 1947. Circular 16, "New Mexico Oil and Gas Production Data for 1946 (Exclusive of Lea

County)," is a statistical report prepared by the Bureau's Artesia office in cooperation with the New Mexico Oil Conservation Commission. Circular 17, "Caprock Pool Statistical Report, Chaves and Lea Counties, New Mexico," was also compiled with the Conservation Commission as a service to the Caprock operators. It includes production statistics and bottom hole pressure and completion data for all wells within the pool. Both of these circulars are much in demand by oil operators. The production figures for the San Juan Basin as given in Circular 16 are the first to be compiled by the State.

E. Russell Lloyd, geologist of Midland, Texas, is engaged in the revision of Bulletin 23, "Stratigraphy and Oil-producing Zones of the Pre-San Andres Formations of Southeastern New Mexico—A Preliminary Report," prepared in 1945 by Robert E. King. Bureau personnel has been assisting by furnishing sample logs and measured geologic sections west of the Sacramento Range. When released, the revised bulletin will contain geologic information on the new deep producing areas in southeastern New Mexico, as well as wildcat data on deep tests in Lea, Eddy, and Chaves counties. Release of this report is expected early in 1949.

MISCELLANEOUS ACTIVITIES

As a service organization, it is the policy of the Bureau to be of as much help as possible to both major and independent oil companies. Between the Socorro and Artesia offices, it is represented at meetings of the Lea County Operators Committee, the New Mexico Nomenclature Committee, and the New Mexico Oil Conservation Commission. Bureau representatives attend meetings of the Geological Society of New Mexico, and the annual meetings of the American Association of Petroleum Geologists. The Bureau is also represented on the Engineering Committee of the Interstate Oil Compact Commission.

VISITORS

A total of 112 persons called at the Bureau offices during the year for information on oil and gas activity in the State. These visitors included major company geologists, consulting geologists, businessmen, and college students majoring in geology. They discussed geological problems; ran samples; purchased bulletins, maps, and drillers' logs; and examined the file of plotted log strips.

ARTESIA OFFICE

The engineering branch of the oil and gas section continued to work with the oil operators and engineering committees in compiling data on corrosion, secondary recovery, and oil and gas

production. A discussion of corrosion problems in the oil fields of Eddy County was prepared for the Lea County Operators Committee. A production report for 1946, covering the entire State excepting Lea County, was prepared and released. A similar report for 1947, including Lea County, is in preparation. Because of the size of this report it will be published in two sections. This report is being compiled in cooperation with the State Oil Conservation Commission and the Lea County Operators Committee. It will be very complete.

Secondary recovery of oil in New Mexico is receiving more and more attention, and the Bureau is cooperating in every possible way in the collection and compilation of information and data that may be of assistance to the operators, and guide them in their efforts. The "Caprock Pool Statistical Report" was prepared for this purpose, and a similar report covering the West Eunice Pool is in preparation.

The cooperative secondary recovery project in the Artesia Pool has not developed as planned, but is still in the picture.

The Bureau is represented, through the Artesia office, on most of the petroleum industry's operating and engineering groups, among them the Lea County Operators Committee, the American Petroleum Institute, the Engineering Committee of the Interstate Oil Compact Commission, and the New Mexico Nomenclature Committee. In serving with these various groups, the Bureau representative has been able to be of much assistance to the industry.

REPORT OF THE MINING SECTION

SERVICES

The functions of the mining section may be presented by the following outline of services performed.

1. Investigations and reports covering mining districts and areas, and mineral deposits; reports published as bulletins and circulars.

2. Collection and distribution of statistics relating to the mineral industry.

3. Identifications and analyses (qualitative, quantitative, and spectrographic) of mineral specimens and samples sent to the Bureau. A laboratory flash-type perlite expanding furnace has been set up and expansion tests on perlites are made. With the cooperation of the petroleum department of the New Mexico School of Mines, rotary drill mud analyses and tests are now performed.

4. Preliminary examinations of, and reports on, properties and prospects for small operators.

5. Miscellaneous services, such as the collection of samples of clay, perlite, pumice, and gypsum from deposits of commercial possibilities; field conferences with small operators; and the showing of New Mexico deposits to out-of-state investors.

PERSONNEL

At the beginning of the fiscal year the personnel consisted of one full-time mining engineer, one field engineer, one office engineer, one metallurgist and assayer, and one student assistant. The death of the mining engineer in August and the resignation of the office engineer the first of September decreased the personnel. Two full-time employees and one student assistant are now engaged by the Bureau.

PROJECTS

A report on pumice aggregate in New Mexico was completed and issued as Bulletin 28.

Work on clays of the State was continued throughout the year. Samples are being gathered and their physical properties determined. Chemical analyses are being made in order to catalog them for various ceramic and non-ceramic uses. Rotary drill mud analyses and performance tests are being run on bentonitic clays to determine their suitability as drilling muds.

Mineral exhibits were distributed early in the fall to the 40 high schools that had not received them during the spring of the previous year. In addition, 28 small mineral collections were sent to school children requesting such material for science study. Most of these collections were sent to out-of-state students interested in the minerals of New Mexico.

ASSAYS AND ANALYSES

The assays and analyses performed this year increased nearly threefold over the previous year. A total of 1,018 samples were received during the year. Identifications, analyses, and assays performed totaled 2,130 and were classified as follows:

Paid Assays and Analyses *	
<i>Description</i>	<i>Number</i>
Assay	39
Quantitative	18
Total	57

* Income from analytical work included under section on Receipts and Disbursements in report of Business Office.

Free Assays and Analyses	
Assay -----	732
Miscellaneous -----	112
Qualitative -----	465
Quantitative -----	733
Spectrographic -----	31
Total -----	2,073

REPORTS OF EXAMINATIONS

During the year the mining section prepared 14 reports on prospects and small operations located throughout the State, classified as follows:

Barite

Preliminary examination of property of American Fluorspar Group, Incorporated, Socorro County.

Clay

Ceramic and fire clays of Gallup, New Mexico, and vicinity, McKinley County.

Clay deposit, Sierra County.

Deposits sampled in the vicinity of Placitas, Sandoval County.

Examination of clays for Mountain Public Schools, Bernalillo County.

Ramsey and Gunnell-Schneider claims, Sierra County.

Coal

Beds in San Juan Basin suitable for strip mining.

Copper

Robinson claims in the "Red Bed" copper deposits, Scholle Mining District, Valencia County.

Gold

Glory Hole mine, Bartolo Canyon, Valencia County.

Lead

Preliminary mine examination of the Old Soldier claims, Socorro County. Recent activity in the Hansonburg District, Socorro County.

Pumice

Occurrence near Mule Creek, Grant County.

Pumice and perlite in central Catron County.

Silver

Prospector's Delight mine, Sierra County.

BASIC GEOLOGY

The first basic geologic project was started on July 27, 1947, in the Red River and Twining districts of the Sangre de Cristo Mountains, Taos County. A total of six men worked on the project at various periods throughout the year. A two-man field party spent three months doing detailed mapping and studying the mineralization around the town of Red River. The geological work included mapping of the various rock units, examination of all prospects and mines encountered, and the giving of general as-

sistance to individuals and corporations interested in development of mineral resources in the Sangre de Cristo Mountains. Over 50 thin sections of rocks from the area were made and examined.

The following tabulation shows the accomplishments of the first season's field work.

Mining corporations contacted	2
Interested individuals and prospectors contacted	25
Mining properties and claims examined	48
Maps made of open prospects and old mines	8
Assays made	*

During the winter months the Bureau geologist prepared the field data for publication. Descriptions of the mining properties were written and a map prepared showing the location of the prospects. On April 29, 1948, the Bureau released Circular 18, "Geology and Ore Deposits of Red River and Twining Districts, Taos County, New Mexico." This circular is only a preliminary report. Corrections and additions will be included in reports to be issued in subsequent years.

As one of the main purposes of the geological mapping is to outline areas where ore deposits may occur, plans are now in progress for a more detailed examination of the most encouraging locations.

VISITORS AND INQUIRIES

The offices of the mining section were visited by a total of 240 persons interested in various phases of the mineral industries, present and future, within the State. Of these persons, approximately 20 percent were from other states; the remainder were New Mexico residents. Over 1,100 letters of inquiry were answered, representing a volume equal that of the preceding year.

REPORT OF THE EDITOR OF PUBLICATIONS

INTRODUCTION

One bulletin and three circulars were published during the year, making a total of 28 bulletins and 18 circulars printed by the Bureau to date.

BULLETIN ISSUED

Bulletin 28, entitled "Pumice Aggregate in New Mexico—Its Uses and Potentialities" by Donn M. Clippinger and Walter E. Gay, was released on October 10, 1947. The report contains 56 pages, with 18 plates and 5 figures. The demand for this bulletin has been very satisfactory, and it has contributed largely to the development of the pumice industry in the State.

* Included with assays under Assays and Analyses.

CIRCULARS ISSUED

Circular 16, "New Mexico Oil and Gas Production Data for 1946 (Exclusive of Lea County)," compiled by N. Raymond Lamb of the Artesia office and W. B. Macey of the New Mexico Oil Conservation Commission, was ready for distribution on September 20, 1947.

Circular 17, "Caprock Pool Statistical Report, Chaves and Lea Counties, New Mexico," also compiled by N. Raymond Lamb and William B. Macey, was released January 30, 1948.

