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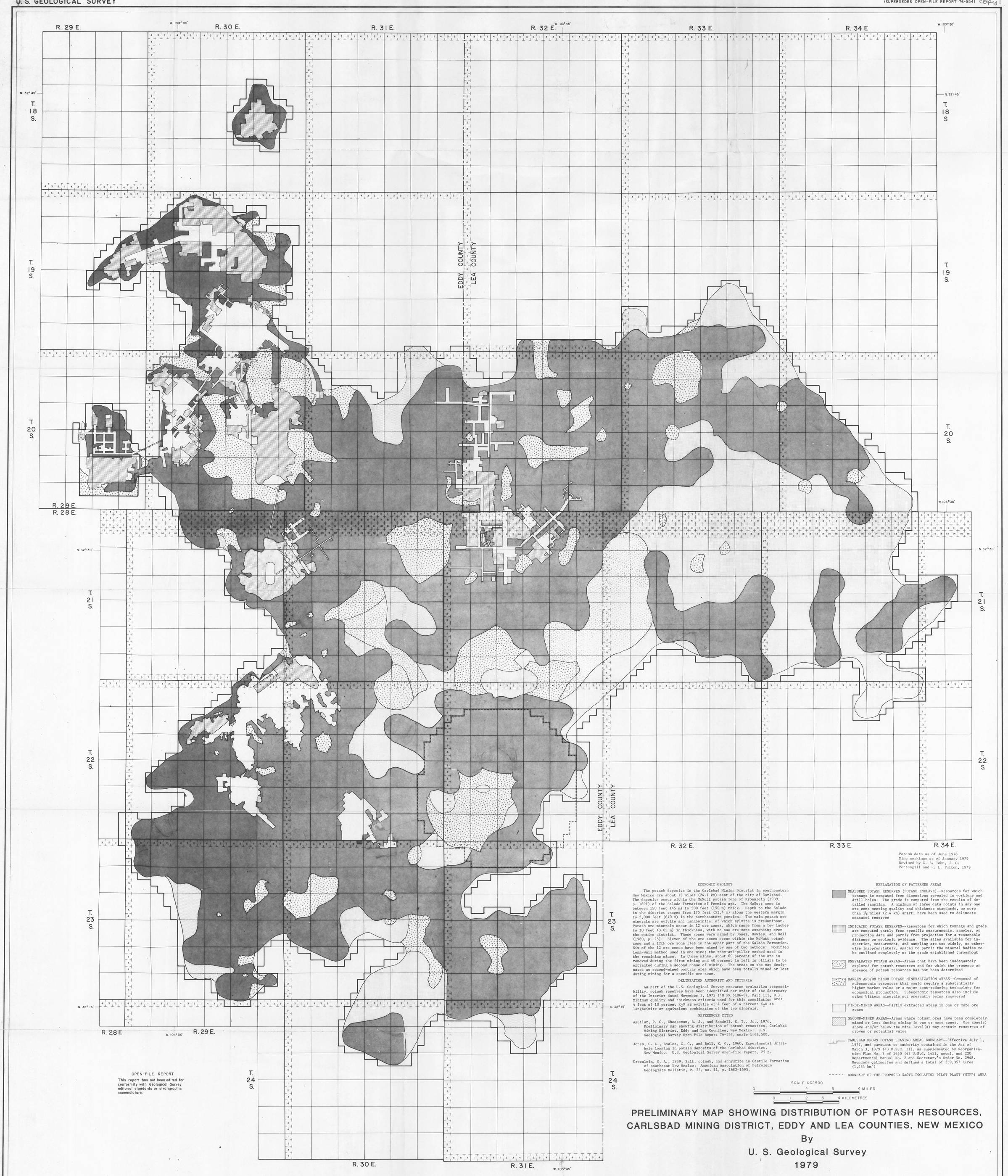
USGS
OPEN-FILE REPORT 79-1579
(SUPERSEDES OPEN-FILE REPORT 76-554) Copy 1



Potash data as of June 1978
Mine workings as of January 1979
Revised by C. B. John, J. G. Pettengill and R. L. Fulton, 1979

OPEN-FILE REPORT

This report has not been edited for conformity with Geological Survey editorial standards or stratigraphic nomenclature.

