

Porphyry Copper Deposits of the American Cordillera

Frances Wahl Pierce and John G. Bolm, Editors

Arizona Geological Society Digest 20
1995

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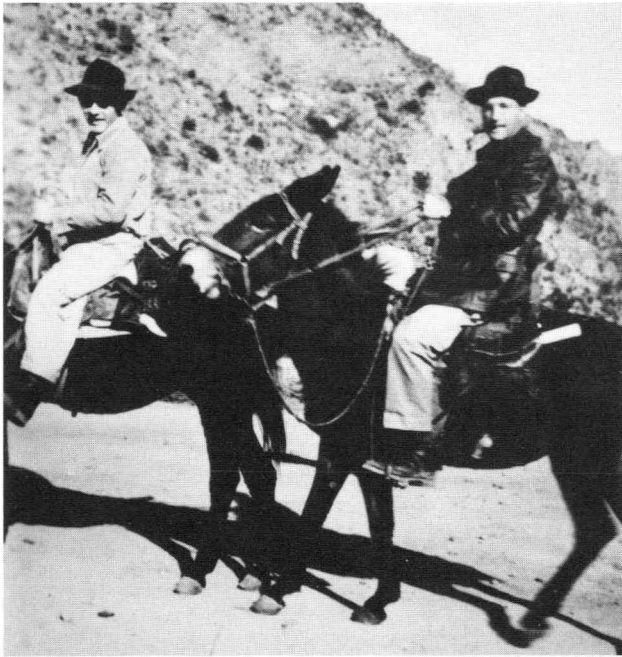
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Dedication to J. Harold Courtright and Kenyon E. Richard



On mules at Toquepala, Peru, 1949.
Left: K. E. Richard;
Right: J. H. Courtright.

J. Harold Courtright was chief geologist of ASARCO until his retirement in 1978. Born in Yalseina, Washington, in 1908, Courtright spent his early years working as a mucker and miner with his father in the Cascade Mountains. This work led to his interest in mining and geology, which he studied at the University of Nevada's Mackay School of Mines in Reno. In 1941 he joined E.N. Pennebaker's staff at Consolidated Coppermines Corporation in Ely, Nevada, where Kenyon E. Richard was already employed. Both Richard and Courtright joined American Smelting and Refining in 1945. Courtright's custom-made, thick-soled, size 14½ logger's boots left their prints along the Cordillera from Alaska and British Columbia to north-central South America and the tip of Chile, as well as over most of the porphyries throughout the world. He continued as a consultant to ASARCO until his death in 1986 at age 78.

Kenyon E. Richard, former chief geologist for ASARCO, was born in San Francisco in 1915 and died in Tucson in 1993. He earned a B.S. in Geological Engineering from the University of Nevada's Mackay School of Mines in 1937. He graduated Magna Cum Laude and Phi Kappa Phi, was president of Blue Key and Sigma Nu, and excelled in track, setting a long jump record that remained unbeaten for 25 years. He worked for Consolidated Coppermines Corporation in Ely, Nevada, for eight years after graduation, then joined ASARCO in 1945. He moved to Tucson in 1953, where he was appointed chief geologist of ASARCO's Southwest Division. He was promoted to ASARCO's chief geologist of worldwide exploration in 1963 and transferred to New York City. He retired from ASARCO in 1967 and spent 11 years consulting throughout the world for Royal Dutch Shell, Exxon, the United Nations, and a variety of global mining companies. A charter member of the Mining Club of the Southwest, Richard held leadership positions in numerous professional organizations, including the American Institute of Mining, Metallurgical and Petroleum Engineers, the Geological Society of America, and the Arizona Geological Society.

Preface and Acknowledgments

This volume is dedicated to the lives and work of J. Harold Courtright and Kenyon E. Richard, gentlemen whose work in the field of porphyry copper exploration has as its legacy some of the best-known porphyry copper deposits in the world. Although the volume invites cloistered reading, Kenyon was of the opinion that one needed to “put on a worn pair of field boots as often as possible [or one] might as well stay in bed;” Harold said that “all the tools an explorationist really needs are a pair of boots, a pick and drill.”