Circular 18, a mimeographed report entitled "Geology and Ore Deposits of Red River and Twining Districts, Taos County, New Mexico—A Preliminary Report" by Charles F. Park, Jr. and Philip F. McKinlay, was completed April 29, 1948. This circular was prepared in cooperation with the U. S. Geological Survey.

PUBLICATIONS IN PREPARATION

A supplementary report to Bulletin 23, "Stratigraphy and Oil-producing Zones of the Pre-San Andres Formations of South-eastern New Mexico—A Preliminary Report," is being prepared by E. Russell Lloyd, geologist of Midland, Texas.

Revision to date of Bulletin 7, "The Metal Resources of New Mexico and their Economic Features," published in 1933, is underway by Professor A. J. Thompson, Head of the Department of Mining and Metallurgy of the New Mexico School of Mines.

Circular 19-A, "New Mexico Oil and Gas Statistical Data for 1947," is in preparation by N. Raymond Lamb and the Lea County Operators Committee.

Circular 19-B, "New Mexico Oil and Gas Engineering Data for 1947," is also being compiled by N. Raymond Lamb and the Lea County Operators Committee.

The New Mexico Oil Conservation Commission will assist the Bureau in the printing of both these circulars.

REPORT OF THE BUSINESS OFFICE

INTRODUCTION

The routine duties of the business office consist of typing reports and general correspondence for the director and the mining and oil and gas sections of the Bureau; typing manuscripts; filling orders for reports, bulletins, well logs, and maps; registering visitors; recording analytical work; copying drillers' logs; and keeping mining and oil-well data up to date.

Additional duties performed during the year were the indexing of publications received by exchange with college libraries and state geological surveys, and the keeping of a set of books.

The personnel consists of an office manager, an assistant office manager who acts as librarian and bookkeeper, and a stenographer. Part-time help is employed when needed.

CORRESPONDENCE

A total of 3,164 letters were answered for the year. Of this number 430 were written by the director, 549 by the mining section, 440 by the oil and gas section, and 1,745 by the business office. Correspondence was exchanged with 46 states and 15 foreign countries. A classification of these letters follows:

<i>Mining</i>		<i>Oil and Gas</i>	
General letters -----	590	General letters -----	141
Inquiries -----	455	Inquiries -----	65
Letters of transmittal -----	786	Letters of transmittal -----	1,045
Assay letters -----	82		
Total -----	1,913	Total -----	1,251

SALES

Sales of bulletins and maps increased over last year. Eighty-eight more bulletins and 95 more maps were sold. There was a decrease of 1,335 in the number of well logs sold. Income from the following tabulation of sales is shown under the section on Receipts and Disbursements.

<i>Classification</i>	BULLETINS	<i>Number Sold</i>
New Mexico Bureau of Mines and Mineral Resources:		
Geology, paleontology, and miscellaneous ¹ -----		1,003
Ore deposits and mineral resources ² -----		442
Oil and gas ³ -----		461
U. S. Geological Survey -----		212
Others -----		82
Total -----		2,200
MAPS		
New Mexico Bureau of Mines and Mineral Resources -----		68
U. S. Geological Survey -----		1,270
Others -----		65
Total -----		1,403
WELL LOGS		
To companies on regular monthly order -----		754
In odd lots on special order -----		1,772
Total -----		2,526

¹ Includes Bulletins 14, 16, 17, 22, 24, 26, 27, 28.

² Includes Bulletins 7, 8, 10, 11, 12, 13, 15, 19, 21, 25.

³ Includes Bulletins 18 and 23.

FREE DISTRIBUTION OF PUBLICATIONS

Circulars and annual reports published by the Bureau are distributed free of charge. The total number of these publications distributed during the year was 3,075, an increase of 647 over the preceding year. A total of 464 annual reports of the State Inspector of Mines were distributed from this office.

The free mailing list maintained by the Bureau had a total of 340 names as of June 30. The list consists of names of State officials, members of the Board of Regents, Chambers of Commerce, college libraries, state geological surveys, public libraries, magazines, and government agencies. The college libraries and state geological surveys have an exchange service with the Bureau.

At the end of the fiscal year 1,102 bulletins and 60 maps had been distributed. This distribution also included additional requests from libraries, public institutions, and government agencies. There was a decrease of 1,570 in free distribution from last year. This is due to the fact that fewer publications were issued this year.

The notification list, consisting of names of individuals, companies, and State high schools notified of new Bureau publications, contained 757 names at the end of the year. These are in addition to the free and exchange mailing lists.

FINANCIAL STATEMENT

The Comptroller of the School of Mines, under whose supervision Bureau finances are handled, submits the following statement.

RECEIPTS AND DISBURSEMENTS

State Bureau of Mines

Receipts:

Carry-over from fiscal year, 1946-1947	\$ 2,125.61*
Legislative appropriation	50,000.00
Receipts from sales of bulletins, etc.	3,585.94
TOTAL	\$51,460.33

Disbursements and Commitments:

Salaries and miscellaneous labor	\$32,553.34
Travel and per diem	3,177.67
Publicity and publications (actual and commitments)	3,522.62
Rental and services	3,526.40
Office supplies, etc.	604.59
Laboratory and scientific supplies	1,076.04
Operation of cars	2,353.42
Miscellaneous (telephone, telegraph, postage, insurance, freight, express, library, etc.)	3,708.01
TOTAL	\$50,522.09

* Represents actual carry-over of outstanding commitments.

ANNUAL REPORT

Carry-over from fiscal year, 1947-1948 -----	938.24
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TOTAL -----	\$51,460.33
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Basic Geology and Ground Water Surveys

Receipts:

Legislative appropriation -----	\$20,000.00
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Disbursements and Commitments:

Salaries and miscellaneous labor -----	\$12,627.75
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Travel and per diem -----	2,526.84
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Printing and publishing -----	215.80
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Operation of cars -----	108.52
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Miscellaneous (telephone, telegraph, postage, freight, camping equipment, etc.) -----	1,378.56
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TOTAL -----	\$16,857.47
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Carry-over from fiscal year, 1947-1948 -----	3,142.53
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TOTAL -----	\$20,000.00
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BUDGETS FOR FISCAL YEAR 1948-1949

State Bureau of Mines

Receipts:

Actual carry-over from fiscal year, 1947-1948 -----	\$ 938.24
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Actual legislative appropriation -----	50,000.00
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Estimated from sales of bulletins, etc. -----	3,700.00
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Estimated from other services, assays, etc. -----	300.00
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TOTAL -----	\$54,938.24
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Proposed Disbursements:

Salaries and miscellaneous labor -----	\$31,900.00
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Travel and per diem -----	3,000.00
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Publicity and publications -----	4,500.00
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Rental and services -----	4,350.00
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Office supplies, etc. -----	600.00
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Laboratory and scientific supplies -----	2,200.00
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State retirement -----	850.00
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Resale supplies -----	1,000.00
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Operation of cars -----	1,500.00
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Miscellaneous (telephone, telegraph, postage, insurance, freight, express, library, audit, special surveys, etc.) -----	4,100.00
--	----------

TOTAL -----	\$54,000.00
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Estimated carry-over from fiscal year, 1948-1949 -----	938.24
--	--------

TOTAL -----	\$54,938.24
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Basic Geology and Ground Water Surveys

Receipts:

Actual carry-over from fiscal year, 1947-1948 -----	\$ 3,142.53
---	-------------

Actual legislative appropriation -----	20,000.00
--	-----------

TOTAL -----	\$23,142.53
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Proposed Disbursements:

Salaries and miscellaneous labor -----	\$11,450.00
Travel and per diem -----	1,800.00
Printing and publishing -----	1,500.00
Operation of cars -----	100.00
Special equipment and supplies -----	3,448.00
Miscellaneous (telephone, telegraph, postage, freight, camping equipment, etc.) -----	4,150.00
TOTAL -----	\$22,448.00
Estimated carry-over from fiscal year, 1948-1949 -----	694.53
TOTAL -----	\$23,142.53

INVENTORY FOR FISCAL YEAR 1947-1948

Bulletins and resale materials -----	\$15,520.05
Office furniture and supplies -----	8,579.90
Laboratory equipment and supplies -----	3,148.91
Miscellaneous (including cars) -----	6,186.46
TOTAL -----	\$33,435.32
Inventory for fiscal year, 1946-1947 -----	30,914.16
INCREASE -----	\$ 2,521.16

PUBLICITY

The Bureau continued its efforts throughout the year to publicize the natural resources of the State. This was done by distribution of publications; by notices of release of new bulletins and circulars; through correspondence; by release of news items and articles written for various journals and magazines; and by the attendance of Bureau representatives at meetings of the mining and oil and gas associations and societies.

Delivery of mineral collections presented by the Bureau to all the high schools in the State, a project started last spring, was completed in October. Some collections were also delivered to Chambers of Commerce and to dude ranches.

The Bureau displayed its fourth exhibit of New Mexico ores and minerals at the State Fair in Albuquerque. The exhibit was larger and of greater interest than in previous years, due principally to a display of fluorescent minerals and prize ore specimens and operational pictures loaned by many of the mine operators of the State. The oil companies also contributed to the display of the oil and gas section.

A brief summary of the activities of the Bureau is published in the *New Mexico Miner and Prospector* each month.

CONCLUSIONS

The Bureau has been of greater service to the mining and petroleum industries of the State during the past year than during any other like period of its existence. This is evidenced by the increased number of assays and quantitative analyses made; the number of specimens and samples received for identification or qualitative analyses; the number of letters received and written; the bulletins and circulars released and sold; and the number of callers seeking information.

