

Areas in Arizona With Elevated Concentrations of Uranium

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EXPLANATION

Virtually all rocks and soils contain uranium, which undergoes radioactive decay into hazardous radon gas. The average uranium concentration of crustal rocks is 2 to 3 parts per million (ppm). Geologic materials containing anomalously high levels of uranium (greater than 6 ppm) have greater potential for producing radon gas that can seep into homes and buildings and accumulate in hazardous concentrations. This map shows areas where uranium is known to be present in anomalously high concentrations and where there is a greater-than-average probability of homes having hazardous indoor-radon concentrations.

Locations of uranium mineral districts and districts with byproduct uranium production or associated uranium mineralization were derived from Keith and others (1983). Granites with unusually high uranium concentrations include the Lawler Peak Granite north of Bagdad (Anderson and others, 1955; Silver and others, 1980), the Delis Granite northeast of Prescott (Krieger, 1965; Silver and others, 1980; Proctor and others, this volume, p. 61-81), and two granitic plutons near Kingman (Loggry and Heinrichs, 1980). Locations of other areas with anomalously high uranium concentrations were derived from Scarborough (1981), Doorn and Péwé (1991), and studies presented in this bulletin.

The map also shows areas that were determined to have greater than 5 ppm uranium based on a statewide airborne survey of gamma radiation conducted in the late 1970's as part of the U.S. Department of Energy National Uranium Resource Evaluation (NURE) Program (Joseph S. Duval, U.S. Geological Survey, written commun., 1989). This survey did not detect many small anomalies that have since been recognized on the ground, and a few areas, including much of metropolitan Phoenix and Tucson, were not surveyed.

Several areas of granitic rock with unusually high uranium concentrations exist in Arizona, but are not shown on this map because their boundaries have not been mapped or because their uranium concentrations are not high everywhere. Tertiary limestone and related sedimentary rocks are locally anomalous in uranium but have not been completely surveyed. Other areas of anomalous radioactivity are described in U.S. Department of Energy open-file reports, but a complete survey of these reports was beyond the scope of this study. In addition, there are also certain areas of anomalous radioactivity that have not been recorded in published literature and, thus, are not shown on this map. Anomalous concentrations of radioactive elements in well water have led to the closing of wells in Arizona, but showing the locations of these wells was also beyond the scope of this study.

This plate supersedes the following map: Spencer, J.E., Shenk, J.D., and Duncan, J.T., 1990, Map showing areas in Arizona with elevated concentrations of uranium: Arizona Geological Survey Open-File Report 90-5, scale 1:1,000,000. This mapping project was supported by the Arizona Radiation Regulatory Agency, with funds provided by the U.S. Environmental Protection Agency, Arizona State Indoor Radon Grant Program K1-009544-01-0.