The work presented here is the result of many miles covered in worn field boots, pick in hand, by authors from the mining industry, academia, and government and follows in the bootprints of outstanding works on porphyry copper deposits which have preceded it. Beginning in 1966 with Titley and Hicks' volume *Geology of the Porphyry Copper Deposits, Southwestern North America*, numerous anthologies have been dedicated to these deposits. Such volumes have focused on deposits of the Canadian Cordillera (Sutherland Brown, 1976), the Pacific islands and Australia (Gustafson and Titley, 1978), southwestern North America (Titley and Hicks, 1966; Titley, 1983), or the Western Hemisphere (Hollister, 1978). The present work includes both descriptions of representative deposits of the American Cordillera from Canada to Chile and overview articles on various topics generally related to porphyry copper geology, exploration, and production; it is intended to summarize current thinking on these matters, and we hope it will contribute to the development and refinement of concepts for future exploration.

Publication of this volume is in conjunction with the symposium *Bootprints Along the Cordillera — Porphyry Copper Deposits from Alaska to Chile* presented by the Arizona Geological Society, the Society for Min-

ing, Metallurgy, and Exploration, Inc., and the U.S. Geological Survey from October 5 through 7, 1994, in Tucson, Arizona. Charles P. Miller and James D. Sell were general co-chairmen of the symposium; the symposium and this volume, which includes most of the papers presented at the symposium, would not have been possible without their dedication and effort.

This volume is number 20 in the digest series of the Arizona Geological Society, an organization of geoscientists and others with professional interests in the geology of Arizona. Founded in 1948, the Society brings together members from industry, academia, and government to share information and ideas at monthly meetings, on field trips, and at symposia. The society publishes guidebooks, maps, and digests covering all aspects of Arizona geology, and information on these publications or membership in the Society is available from the Arizona Geological Society, P.O. Box 40952, Tucson, Arizona 85717. Society publications are available for purchase from the Arizona Geological Survey, 416 West Congress, Suite 100, Tucson, Arizona 85701.

We would like to acknowledge the support provided by the U.S. Geological Survey for one of us (F.W.P.) to have access to computer equipment and devote time to this project. We thank the authors for their willingness to share their knowledge and experience. We thank Floyd Gray, Brenda B. Houser, David M. Spatz, and especially Keith R. Long for editorial assistance. Finally, we thank our families for their patience and support while we muttered over manuscripts and computers and ignored them completely for long periods of time.