The Bureau has been instrumental in bringing at least three new industries to the State and has assisted in the expansion of many others. We have assisted in the investigation of sources of raw materials and a site for a cement plant which is expected to materialize during the coming year. We have spent days in the field with out-of-state people interested in the possibilities for strip coal mining operations, and have assisted others in their search for clay deposits with commercial possibilities.

It has been a very full year for the Bureau.

PLANS FOR THE COMING YEAR

Eight uncompleted projects are being carried into the new year. They are:

1. The clay survey.
2. The revision of Bulletin 7.
3. The revision of Bulletin 23.
4. The Sacramento Mountains geological survey.
5. The Basic Geological survey.
6. The Ground Water survey.
7. The oil and gas production report for 1947.
8. The "West Eunice Pool Statistical Report," which is expected to be a guide for secondary recovery efforts in that pool area.

Of these eight projects, all except the Basic geology and the Ground Water surveys are scheduled for completion and release before July 1, 1949.

The plans for the coming year include the continued acquisition of oil-well samples, the logging of wells, and the plotting of sections; as well as the usual service to the prospector and the small operator, also service to State and Federal agencies.

NEEDS OF THE BUREAU

The greatest needs of the Bureau at this time are:

1. Adequate office space and facilities.
2. Adequate laboratory space and facilities.

It is hoped that funds will be made available to the Bureau for taking care of these needs.

APPENDIX

PUBLICATIONS

PUBLICATIONS OF THE MINERAL RESOURCES SURVEY

<i>No.</i>	<i>Title and Author</i>	<i>Date</i>	<i>Price</i>
1	The Mineral Resources of New Mexico; Fayette A. Jones -----	1915	Out of print
2	Manganese in New Mexico; E. H. Wells-----	1918	Out of print
3	Oil and Gas Possibilities of the Puertecito District, Socorro and Valencia Counties, New Mexico; E. H. Wells -----	1919	Out of print

PUBLICATIONS OF THE NEW MEXICO BUREAU OF MINES AND MINERAL RESOURCES

BULLETINS

<i>No.</i>	<i>Title and Author</i>	<i>Date</i>	<i>Price</i>
4	Fluorspar in New Mexico; W. D. Johnston, Jr. (Superseded by Bulletin 21) -----	1928	Out of print
5	Geologic Literature of New Mexico; T. P. Wootton (Superseded by Bulletin 22) -----	1930	Out of print
6	Mining and Mineral Laws of New Mexico; Charles H. Fowler (Superseded by Bulletin 16) -----	1930	Out of Print
7	The Metal Resources of New Mexico and their Economic Features; S. G. Lasky and T. P. Wootton -----	1933	.50
8	The Ore Deposits of Socorro County, New Mexico; S. G. Lasky -----	1932	.60
9	The Oil and Gas Resources of New Mexico; Dean E. Winchester (First edition; superseded by Bulletin 18) -----	1933	Out of print
10	The Geology and Ore Deposits of Sierra County, New Mexico; G. Townsend Harley --	1934	.60
11	The Geology of the Organ Mountains, with an Account of the Geology and Mineral Resources of Dona Ana County, New Mexico; Kingsley Charles Dunham -----	1935	1.00
12	The Non-Metallic Mineral Resources of New Mexico and their Economic Features (Exclusive of Fuels); S. B. Talmage and T. P. Wootton -----	1936	.50
13	Geology and Economic Features of the Pegmatites of Taos and Rio Arriba Counties, New Mexico; Evan Just -----	1937	.50
14	Some New Mexico Fusulinidae; C. E. Needham -----	1937	.50
15	The Geology and Ore Deposits of Northeastern New Mexico (Exclusive of Colfax County); G. Townsend Harley -----	1940	.60

PUBLICATIONS

16	Mining, Oil, and Mineral Laws of New Mexico; C. H. Fowler and S. B. Talmage (Supersedes Bulletin 6) -----	1941	.75
17	Pennsylvanian System in New Mexico; M. L. Thompson -----	1942	.50
18	The Oil and Gas Resources of New Mexico; compiled by Robert L. Bates (Second edition; supersedes Bulletin 9) -----	1942	2.50
19	Manganiferous Iron-ore Deposits near Silver City, New Mexico; Lawson P. Entwistle ----	1944	.50
20	Stratigraphy of the Colorado Group, Upper Cretaceous, in Northern New Mexico; Charles H. Rankin -----	1944	Out of print
21	Fluorspar Resources of New Mexico; H. E. Rothrock, C. H. Johnson, and A. D. Hahn. (Supersedes Bulletin 4) -----	1946	2.50
22	Geologic Literature of New Mexico Through 1944; Robert L. Bates and Marian R. Burks (Supersedes Bulletin 5) -----	1945	.30
23	Stratigraphy and Oil-producing Zones of the Pre-San Andres Formations of Southeastern New Mexico—A Preliminary Report; Robert E. King -----	1945	.50
24	Building Blocks from Natural Lightweight Materials of New Mexico; Donn M. Clippinger -----	1946	.50
25	Mica Deposits of the Petaca District, Rio Arriba County, New Mexico, with Brief Descriptions of the Ojo Caliente District, Rio Arriba County, and the Elk Mountain District, San Miguel County; Richard H. Jahns -----	1946	2.00
26	Geology of the Gran Quivira Quadrangle, New Mexico; Robert L. Bates, Ralph H. Wilpolt, Archie J. MacAlpin, and Georges Vorbe -----	1947	.60
27	Contributions of New Mexico's Mineral Industry to World War II; compiled by T. D. Benjovsky -----	1947	.50
28	Pumice Aggregate in New Mexico — Its Uses and Potentialities; Donn M. Clippinger and Walter E. Gay -----	1947	1.00

CIRCULARS

1	An Outline of the Mineral Resources of New Mexico; E. H. Wells -----	1930	Out of print
2	Geology and Ore Deposits of the Ground Hog Mine, Central District, Grant County, New Mexico; S. G. Lasky -----	1930	Out of print
3	First, Second, and Third Annual Reports of the Director, and Preliminary Report for the Fourth Year; E. H. Wells -----	1931	Out of print

4	The Hobbs Field and Other Oil and Gas Areas, Lea County, New Mexico; Dean E. Winchester -----	1931	Out of print
5	Gold Mining and Gold Deposits in New Mexico; E. H. Wells and T. P. Wootton, 1932; revised by T. P. Wootton -----	1940	No charge
6	Carbon Dioxide in New Mexico; E. H. Wells and A. Andreas (Superseded by Circular 9) -----	1938	Out of print
7	Outlook for Further Ore Discoveries in the Little Hatchet Mountains, New Mexico; S. G. Lasky -----	1940	Out of print
8	Selected Bibliography on Coal in New Mexico; Robert L. Bates -----	1943	No charge
9	Carbon Dioxide in New Mexico; Sterling B. Talmage and A. Andreas (Reprinted from Bulletin 18) -----	1942	No charge
10	Natural Light-weight Building-block Materials of New Mexico; T. D. Benjovsky and D. M. Clippinger -----	1945	Out of print
11	Reconnaissance Survey of the Headstone Mining District, Rio Arriba County, New Mexico; T. D. Benjovsky -----	1945	No charge
12	Future Oil Possibilities of New Mexico; Robert L. Bates -----	1946	No charge
13	Compilation of State Tax Law Relating to Mineral Properties in New Mexico; E. P. Ripley -----	1946	No charge
14	Oil and Gas Production Data, Eddy County, New Mexico, 1943-1945; compiled by N. Raymond Lamb and W. B. Macey -----	1947	Out of print
15	Tables of Fluorescent and Radioactive Minerals; compiled by Robert L. Hershey -----	1947	No charge
16	New Mexico Oil and Gas Production Data for 1946 (Exclusive of Lea County); compiled by N. Raymond Lamb and W. B. Macey -----	1947	No charge
17	Caprock Pool Statistical Report, Chaves and Lea Counties, New Mexico; compiled by N. Raymond Lamb and William B. Macey -----	1947	No charge
18	Geology and Ore Deposits of Red River and Twining Districts, Taos County, New Mexico—A Preliminary Report; Charles F. Park, Jr. and Philip F. McKinlay -----	1948	No charge

ANNUAL REPORT

1	For the Fiscal Year July 1, 1945 - June 30, 1946; E. C. Anderson -----	1946	No charge
2	For the Fiscal Year July 1, 1946-June 30, 1947 (includes Annual Report of State Inspector of Mines); E. C. Anderson -----	1947	No charge

PUBLICATIONS

- 3 For the Fiscal Year July 1, 1947-June 30, 1948
(includes Annual Report of State Inspector of
Mines); E. C. Anderson ----- 1948 No charge

OIL AND GAS MAP

- Oil and Gas Map of New Mexico; Dean E.
Winchester, 1931; revised by Robert L. Bates
to July, 1942. Scale about 16 miles to 1 inch.
(This map is included in Bulletin 18.) ----- 1942 \$.75

WELL LOGS

- Over 5,500 typed drillers' logs of wells drilled in
New Mexico ----- Prices on request