References

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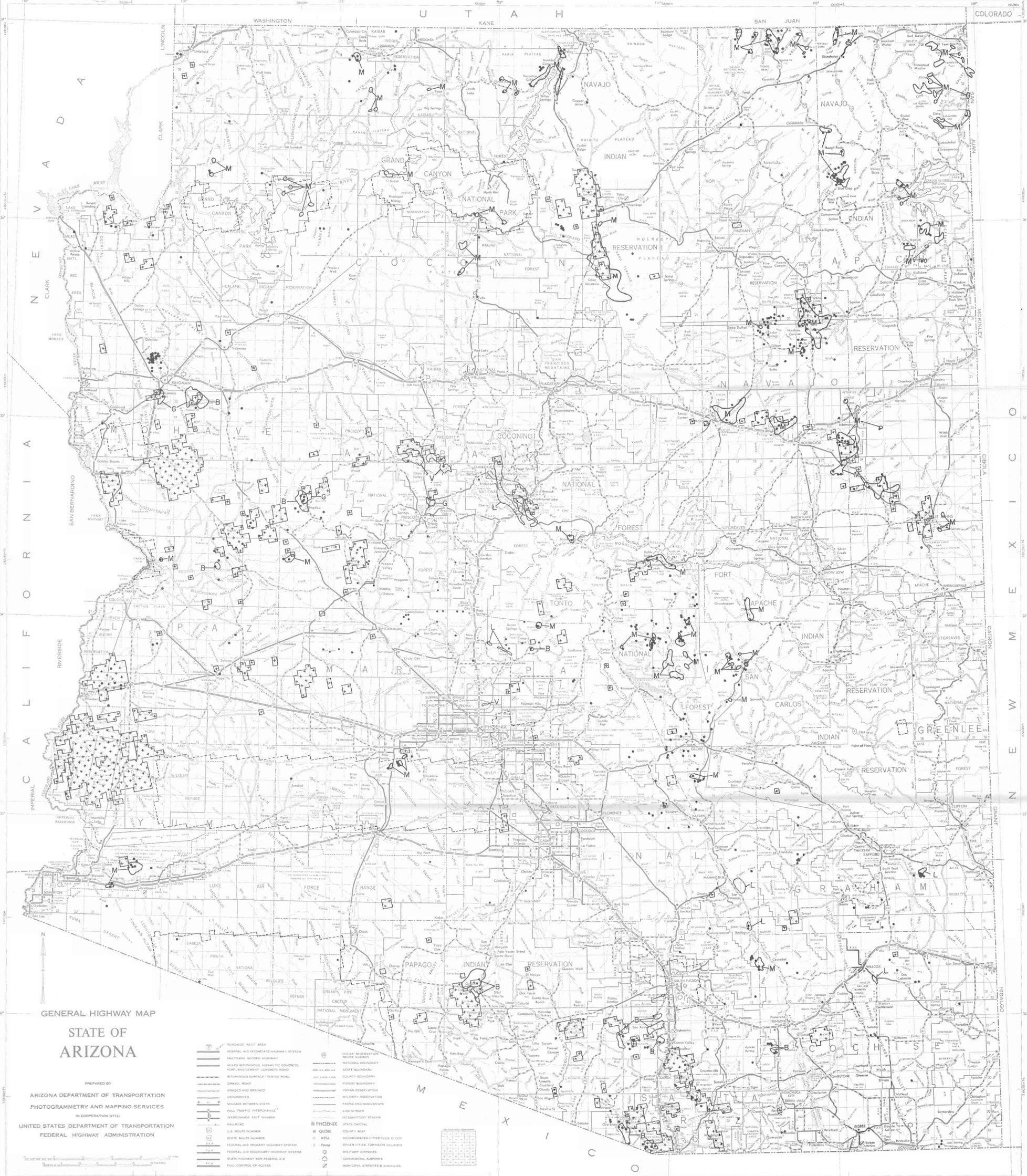
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Map Symbols

- M Uranium mineral district
- B Other mineral district with uranium mineralization or byproduct production
- G Granitic rocks with unusually high uranium concentrations
- L Lacustrine rocks with unusually high uranium concentrations
- V Volcanic rocks with unusually high uranium concentrations
- Locality with anomalously high radioactivity
- X Area with >5 ppm average uranium concentration based on NURE airborne survey
- • Area not covered by NURE airborne survey



GENERAL HIGHWAY MAP
STATE OF ARIZONA

PREPARED BY
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PHOTOGAMMETRY AND MAPPING SERVICES
IN COOPERATION WITH
UNITED STATES DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

- INTERSTATE HIGHWAY
- FEDERAL-AID INTERSTATE HIGHWAY SYSTEM
- MULTILANE DIVIDED HIGHWAY
- WHITE BITUMINOUS ASPHALTIC CONCRETE
- PORTLAND CEMENT CONCRETE ROAD
- BITUMINOUS SURFACE TREATED ROAD
- GRAVEL ROAD
- GRADED AND DRAINED
- UNIMPROVED
- WILDLIFE BETWEEN STAYS
- FULL TRAFFIC INTERCHANGE
- INTERCHANGE EAST SHOULDER
- WALL ROAD
- U.S. ROUTE NUMBER
- STATE ROUTE NUMBER
- FEDERAL-AID PRIMARY HIGHWAY SYSTEM
- FEDERAL-AID SECONDARY HIGHWAY SYSTEM
- STATE HIGHWAY NON-FEDERAL A.D.
- FULL CONTROL OF ACCESS
- INDIAN RESERVATION
- NATIONAL BOUNDARY
- STATE BOUNDARY
- COUNTY BOUNDARY
- FOREST BOUNDARY
- INDIAN RESERVATION
- MILITARY RESERVATION
- PARKS AND MONUMENTS
- LAKE SYSTEM
- INTERMITTENT STREAM
- STATE CAPITAL
- COUNTY SEAT
- INCORPORATED CITIES OVER 10,000
- QUARTER-CENTURY TOWNS OR VILLAGES
- MILITARY AIRPORTS
- COMMERCIAL AIRPORTS
- MUNICIPAL AIRPORTS & AIRFIELDS