F.W.P. and J.G.B.
Tucson, Arizona
March 1995

Bootprints Along the Cordillera:
Porphyry Copper Deposits from Alaska to Chile

October 5 to 7, 1994
Tucson, Arizona

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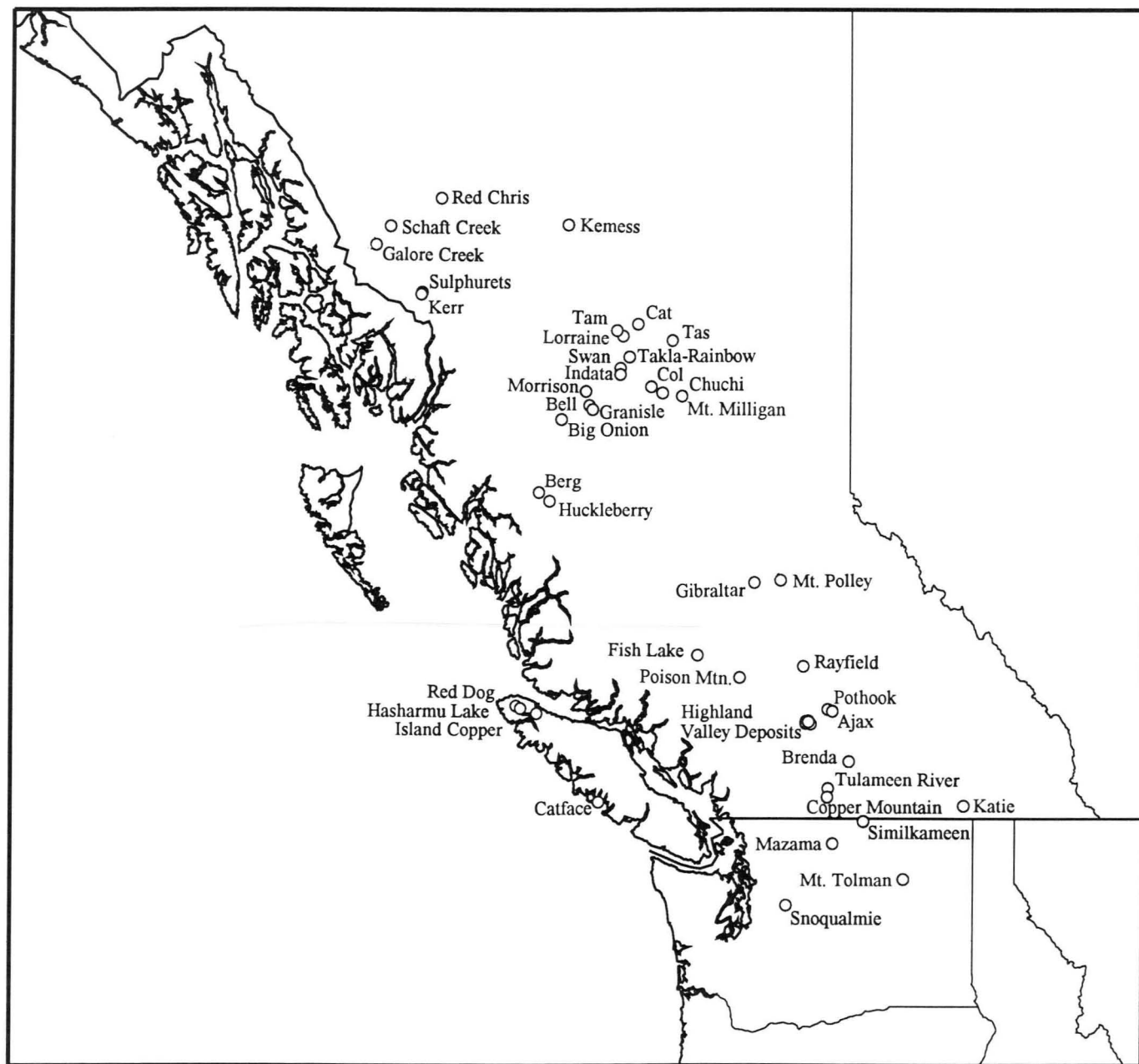
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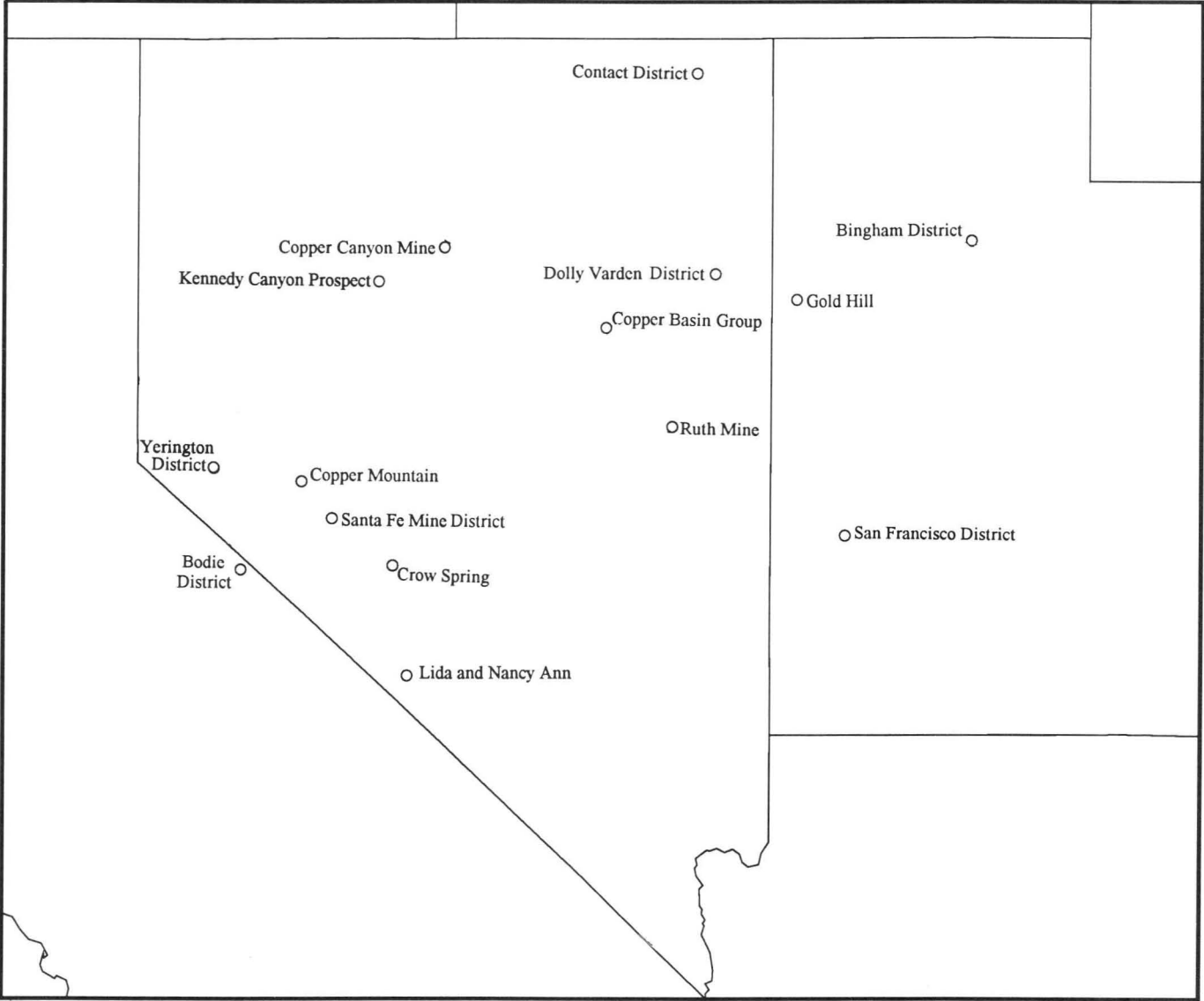
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