PUBLICATIONS OF THE U. S. GEOLOGICAL SURVEY, FOR
SALE BY THE NEW MEXICO BUREAU OF MINES
AND MINERAL RESOURCES

BULLETINS

No.	Title and Author	Date	Price
752	Coal Resources of the Raton Coal Field, Col- fax County, New Mexico; W. T. Lee -----	1924	.50
859	Geology of the Santa Rita Mining Area, New Mexico; A. C. Spencer and Sidney Paige ----	1935	.40
860-A	The Coal Field from Gallup Eastward toward Mount Taylor; Julian D. Sears -----	1934	.35
860-B	The Mount Taylor Coal Field; Charles B. Hunt -----	1936	1.00
860-C	The La Ventana-Chacra Mesa Coal Field; Carle H. Dane -----	1936	.40
*870	Geology and Ore Deposits of the Bayard Area, Central Mining District, New Mexico; Sam- uel G. Lasky -----	1936	.80
*885	Geology and Ore Deposits of the Lordsburg Mining District, Hidalgo County, New Mex- ico; Samuel G. Lasky -----	1938	1.25
922-C	Manganese Deposits in the Little Florida Mountains, Luna County, New Mexico—A Preliminary Report; S. G. Lasky -----	1940	.25
922-M	Tin Deposits of the Black Range, Catron and Sierra Counties, New Mexico; Carl Fries, Jr. 1940	1940	.50
945-C	Beryllium and Tungsten Deposits of the Iron Mountain District, Sierra and Socorro Coun- ties, New Mexico; R. H. Jahns -----	1944	1.25

PROFESSIONAL PAPERS

- *200 Geology and Ore Deposits of the Magdalena
Mining District, New Mexico; G. F. Loughlin
and A. H. Koschmann ----- 1942 2.00

* Prepared in coöperation with the New Mexico Bureau of Mines and Mineral Resources.

PUBLICATIONS

31

- *208 Geology and Ore Deposits of the Little Hatchet Mountains, Hidalgo and Grant Counties, New Mexico; Samuel G. Lasky ----- 1947 2.50

WATER-SUPPLY PAPER

- 842 Floods in the Canadian and Pecos River Basins of New Mexico—With Summary of Flood Discharges in New Mexico; Tate Dalrymple and others ----- 1937 .20

MAPS AND CHARTS

- Topographic map of New Mexico. Scale about 8 miles to 1 inch; contour interval 100 meters__ 1925 .75
- Geologic Map of New Mexico; N. H. Darton. Scale about 8 miles to 1 inch; contour interval 100 meters ----- 1928 1.50
- Maps Showing Thickness and General Character of the Cretaceous Deposits in the Western Interior of the United States; J. B. Reeside, Jr. Scale 225 miles to 1 inch. Preliminary Map 10, Oil and Gas Investigations ----- 1944 .25
- Geologic Map and Stratigraphic Sections of Permian and Pennsylvanian Rocks of Parts of San Miguel, Santa Fe, Sandoval, Bernalillo, Torrance, and Valencia Counties, North Central New Mexico; C. B. Read and others. Scale 3 miles to 1 inch. Preliminary Map 21, Oil and Gas Investigations ----- 1944 .60
- Stratigraphic Distribution of the Pennsylvanian Fusulinidae in a Part of the Sierra Nacimiento of Sandoval and Rio Arriba Counties, New Mexico; Lloyd G. Henbest and others. Preliminary Chart 2, Oil and Gas Investigations ----- 1944 .25
- Correlation of Basal Permian and Older Rocks in Southwestern Colorado, Northwestern New Mexico, Northeastern Arizona, and Southeastern Utah; N. W. Bass. Preliminary Chart 7, Oil and Gas Investigations ----- 1944 .40
- Map of Eddy and Lea Counties, Showing Oil and Gas Fields by Colors. Scale about 5½ miles to 1 inch ----- 1945 No charge
- Geology and Asphalt Deposits of North-central Guadalupe County, New Mexico; Joseph M. Gorman and Raymond C. Robeck. Scale 1 mile to 1 inch. Preliminary Map 44, Oil and Gas Investigations ----- 1946 .60
- Lucero Uplift, Valencia, Socorro, and Bernalillo Counties, New Mexico; V. C. Kelley and G. H. Wood. Scale 3 miles to 1 inch. Preliminary Map 47, Oil and Gas Investigations 1946 .60

Stratigraphic Relations of Eocene, Paleocene, and Latest Cretaceous Formations of Eastern Side of San Juan Basin, New Mexico; C. H. Dane. Preliminary Chart 24, Oil and Gas Investigations -----	1946	.35
Geologic Maps of a Part of the Las Vegas Basin and of the Foothills of the Sangre de Cristo Mountains, San Miguel and Mora Counties, New Mexico; S. A. Northrop, H. H. Sullwold, Jr., A. J. MacAlpin, and C. P. Rogers, Jr. Scales, 2/3 mile to 1 inch and 4 miles to 1 inch. Preliminary Map 54, Oil and Gas Investigations -----	1946	.60
Geology of Nacimiento Mountains, San Pedro Mountain, and Adjacent Plateaus in Parts of Sandoval and Rio Arriba Counties, New Mexico; S. A. Northrop and G. H. Wood. Scale 1½ miles to 1 inch. Preliminary Map 57, Oil and Gas Investigations -----	1946	.60
*Geologic Map and Stratigraphic Sections of Paleozoic Rocks of Joyita Hills, Los Pinos Mountains, and Northern Chupadera Mesa, Valencia, Torrance, and Socorro Counties, New Mexico; R. H. Wilpolt, A. J. MacAlpin, R. L. Bates, and Georges Vorbe. Scale 1 mile to 1 inch. Preliminary Map 61, Oil and Gas Investigations -----	1946	.65
*Geology of Northwestern Quay County, New Mexico; Ernest Dobrovolny, C. H. Summerson, and Robert L. Bates. Preliminary Map 62, Oil and Gas Investigations -----	1946	.75
Geology and Mineral Deposits of the Gallinas District, Lincoln County, New Mexico; V. C. Kelley, H. E. Rothrock, and R. G. Smalley. Scale 2 miles to 1 inch. Preliminary Map 3-211, Strategic Minerals Investigations -----	1946	.30
Geologic map of part of eastern San Juan Basin, Rio Arriba County, New Mexico; C. H. Dane. Preliminary Map 78, Oil and Gas Investigations -----	1947	1.00
Geology of Southern Part of Archuleta County, Colorado; G. H. Wood, V. C. Kelley, and A. J. MacAlpin. Scale 1 mile to 1 inch. Preliminary Map 81, Oil and Gas Investigations ----	1948	1.00
Topographic maps of approximately 80 quadrangles in New Mexico and adjacent parts of Arizona, Colorado, and Texas. Scales range from 1,000 feet to 1 inch, to 4 miles to 1 inch		.20 each

* Prepared in cooperation with the New Mexico Bureau of Mines and Mineral Resources.

PUBLICATIONS

33

PUBLICATION OF THE U. S. GENERAL LAND OFFICE, FOR SALE
BY THE NEW MEXICO BUREAU OF MINES AND
MINERAL RESOURCES

State of New Mexico. Geographic map, scale 12 miles to 1 inch -----	1936	.35
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PUBLICATIONS OF THE UNIVERSITY OF NEW MEXICO, FOR
SALE BY THE NEW MEXICO BUREAU OF MINES
AND MINERAL RESOURCES

BULLETIN

<i>Title and Author</i>	<i>Date</i>	<i>Price</i>
Minerals of New Mexico; Stuart A. Northrop -----	1942	3.00

MAP

Mining Districts of New Mexico; Stuart A. Northrop. Scale 20 miles to 1 inch. (This map is included in the above bulletin.) -----	1942	.75
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PUBLICATION OF THE STATE INSPECTOR OF MINES, FOR SALE
BY THE NEW MEXICO BUREAU OF MINES AND
MINERAL RESOURCES

<i>Title</i>	<i>Date</i>	<i>Price</i>
Mining Laws of New Mexico -----	1946	.25

PUBLICATION OF THE GEOLOGICAL SOCIETY OF AMERICA,
FOR SALE BY THE NEW MEXICO BUREAU OF MINES
AND MINERAL RESOURCES

MEMOIR

<i>No.</i>	<i>Title and Author</i>	<i>Date</i>	<i>Price</i>
24	Intertonguing Marine and Nonmarine Upper Cretaceous Deposits of New Mexico, Arizona, and Southwestern Colorado; William S. Pike, Jr. -----	1947	2.25

THIRTY-SEVENTH ANNUAL REPORT OF

The State Inspector of Mines

TO THE GOVERNOR OF THE STATE OF
NEW MEXICO



FOR THE YEAR ENDING JUNE 30, 1948

LETTER OF TRANSMITTAL

Honorable Thomas J. Mabry
Governor of the State of New Mexico
Santa Fe, New Mexico

Dear Governor Mabry:

In compliance with Section 6 of an Act of the State Legislature of New Mexico approved June 13, 1912, entitled, "An Act providing for the inspection of mines and the protection of employees therein," I hereby submit the Thirty-Seventh Annual Report of this office for the fiscal year ending June 30, 1948, for your consideration and approval.

Respectfully submitted,

JOHN ANTHONY GARCIA,
State Inspector of Mines.

Albuquerque, New Mexico,
August 31, 1948.

THIRTY-SEVENTH ANNUAL REPORT OF THE STATE INSPECTOR OF MINES

GENERAL STATEMENT AND ACKNOWLEDGMENTS

During the fiscal year 1948, the mines in the State produced a total valuation of \$92,693,429.64, an increase of \$17,533,197.41 over the fiscal year 1947.