ECONOMIC GEOLOGY

The potash deposits in the Carlsbad Mining District in southeastern New Mexico are about 15 miles (24.1 km) east of the city of Carlsbad. The deposits occur within the McNutt potash zone of Kroenlein (1939, p. 1691) of the Salado Formation of Permian age. The McNutt zone is between 150 feet (45 m) to 500 feet (150 m) thick. Depth to the Salado in the district ranges from 175 feet (53.4 m) along the western margin to 2,000 feet (610 m) in the northeastern portion. The main potash ore minerals are sylvite and langbeinite, of which sylvite is predominant. Potash ore minerals occur in 12 ore zones, which range from a few inches to 10 feet (3.05 m) in thickness, with no one ore zone extending over the entire district. These zones were named by Jones, Bowles, and Bell (1960, p. 25). Eleven of the ore zones occur within the McNutt potash zone and a 12th ore zone lies in the upper part of the Salado Formation. Six of the 12 ore zones have been mined by one of two methods: Modified long-wall method used in one mine; the room-and-pillar method used in the remaining mines. In these mines, about 60 percent of the ore is removed during the first mining and 40 percent is left in pillars to be extracted during a second phase of mining. The areas on the map designated as second-mined portray ores which have been totally mined or lost during mining for a specific ore zone.

DELINEATION AUTHORITY AND CRITERIA

As part of the U.S. Geological Survey resource evaluation responsibility, potash reserves have been identified per order of the Secretary of the Interior dated November 5, 1975 (40 FR 5186-87, Part III, D.). Minimum quality and thickness criteria used for this compilation are: 4 feet of 10 percent K_2O as sylvite or 4 feet of 4 percent K_2O as langbeinite or equivalent combination of the two minerals.

REFERENCES CITED

Aguilar, F. C., Cheeseman, R. J., and Sandell, E. T., Jr., 1976, Preliminary map showing distribution of potash resources, Carlsbad Mining District, Eddy and Lea Counties, New Mexico: U.S. Geological Survey Open-File Report 76-554, scale 1:62,500.

Jones, C. L., Bowles, C. G., and Bell, K. G., 1960, Experimental drill-hole logging in potash deposits of the Carlsbad district, New Mexico: U.S. Geological Survey open-file report, 25 p.

Kroenlein, G. A., 1939, Salt, potash, and anhydrite in Castile Formation of southeast New Mexico: American Association of Petroleum Geologists Bulletin, v. 23, no. 11, p. 1682-1693.

EXPLANATION OF PATTERNED AREAS

MEASURED POTASH RESERVES (POTASH ENCLAVE)--Resources for which tonnage is computed from dimensions revealed in workings and drill holes. The grade is computed from the results of detailed sampling. A minimum of three data points in any one ore zone meeting quality and thickness standards, no more than 1½ miles (2.4 km) apart, have been used to delineate measured reserves

INDICATED POTASH RESERVES--Resources for which tonnage and grade are computed partly from specific measurements, samples, or production data and partly from projection for a reasonable distance on geologic evidence. The sites available for inspection, measurement, and sampling are too widely, or otherwise inappropriately, spaced to permit the mineral bodies to be outlined completely or the grade established throughout

UNEVALUATED POTASH AREAS--Areas that have been inadequately explored for potash resources and for which the presence or absence of potash resources has not been determined

BARREN AND/OR MINOR POTASH MINERALIZATION AREAS--Composed of subeconomic resources that would require a substantially higher market value or a major cost-reducing technology for economical production. Subeconomic resources also include other bittern minerals not presently being recovered

FIRST-MINED AREAS--Partly extracted areas in one or more ore zones

SECOND-MINED AREAS--Areas where potash ores have been completely mined or lost during mining in one or more zones. Ore zone(s) above and/or below the mine level(s) may contain resources of proven or potential value

CARLSBAD KNOWN POTASH LEASING AREAS BOUNDARY--Effective July 1, 1977, and pursuant to authority contained in the Act of March 3, 1879 (43 U.S.C. 31), as supplemented by Reorganization Plan No. 3 of 1950 (43 U.S.C. 1451, note), and 220 Departmental Manual No. 2 and Secretary's Order No. 2948. Boundary delineates and defines a total of 359,357 acres (1,454 km^2)

BOUNDARY OF THE PROPOSED WASTE ISOLATION PILOT PLANT (WIPP) AREA

SCALE 1:62500

0 1 2 3 4 MILES

0 1 2 3 4 KILOMETRES

PRELIMINARY MAP SHOWING DISTRIBUTION OF POTASH RESOURCES, CARLSBAD MINING DISTRICT, EDDY AND LEA COUNTIES, NEW MEXICO

By

U. S. Geological Survey

1979