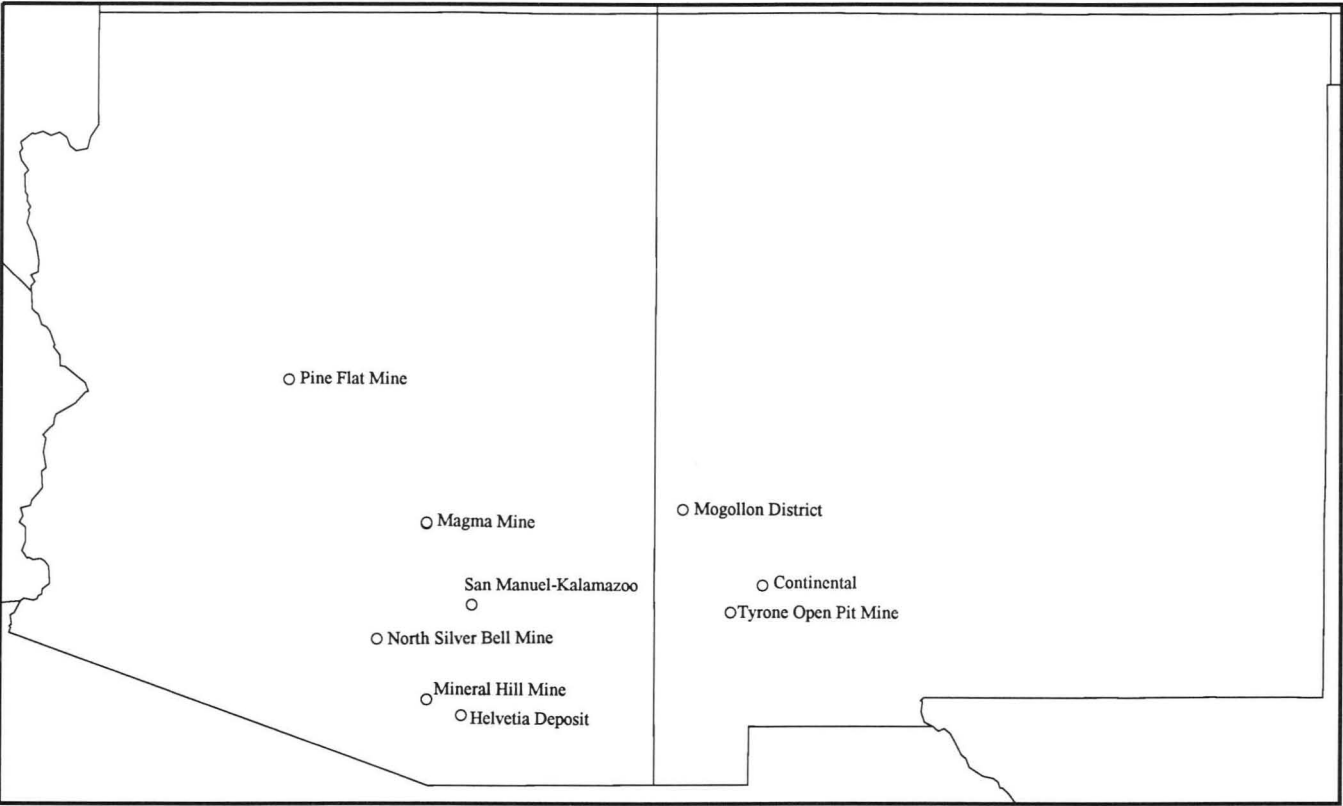
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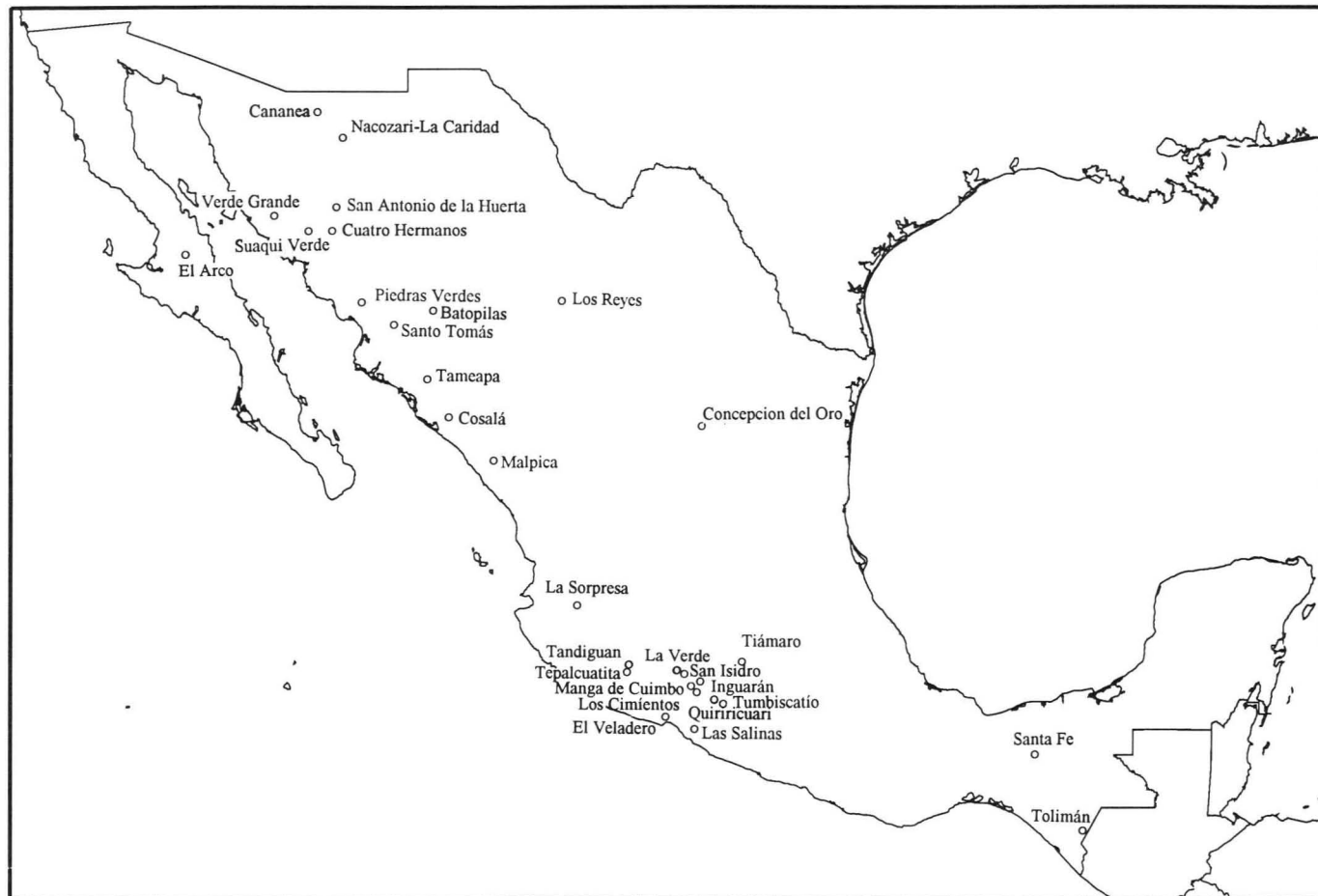


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