Coal mine operators reported a total production of 1,416,099 tons, of which 40,665 tons were produced by mines located on Indian lands. These operators reported a total of 1,350 persons employed in and about the mines, an increase of 93. In spite of the increase in employees, coal mines in the State produced 14,433 tons less than the preceding year. However, there was a reported increase of \$700,816.46 in production values.

Mineral mines other than coal reported production values at \$85,981,386.50, an increase of \$16,832,380.95. These mines also reported a total of 5,933 persons employed in and about the mines, an increase of 378. Eddy County was again the highest producer in the State. Operators from this county reported total production values of \$42,738,880.00; all production was nonmetallic. The leading producer of metallics was Grant County which reported a total production valuation of \$38,792,425.95.

A total of \$3,080,258.45 was reported by all mines for new buildings, new safety equipment, new mining equipment, and other improvements, an increase of \$1,202,288.38. This sum does not include monies expended by various mining organizations for sinking new shafts to improve underground ventilation and to serve as additional escapeways.

The St. Louis, Rocky Mountain & Pacific Coal Company at their Koehler and Brilliant Mines introduced the use of Airdox, a safety improvement, to the State and the Southwest. Airdox is a method in which coal is broken down by compressed air, thus eliminating the use of explosives which is considered a potential hazard.

No major disasters occurred in the mines during the past year; however there were two surface fires at the McGhee and Shrine Mines respectively.

Two fatal accidents were reported in the coal mines. Although this is an increase of 100 percent over the past year, it is still considered a good record. In mines other than coal, we had five fatal accidents which is a decrease of four

over the past year. A thorough investigation was made of each accident and the proper recommendations given to prevent other accidents of the same nature.

As well as educational and safety activities, the following summary shows additional work performed by this department.

Mining inspections	252
Check-up inspections on recommendations	26
Informal mine inspections	12
Scale inspections only upon request	8
Mine fires investigated	2
Fatal accidents investigated	7
Non-fatal accidents investigated	2
Various complaints investigated	11
First aid classes	25

For the first time in its history, the State Inspector of Mines department is purchasing the following safety equipment to be used in the promotion of safety throughout the State. The immediate availability of this equipment, in case of a mine disaster, will be of especial benefit to the small operator who is not generally equipped with safety appliances.

- 6 Chemox breathing apparatus
- 18 Chemox cannisters
- 1 H and H inhalator
- 1 Carbon monoxide tester
- 1 Stretcher outfit
- 1 Miner's first aid cabinet
- 2 Wolf safety lamps
- 1 Flame safety lamp-testing cabinet complete with 10-cubic foot propane gas cylinder
- 1 Chevrolet truck for transporting safety equipment

In addition to the above safety equipment, this department has acquired a 16-millimeter sound-projector to be used for safety and mine educational purposes.

Please permit me to extend my sincere appreciation to you, Governor Mabry, and to the members of the State Board of Finance for granting permission to purchase this equipment.

Tables of statistics included in this report have been compiled from information furnished by the mine operators.

The close cooperation and assistance of the mine operators, mine employees, the Director of the New Mexico Bureau of Mines and Mineral Resources, and Federal mine inspectors are gratefully acknowledged.

Yours very truly,
JOHN ANTHONY GARCIA,
State Inspector of Mines.

MINE FIRES

Investigations and detailed reports were made on two reported surface fires which caused extensive property damage.

McGhee Mine; employing 10 men; located at Steins, Hidalgo County, New Mexico; June 17, 1948. Origin is attributed to oil being ignited by a lighted blowtorch. All surface buildings including machinery, equipment, and tools were totally destroyed. The headframe and timbers in the shaft were burned to a depth of 35 feet, thus necessitating a new headframe, a new collar on the shaft, and new timbers to that depth. The men employed in this mine were kept on the payroll repairing damages.

Shrine Mine; employing 18 men; located near Tyrone, Grant County, New Mexico; June 29, 1948. Origin is attributed to the careless handling of gasoline which was ignited by a carbide lamp. With the exception of an office building, all surface buildings, machinery, equipment, and tools were destroyed. The headframe and timbers in the shaft were burned to a depth of 185 feet. Men were kept on the payroll to repair damages.

FATAL ACCIDENTS

The following is a list of fatal accidents that occurred in the mines of the State during the fiscal year ending June 30, 1948.

September 11, 1947; A. N. Bishop; married, wife and 1 child; age 49; occupation, truck driver; instantly killed by a 4/10-yard Quickway gasoline-powered shovel in the No. 130 open pit of the Empire Zinc Company's mine located near Hanover, New Mexico. Bishop was employed by Strong & Harris, Vanadium, New Mexico, who had a contract to load and haul ore from the Empire Zinc Company's open-pit operations.

September 29, 1947; Teodoro Barela; single; age 24; occupation, miner; killed instantly by a fall of rock in the Shingle Canyon Mine near Fierro, New Mexico. This mine is operated by the U. S. Smelting Refining and Mining Company, Bayard, New Mexico. Deceased met death while barring down loose ground in the 3-700-foot sublevel drift above the 300-foot level. A rock weighing approximately one ton sloughed off from the hanging wall of the drift and, it is assumed, struck the deceased on the head, shoulders, and back bearing him down to the floor.

October 31, 1947; Jacobo Garcia; single; age 37; occupation, miner; mining experience, none; killed instantly by a fall of rock in the No. 2 right room off the main slope of the Sunny-Slope Mine. Located seven miles south of Cuba, New Mexico, the Sunny-Slope Mine was being operated under lease by Edwin A. Lovato, Cuba, New Mexico.

November 3, 1947; Fructousa Parra Andazola; married, wife and 4 children; age 48; occupation, laborer; ran over by a truck on the 6662-foot stripping bench of the Kennecott Copper Corporation's open-pit mine located at Santa Rita, New Mexico. Deceased was employed by the Isbell Construction Company, Santa Rita, New Mexico. This company is engaged in stripping operations under contract with Kennecott Copper Corporation.

December 5, 1947; Francisco Padilla; married, 7 children; age 40; occupation, miner; killed by falling into a winze in a cross-cut off the tunnel level of the Linchburg Mine, near Magdalena, New Mexico. The Linchburg Mine is being operated under a lease by C. S. Elayer, Walter R. Jenks, and Harry V. Kessey.

February 14, 1948; Vance Sepich; married, 2 children; age 31; occupation, coal-cutter operator; mining experience, 10 years; died from injuries sustained after being pinned by mining machine against roof of the 5th north air-course Brilliant No. 2 Mine operated by the St. Louis, Rocky Mountain & Pacific Coal Company.

May 15, 1948; Elauterio Gonzales; married, no children; age 23; occupation, skiptender; killed by a 225-foot fall down shaft of the Continental Mine at Fierro, New Mexico, owned by the United States Smelting Refining and Mining Company.

NON-FATAL ACCIDENTS

The following tabulation gives the reported number of non-fatal lost-time accidents occurring in all mines for the past year.

	<i>Number of employees</i>	<i>Causes</i>
Mineral mines other than coal -----	340	Various
Coal mines -----	99	Various
Total -----	439	

MINERAL STATISTICS

Tables showing metal and nonmetallic valuations of production, improvements, and new equipment, as well as volume of production, are as follows:

METALS PRODUCTION BY COUNTY

Grant			
<i>Metal</i>	<i>Volume</i>	<i>Value</i>	
Copper -----	68,264 tons	\$28,994,623.97	
Gold -----	1,641.96 ozs.	51,216.38	
Iron-manganese --	72,000 tons	270,000.00	
Lead -----	4,334 tons	1,364,737.56	
Molybdenum ----	533 tons	394,772.00	
Silver -----	224,896.76 ozs.	202,269.28	
Zinc -----	100,532 tons	7,514,806.76	
<i>Total</i> -----			\$38,792,425.95
<i>Metal</i>	<i>Volume</i>	<i>Value</i>	
Hidalgo			
Copper -----	1,966 tons	\$808,205.49	
Gold -----	1,815.84 ozs.	58,507.78	
Lead -----	181 tons	62,363.00	
Silver -----	183,453.97 ozs.	165,275.47	
Zinc -----	5,154 lbs.	480.00	
<i>Total</i> -----			1,094,831.74
Luna			
Lead -----	9 tons	\$3,048.67	
Silver -----	62.90 ozs.	62.28	
<i>Total</i> -----			3,110.95
Sandoval			
Lead -----	30 tons	\$10,500.00	
<i>Total</i> -----			10,500.00
Sierra			
Lead -----	50 tons	\$17,500.00	
<i>Total</i> -----			17,500.00
Socorro			
Copper -----	172 tons	\$73,069.62	
Gold -----	143.17 ozs.	5,010.81	
Lead -----	23,389 tons	815,534.76	
Silver -----	82,604.00 ozs.	74,343.60	
Zinc -----	5,689 tons	1,365,533.88	
<i>Total</i> -----			2,333,492.67
Taos			
Molybdenum ---	169 tons	\$98,339.00	
<i>Total</i> -----			98,339.00
STATE TOTAL -----			\$42,350,200.31

THIRTY-SEVENTH ANNUAL REPORT

TOTAL METAL PRODUCTION

36th fiscal year		37th fiscal year	
<i>Metal</i>	<i>Value</i>	<i>Volume</i>	<i>Value</i>
Copper -----	\$20,404,404.94	70,402 tons	\$29,875,899.08
Gold -----	109,009.97	3,600.97 ozs.	114,734.97
Iron-manganese -----		72,000 tons	270,000.00
Lead -----	1,270,575.59	27,993 tons	2,273,683.99
Lepidolite -----	12,855.37		
Manganese -----	42,541.00		
Microlite -----	4,800.00		
Molybdenum ----	417,051.12	702 tons	493,111.00
Silver -----	335,206.14	491,017.63 ozs.	441,950.63
Zinc -----	6,928,805.14	106,223 tons	8,880,820.64
<i>Total</i> -----	\$29,525,249.27		\$42,350,200.31

NONMETALLICS OTHER THAN COAL
PRODUCTION BY COUNTY

Eddy			
<i>Nonmetallic</i>	<i>Volume</i>	<i>Value</i>	
Potash -----	4,846,319 tons	\$42,738,880.00	
<i>Total</i> -----			\$42,738,880.00
Grant			
Fluorspar -----	19,327 tons	\$208,809.00	
<i>Total</i> -----			208,809.00
Rio Arriba			
Mica -----	48 tons	\$1,249.63	
<i>Total</i> -----			1,249.63
Sandoval			
Pumice -----	88,000 tons	\$338,800.00	
<i>Total</i> -----			338,800.00
Sierra			
Fluorspar -----	300 tons	\$2,500.00	
<i>Total</i> -----			2,500.00
Valencia			
Fluorspar -----	8,905 tons	\$ 80,000.00	
Pumice -----	7,640 tons	260,947.56	
<i>Total</i> -----			340,947.56
<i>STATE TOTAL</i> -----			\$43,631,186.19

TOTAL NONMETALLIC PRODUCTION OTHER THAN COAL

36th fiscal year		37th fiscal year	
<i>Nonmetallic</i>	<i>Value</i>	<i>Volume</i>	<i>Value</i>
Fluorspar -----	\$ 135,063.16	28,532 tons	\$ 291,309.00
Mica -----		48 tons	1,249.63
Potash -----	39,296,180.00	4,846,319 tons	42,738,880.00
Pumice or scoria	142,513.12	95,640 tons	599,747.56
<i>Total</i> -----	\$39,623,756.28		\$43,631,186.19

YEARLY MINERAL PRODUCTION OTHER THAN COAL

<i>Fiscal year</i>	<i>Value</i>
28th -----	\$18,988,622.00
29th -----	28,691,214.00
30th -----	33,231,130.00
31st -----	38,984,479.00
32nd -----	43,920,949.00
33rd -----	43,115,270.00
34th -----	36,734,854.00
35th -----	32,567,577.19
36th -----	69,149,005.55
37th -----	85,981,386.50

COAL

PRODUCTION BY COUNTY

<i>County</i>	<i>Total tonnage</i>	<i>Tons sold</i>	<i>Value</i>	<i>Tons machine-cut</i>
Colfax -----	1,132,894	1,123,278	\$5,355,344.10	1,099,976
McKinley -----	161,878	162,147	930,256.18	65,685
Rio Arriba -----	24,964	24,964	99,313.12	-----
Sandoval -----	4,676	4,676	23,380.00	-----
San Juan -----	11,301	11,301	55,206.00	-----
Santa Fe -----	35,775	32,415	226,636.74	-----
Socorro -----	3,946	3,946	21,907.00	-----
Indian land -----	40,665	-----	-----	-----
STATE TOTAL ----	1,416,099	1,362,727	\$6,712,043.14	1,165,661

TOTAL COAL PRODUCTION

	<i>36th fiscal year</i>	<i>37th fiscal year</i>
Tons mined -----	1,430,532	1,416,099
Tons hand-mined -----	228,920	250,438
Tons machine-cut -----	1,201,612	1,165,661
Tons used and slack lost -----	9,278	6,360
Tons sold -----	1,413,246	1,362,727
Value of coal sold -----	\$6,011,226.68	\$6,712,043.14

TOTAL POUNDS OF POWDER USED

Black powder -----	32,400 lbs.
Permissible powder -----	231,410 lbs.

YEARLY COAL PRODUCTION

<i>Fiscal year</i>	<i>Tons</i>	<i>Number of employees</i>
28th -----	1,235,980	2,276
29th -----	1,069,000	1,992
30th -----	1,190,280	1,746
31st -----	1,578,718	1,830
32nd -----	1,804,872	1,890
33rd -----	1,753,500	1,752
34th -----	1,397,414	1,334
35th -----	1,315,199	1,320
36th -----	1,430,532	1,257
37th -----	1,416,099	1,350

THIRTY-SEVENTH ANNUAL REPORT

TOTAL MINERAL VALUATIONS

	<i>36th fiscal year</i>	<i>37th fiscal year</i>
Minerals other than coal -----	\$69,149,005.55	\$85,981,386.50
Coal -----	6,011,226.68	6,712,043.14
STATE TOTAL -----	\$75,160,232.23	\$92,693,429.64

IMPROVEMENTS AND NEW EQUIPMENT

	<i>36th fiscal year</i>	<i>37th fiscal year</i>
Minerals other than coal -----	\$1,797,784.47	\$2,942,924.21
Coal -----	80,185.60	137,334.24
STATE TOTAL -----	\$1,877,970.07	\$3,080,258.45

EMPLOYEES

METAL MINES

<i>Name of mine</i>	Grant		<i>Mill</i>	<i>Other</i>	<i>Total</i>
	<i>Surface</i>	<i>Under-ground</i>			
Atlas No. 2 -----	3	12	--	--	15
Boston Hill -----	34	--	--	--	34
Bullfrog and Slate -----	84	219	37	46	386
Burro Mountain -----	11	10	--	3	24
Carlisle -----	1	1	--	--	2
Chino -----	756	89	969	77	1,891
Combination and Hobo -----	3	25	--	2	30
Granite -----	22	6	--	--	28
Ground Hog -----	38	160	--	16	214
Hanover -----	8	85	66	44	203
Johnnie -----	1	2	--	--	3
Kearney -----	14	44	32	--	90
Langston -----	3	12	--	--	15
Pearson and Continental -----	7	34	--	2	43
Royal John -----	1	6	--	--	7
Shingle Canyon -----	5	18	--	1	24
Silver Hill -----	2	4	--	--	6
<i>Total</i> -----	993	727	1,104	191	3,015

Hidalgo

Anita -----	1	2	--	--	3
Atwood Copper -----	10	30	--	4	44
Carbonate Hill -----	2	3	2	1	8
Lead-Queene -----	--	3	--	--	3
Millsite -----	2	3	--	--	5
Miser's Chest & Bonney -----	13	61	11	5	90
Montgomery -----	--	--	--	1	1
Silver Hill -----	1	1	--	--	2
<i>Total</i> -----	29	103	13	11	156

Luna

Blue Ridge -----	2	2	1	--	5
Mahoney -----	2	3	--	--	5
<i>Total</i> -----	4	5	1	--	10

Sandoval					
Pay Day -----	1	2	--	--	3
<i>Total</i> -----	1	2			3
Santa Fe					
Bonanza -----	2	3	--	--	5
<i>Total</i> -----	2	3			5
Sierra					
Iron King -----	--	2	--	--	2
<i>Total</i> -----		2			2
Socorro					
Kelly -----	4	--	--	--	4
Linchburg -----	2	38	--	--	40
Melva -----	3	3	--	1	7
Nitt -----	2	15	--	--	17
North Juanita -----	--	2	--	--	2
Portales -----	3	1	3	--	7
Salinas -----	1	1	--	--	2
Waldo -----	9	37	40	14	100
<i>Total</i> -----	24	97	43	15	179
Taos					
Molybdenum -----	4	21	12	5	42
<i>Total</i> -----	4	21	12	5	42
STATE TOTAL ----	1,057	960	1,173	222	3,412
NONMETALLIC MINES OTHER THAN COAL					
Eddy					
<i>Name of mine</i>	<i>Surface</i>	<i>Under-ground</i>	<i>Mill</i>	<i>Other</i>	<i>Total</i>
Continental -----	8	--	--	--	8
International -----	162	310	144	95	711
Potash Co. of America -----	277	361	228	--	866
U. S. Potash Co. -----	147	258	64	300	769
<i>Total</i> -----	594	929	436	395	2,354
Grant					
Burro Chief -----	4	17	--	--	21
Shrine -----	5	9	--	2	16
White Eagle -----	2	5	--	--	7
<i>Total</i> -----	11	31		2	44
Rio Arriba					
Mica -----	1	1	3	1	6
<i>Total</i> -----	1	1	3	1	6

Sandoval					
Pumice -----	10	--	--	--	10
<i>Total</i> -----	10				10
Sierra					
Imperial -----	6	5	4	--	15
U. S. Fluorspar -----	2	4	--	2	8
<i>Total</i> -----	8	9	4	2	23
Valencia					
Pumice -----	25	--	9	3	37
Zuni -----	5	22	18	2	47
<i>Total</i> -----	30	22	27	5	84
STATE TOTAL ---	654	992	470	405	2,521

COAL MINES

Name of mine	Colfax			Total
	Inside miners	Inside Co. men	Outside employees	
Brilliant No. 2 -----	--	150	25	175
Dawson No. 6 -----	126	73	125	324
Denton -----	2	--	--	2
Frank's -----	4	--	--	4
Genta -----	2	1	1	4
Koehler Nos. 1 and 2 -----	--	225	46	271
New Yankee -----	3	3	--	6
Sonchar -----	3	1	1	5
Turner -----	2	--	--	2
Van Houten -----	12	91	11	114
<i>Total</i> -----	154	544	209	907

McKinley				
Biava -----	8	2	1	11
Carbon City -----	3	--	--	3
Chiaramonte -----	3	3	3	9
Fiori's -----	--	--	1	1
George -----	5	1	2	8
Grenko -----	3	--	1	4
Mentmore -----	37	10	18	65
Mutual -----	25	20	6	51
Navajo No. 5 -----	85	25	23	133
Pass -----	--	--	1	1
<i>Total</i> -----	169	61	56	286

Rio Arriba				
Amargo -----	6	4	2	12
Caranta -----	8	2	2	12
Dandee -----	2	--	--	2
Rainbow -----	7	1	3	11
<i>Total</i> -----	23	7	7	37

Sandoval				
La Ventana -----	6	8	1	15
San Luis -----	2	--	1	3
<i>Total</i> -----	8	8	2	18
San Juan				
Hogback -----	8	--	2	10
Smouse -----	2	--	2	4
Stallings -----	2	2	--	4
<i>Total</i> -----	12	2	4	18
Santa Fe				
Anthracite No. 4 -----	30	4	5	39
Jones -----	20	3	3	26
Omero -----	3	--	--	3
<i>Total</i> -----	53	7	8	68
Socorro				
De Soto -----	3	2	1	6
Kinney -----	4	4	2	10
<i>Total</i> -----	7	6	3	16
STATE TOTAL -----	426	635	289	1,350

SUMMARY OF STATISTICS

The following summary reflects the preceding tables, comparing figures of the 36th and 37th annual reports.

MINERAL MINES OTHER THAN COAL

Production		
<i>36th fiscal year</i>	<i>37th fiscal year</i>	<i>Increase</i>
\$69,149,005.55	\$85,981,386.50	\$16,832,380.95
Employees		
<i>36th fiscal year</i>	<i>37th fiscal year</i>	<i>Increase</i>
5,555	5,933	378
Fatal accidents		
<i>36th fiscal year</i>	<i>37th fiscal year</i>	<i>Decrease</i>
9	5	4
Improvements		
<i>36th fiscal year</i>	<i>37th fiscal year</i>	<i>Increase</i>
\$1,797,784.47	\$2,942,924.21	\$1,145,139.74
Mining operations		
<i>36th fiscal year</i>	<i>37th fiscal year</i>	<i>Increase</i>
82	85	3

COAL MINES

Production

<i>36th fiscal year</i>	<i>37th fiscal year</i>	<i>Increase</i>
\$6,011,226.68	\$6,712,043.14	\$700,816.46

Employees

<i>36th fiscal year</i>	<i>37th fiscal year</i>	<i>Increase</i>
1,257	1,350	93

Fatal accidents

<i>36th fiscal year</i>	<i>37th fiscal year</i>	<i>Increase</i>
--	2	2

Improvements

<i>36th fiscal year</i>	<i>37th fiscal year</i>	<i>Increase</i>
\$80,185.60	\$137,334.24	\$57,148.64

Mining operations

<i>36th fiscal year</i>	<i>37th fiscal year</i>	<i>Decrease</i>
43	37	6

ABSTRACT

	<i>36th fiscal year</i>	<i>37th fiscal year</i>
Production values -----	\$75,160,232.23	\$92,693,429.64
Employees -----	6,812	7,283
Fatal accidents -----	9	7
Improvements -----	\$1,877,970.07	\$3,080,258.45
Mining operations -----	125	122

DIRECTORY OF THE STATE INSPECTOR OF MINES DEPARTMENT

- E. C. Anderson, Director, State Bureau of Mines and Mineral Resources, Socorro, New Mexico. Office telephone, 88.
John A. Garcia, State Inspector of Mines, Rooms 27 and 28, Lincoln Building, 312 South Third Street, Albuquerque, New Mexico. Office telephone, 2-7373. Residence telephone, 3-1290.
Charles L. Knaus,¹ Deputy State Inspector of Mines, Box 39, Tyrone, New Mexico. Residence telephone, Silver City 0-16R4.
Daniel B. Leake,² Deputy State Inspector of Mines, San Lorenzo, New Mexico. Residence telephone, Silver City 806-F12.
Angelo J. Pais,³ Deputy State Inspector of Mines, Rooms 27 and 28, Lincoln Building, 312 South Third Street, Albuquerque, New Mexico. Office telephone, 2-7373.

DIRECTORY OF METAL MINES

Dona Ana County

- Cowpuncher, William E. Houser, Superintendent, Organ, New Mexico.
Empire Mining and Milling Company, Inc., G. R. Crager, President and General Manager, Box 311, Las Cruces, New Mexico.
Merrimac Mines, J. H. Brown, Operator, Box 106, Organ, New Mexico.

Grant County

- Atlas No. 2, Houston-Thomas, James B. Mathis, Sr., General Manager; T. J. Stockbridge, General Superintendent, Box 452, Silver City, New Mexico.
Boston Hill, Luck Mining and Construction Company, G. K. Luck, General Manager, Silver City, New Mexico.
Bullfrog and Slate, United States Smelting Refining and Mining Company, L. H. Duriez, Manager; J. T. Lewis, Jr., General Superintendent, Box 698, Bayard, New Mexico.
Burro Mountain, Phelps Dodge Corporation, Burro Mountain Branch, H. M. Lavender, General Manager, Douglas, Arizona; Thomas Jancic, General Superintendent, Tyrone, New Mexico.
Carlisle, Ben F. Billingsley, Operator, Duncan, Arizona.
Chino, Kennecott Copper Corporation, W. H. Goodrich, General Manager; F. C. Green, General Superintendent, Hurley, New Mexico.
Combination and Hobo, United States Smelting Refining and Mining Company, L. H. Duriez, Manager; J. T. Lewis, Jr., General Superintendent, Box 698, Bayard, New Mexico.
Continental, United States Smelting Refining and Mining Company, L. H. Duriez, Manager; J. T. Lewis, Jr., General Superintendent, Box 698, Bayard, New Mexico.
Granite, Pinos Altos Mining Company, Inc., Loren F. Read, General Manager, 403 C Street, Silver City, New Mexico.
Ground Hog, American Smelting and Refining Company, A. E. Ring, General Manager, Box 2229, Tucson, Arizona; T. A. Snedden, Superintendent, Vanadium, New Mexico.

¹ Resigned, April 1, 1948.

² Employed, March 25, 1948.

³ Employed, September 1, 1948.

Hanover, Empire Zinc Company, A. L. Hayes, Superintendent, Hanover, New Mexico.
Hornet, Minerals Operation, Inc., C. J. Vezzetti, Superintendent, Box 56, Hachita, New Mexico.
Johnnie, A. J. Thomas, Owner, Box 9, Pinos Altos, New Mexico.
Kearney, New Mexico Consolidated Mining Company, Jos. H. Taylor, General Manager, Silver City, New Mexico; J. W. Faust, General Superintendent, Hanover, New Mexico.
Langston, Southwest Development Corporation, Donald E. Blackmar, Owner, Box 537, Silver City, New Mexico.
Live Oak, Henry Eaton and N. P. Grenfell, Owners, Silver City, New Mexico.
Oswaldo, Kennecott Copper Corporation, W. H. Goodrich, General Manager, Hurley, New Mexico; Gerald Ballmer, General Superintendent, Santa Rita, New Mexico.
Pearson, United States Smelting Refining and Mining Company, L. H. Duriez, Manager; J. T. Lewis, Jr., General Superintendent, Box 698, Bayard, New Mexico.
Pewabic, New Mexico Consolidated Mining Company, Jos. H. Taylor, General Manager, Silver City, New Mexico; J. W. Faust, General Superintendent, Hanover, New Mexico.
Pine Lawn, William Guest, Operator, Box 42, Pinos Altos, New Mexico.
Pipe Stem, E. B. Killien, Owner, Box 348, Silver City, New Mexico.
Princess, United States Smelting Refining and Mining Company, L. H. Duriez, Manager; J. T. Lewis, Jr., General Superintendent, Box 698, Bayard, New Mexico.
Royal John, A. L. Owen, Owner and Operator, Box 1018, Santa Rita, New Mexico.
Shingle Canyon, United States Smelting Refining and Mining Company, L. H. Duriez, Manager; J. T. Lewis, Jr., General Superintendent, Box 698, Bayard, New Mexico.
Silver Hill, Silver Hill Mining Corporation, G. A. Bradley, Manager, Box 103, Pinos Altos, New Mexico.
Treasure Vault, H. T. Crosby, Owner, Box 514, Silver City, New Mexico.
Uncle Sam, Steven Bener, Owner, Box 514, Silver City, New Mexico.

Hidalgo County

Anita, B. W. Venable, Operator, Box 754, Lordsburg, New Mexico.
Atwood Copper, C. H. McKintosh, General Manager; W. S. Harrison, General Superintendent, Lordsburg, New Mexico.
Carbonate Hill, Donald A. McGhee, Owner, Box 942, Lordsburg, New Mexico.
Crystal, B. W. Venable, General Superintendent, Box 754, Lordsburg, New Mexico.
Lead-Queene, J. J. Adair, Manager, Paul Spur, Arizona.
Millsite, Lordsburg Mining Company, Gerald Fuller, Co-owner, Box 232, Lordsburg, New Mexico.
Miser's Chest & Bonney, Banner Mining Company, E. S. Bowman, General Superintendent, Box X, Lordsburg, New Mexico.
Montgomery, Raymond A. Custer, Operator and Owner, General Delivery, Lordsburg, New Mexico.
Ruth, Carlson Sandburg Mining Corporation, J. Ben Ross, General Manager; B. W. Venable, Superintendent, Box 754, Lordsburg, New Mexico.
Silver Hill, Odell Still, Operator, Lordsburg, New Mexico.

Lincoln County

Conqueror, Continental Engineering Company, C. E. Degner, General Manager, Carrizozo, New Mexico.
Pershing, R. S. Pershing, Owner, Box 1657, Lubbock, Texas.

Luna County

Blue Ridge, T. M. Bond, General Manager, Box 655, Deming, New Mexico.
Cook's Peak Mining Company, W. B. Carlton, Owner, Deming, New Mexico.
Mahoney, Clark Realty & Investment Company, John W. Clark, General Manager, 821 West Pine Street, Deming, New Mexico.
Tungsten Hill Mines, Henry R. Eaton, Owner, 107 South Pinos Altos Street, Silver City, New Mexico.

Sandoval County

Cochiti Mining Company, R. B. Boykin, President, Box 1694, Santa Fe, New Mexico.
Pay Day, Charles E. Hewitt, Co-owner, Box 1357, Santa Fe, New Mexico.

Santa Fe County

Bonanza, Harry Grimsley, Superintendent, Orchard Camp, Santa Fe, New Mexico.

Sierra County

Calamity Jane, E. H. Norris, Owner, Kingston, New Mexico.
Emporia, Robert Burns, Owner, Winston, New Mexico.
Iron King, T. B. Everheart, Lessee, Socorro, New Mexico.
Ivanhoe, Grafton Mining and Milling Company, Winston, New Mexico.
Lookout, E. C. Gillette, Manager, Hillsboro, New Mexico.
Palomas Chief, Alvin W. Emerick, President and General Manager, Box 97, Winston, New Mexico.

Socorro County

Kelly, J. D. Torres, Lessee, Magdalena, New Mexico.
Lynchburg, Elayer and Richmond Company, Lynchburg Lease, C. S. Elayer, Co-owner, Box 825, Silver City, New Mexico.
Melva, Melva Mines Corporation, Nick Sapanas, President, Socorro, New Mexico.
Nitt, MacDonald and Dobson, D. E. Flood, Superintendent, Magdalena, New Mexico.
North Juanita, George Tafoya, Owner, Magdalena, New Mexico.
Portales, Portales Mining Company, Clarence Barrett, Co-owner, Box 382, Socorro, New Mexico.
Salinas, Archie H. Latham, General Manager, Box 785, Hot Springs, New Mexico.
South Juanita, Pete Chavez, Co-owner, Magdalena, New Mexico.
Waldo, American Smelting and Refining Company, D. J. Pope, General Manager, 700 Pacific National Building, Salt Lake City, Utah; G. J. Matthews, General Superintendent, Magdalena, New Mexico.
Young America, Ed Perry, Lessee, Magdalena, New Mexico.

Taos County

Minerals Corporation, J. L. Monson, President, 1115½ East Central Avenue, Albuquerque, New Mexico.
Molybdenum, Molybdenum Corporation of America, J. B. Carman, Manager, Questa, New Mexico.

DIRECTORY OF NONMETALLIC MINES OTHER THAN COAL

Eddy County

Continental Potash Company, W. A. Smith, General Manager; Jas. H. Coleman, General Superintendent, Box 509, Carlsbad, New Mexico.
International, International Minerals and Chemical Corporation, G. T. Harley, General Manager, Carlsbad, New Mexico.
Potash Company of America, P. S. Dunn, Resident Manager; R. R. Knill, Mine Superintendent, Box 31, Carlsbad, New Mexico.
United States Potash Company, T. M. Cramer, Resident Manager; C. A. Pierce, General Superintendent, Box 271, Carlsbad, New Mexico.

Grant County

Burro Chief, Phelps Dodge Corporation, H. M. Lavender, General Manager, Douglas, Arizona; Thomas Jancic, General Superintendent, Tyrone, New Mexico.
Shrine, General Chemical Division, Allied Chemical & Dye Corporation, W. J. Trepp, General Superintendent, Box 228, Boulder, Colorado.
White Eagle, J. H. Harrison, General Manager; Finley Dunagan, General Superintendent, Deming, New Mexico.

Luna County

Greenleaf, M. J. Wallace, Superintendent, Star Route No. 2, Deming, New Mexico.
Lower Saddler, General Chemical Division, Allied Chemical & Dye Corporation, W. J. Trepp, General Superintendent, Box 228, Boulder, Colorado.
Victoria, H. R. Herner, Superintendent, Box 70, Deming, New Mexico.

Rio Arriba County

Mica, Southwestern Mining and Milling Company, Earl Eichelberger, President, 317 Korber Building, Albuquerque, New Mexico.

Sandoval County

Pumice, Cochiti Pumice Company, T. Jack Foster, General Manager, 121 South Yale, Albuquerque, New Mexico.

Sierra County

Imperial, Kidd and Cherry, Blanchard Hanson, General Manager, Box 242, Hot Springs, New Mexico.
U. S. Fluorspar Company, J. P. Wood, General Manager, 910 First National Bank Building, Denver, Colorado.

Valencia County

Pumice, Pumice Corporation of America, J. A. Freeman, Jr., General Manager, Grants, New Mexico.
Zuni, Zuni Milling Company, George A. Warner, General Superintendent, Box 1304, Albuquerque, New Mexico.

DIRECTORY OF COAL MINES

Colfax County

Brilliant No. 2, St. Louis, Rocky Mountain & Pacific Company, Andrew Gracie, General Manager, Raton, New Mexico; David Thompson, Superintendent, Brilliant, New Mexico.
Dawson No. 6, Phelps Dodge Corporation, Stag Cañon Branch, G. O. Arnold, Manager; F. W. Koelling, Mine Superintendent, Dawson, New Mexico.
Denton, Denton Coal Company, Pete Colangelo, Owner, Box 374, Raton, New Mexico.
Frank's, Frank Yasbez, Owner, Box 208, Raton, New Mexico.
Frank No. 2, Henry Barela, Operator, Box 1056, Raton, New Mexico.
Genta, Frank Genta, Owner, 225 South 7th Street, Raton, New Mexico.
Koehler Nos. 1 and 2, St. Louis, Rocky Mountain & Pacific Company, Andrew Gracie, General Manager, Raton, New Mexico; Andrew Cunningham, Superintendent, Koehler, New Mexico.
New Yankee, Valentine Maschio, Owner, Box 947, Raton, New Mexico.
Sonchar, Joe Sonchar, Owner, 441 Maxwell Avenue, Raton, New Mexico.
Turner, Tom Turner, Manager, Box 1117, Raton, New Mexico.
Van Houten, St. Louis, Rocky Mountain & Pacific Company, Andrew Gracie, General Manager, Raton, New Mexico; William H. Lloyd, Superintendent, Van Houten, New Mexico.

McKinley County

Biava, John Biava, Owner, 207 Green, Gallup, New Mexico.
Boardman, Milkie Mason, Owner; William Kimer, Co-owner, 519 East Terrace Avenue, Gallup, New Mexico.
Carbon City, Carbon City Coal Company, Dagaberto Ramirez, Owner, 407 West Wilson, Gallup, New Mexico.
Chiararamonte, Tony Chiararamonte, General Manager, 410 West Avenue, Gallup, New Mexico.
Fiori's, Fiori Bombardieri, General Manager, Gallup, New Mexico.
George, John B. Williams, Manager, Gallup, New Mexico.
Grenko, Julian Grenko, General Manager, Box 47, Gallup, New Mexico.
Mentmore, Defiance Coal Company, G. H. Larson, General Manager, Box 446, Albuquerque, New Mexico; H. A. Manda, General Superintendent, Mentmore, New Mexico.
Mutual, Mutual Coal Company, Dan Brunetta, General Manager, Box 887, Gallup, New Mexico.
Navajo No. 5, Gallup Gamarco Coal Company, R. W. Dennard, General Manager, Gamarco, New Mexico; Otto Fellin, Mine Superintendent, Gallup, New Mexico.
Pass, Joe H. Pass, Owner, Mentmore, New Mexico.

Rio Arriba County

Amargo, The Amargo Knot Coal Company, Juan Tafoya, Superintendent, Lumberton, New Mexico.
Caranta, Annie Caranta, Monero, New Mexico.
Dandee, Rafael Flores, Operator, Tierra Amarilla, New Mexico.
Rainbow, Arthur Erler, Operator, Monero, New Mexico.

Sandoval County

La Ventana, M. G. Montoya, General Manager, La Ventana, New Mexico.
San Luis, W. C. Yarbrough, Owner, 2414 Rice Avenue, Albuquerque, New Mexico.

San Juan County

Fields, H. J. Rasmussen, Owner, La Plata, New Mexico.
Hogback, Clayton Davidson, Owner, Farmington, New Mexico.
Smouse, Harry Smouse, Owner, Fruitland, New Mexico.
Stallings, Fred A. Silva, Owner, Waterflow, New Mexico.

Santa Fe County

Anthracite No. 4, Albuquerque and Cerrillos Coal Company, Oscar
Huber, General Manager, Madrid, New Mexico.
Jones, Albuquerque and Cerrillos Coal Company, Oscar Huber, General
Manager, Madrid, New Mexico.
Omero, Nestor Arceo, Lessee, Cerrillos, New Mexico.

Socorro County

De Soto, De Soto Coal Company, Rafael Soto, Owner, San Antonio, New
Mexico.
Kinney, B. H. Kinney, Owner, Albuquerque, New Mexico.