REPORTS PUBLISHED AND WORK IN PROGRESS, U. S. GEOLOGICAL SURVEY,

GROUND WATER BRANCH

(Data provided by John W. Harshbarger)

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REPORTS PUBLISHED

Annual report on ground water in Arizona -- spring 1956 to spring 1957. Arizona State Land Department, Water Resources Report No. 2, Phoenix, Ariz., 1957. 42 p., 18 figs., 1 table.

This report is prepared annually by the U. S. Geological Survey in cooperation with the Arizona State Land Department. It contains a summary of the basic hydrologic data collected during the year, including a discussion of the pumpage in the various basins and the trend of the water levels in response to the pumping of ground water in developed areas.

Geology and ground-water resources of the Harquahala Plains area, Maricopa and Yuma Counties, Arizona, by D. G. Metzger. Arizona State Land Department, Water Resources Report No. 3, Phoenix, Ariz., 1957. 40 p., 2 pls., 7 figs., 4 tables.

Briefly describes the bedrock geology, and gives special attention to the alluvium which is the only water-bearing rock unit in the area. The ground-water storage is very large, and this is emphasized in the report. Contains a map showing the generalized geology, location of wells, irrigated areas and drawings, and cross showing lithology of the valley fill.

Stratigraphy of the uppermost Triassic and the Jurassic rocks of the Navajo country, by J. W. Harshbarger, C. A. Repenning, and J. H. Irwin. U. S. Geol. Survey Prof. Paper 291, 1957. 74p., 3 pls., 38 figs.

This paper documents the results of a detailed and comprehensive stratigraphic study of the Triassic and Jurassic rocks of the Navajo country which has undertaken as a part of the investigation of the geology and ground-water resources of the Navajo and Hope Indian Reservations. An understanding of the regional stratigraphic relationships of the rocks of Traissic and Jurassic age was necessary to determine the occurrence and development of ground water. Intertonguing, lateral gradation, and facies changes within and between the formations obscured the regional correlations. These detailed stratigraphic studies and geologic mapping have revealed new data on the stratigraphy of these rocks and resulted in a definition and adequate description of new methodology and rock units correlated into an understandable explanation. This report was written with the intention of making these data and results available prior to the completion of the overall report on the geology and ground-water resources of the Navajo country.

Geology and ground-water resources of the Palomas Plain-Dendora Valley area, Maricopa and Yuma Counties, Arizona, by C. A. Armstrong and C. B. Yost, Jr., Arizona State Land Department Water-Resources Report No. 4, 1958. 49 p., 3 pls., 4 figs., 5 tables.

This report presents the results of an investigation of the geologic and hydrologic characteristics of the Palomas Plain-Dendora Valley area, prior to any extensive development of ground water. The records obtained during the initial stages of development in the area should be of great value in future studies. The report describes the various rock units of the area, as well as the structure and geologic history. In addition to the ground-water resources in relation to the occurrence and movement, recharge and discharge, storage, and quality of the ground water are described.

REPORTS RELEASED TO THE OPEN FILE (AVAILABLE FOR PUBLIC INSPECTION)

Interim report on the ground-water resources of the McMullen Valley area, Maricopa, Yavapai, and Yuma Counties, Arizona, by William Kam. October 1957. 27 p., 1 pl., 2 figs., 3 tables.

Describes briefly the ground-water conditions in the valley. Contains an inventory of wells in the area and chemical analyses of ground water from selected or representative wells. A map shows bedrock outcrops, location of wells, depths to water, water-table altitudes, and irrigated areas. Also contains several selected drillers' logs.

Reconnaissance of the water resources of the Lonesome Valley area, Yavapai County, Arizona, by D. G. Metzger. 1957. 4 p., 1 map.

Describes the probable effect of a small dam on one of the contributory drainages to Lonesome Valley on the ground water stored in Lonesome Valley. Map shows the bedrock and alluvial areas, location of wells, damsite, and drainage.

Use of ground water in Arizona, by J. W. Harshbarger. 1957. 34 p., 5 figs., 1 table.

This paper presents a resume of the ground-water conditions in the State of Arizona and includes discussion of the major geologic features that control the occurrence of ground water, the effect of geologic conditions on the recharge, movement, storage, and discharge of ground water from the various reservoirs. The various uses of ground water in the State are discussed and the effect that this use has on the ground-water reservoirs is described by means of a comparison of the early status of the water table with current conditions.

Should the term Gila conglomerate be abandoned?, by L. A. Heindl. 1957. 34 p., 3 figs.

Alluvial deposits exposed in the four areas of the original definition of the Gila conglomerate are shown to include at least 10 mappable units, a large portion of which are composed of fine-grained deposits. The units described are divided into two major sets with considerably different geologic histories. The author believes the term Gila conglomerate should be abandoned because it refers to diverse units and he does not consider it feasible to raise the Gila to group status because the deposits do not represent a succession of units in a single basin.

REPORTS IN REVIEW

Cenozoic alluvial deposits in the vicinity of Mammoth, Pinal County, Arizona, by L. A. Heindl. For publication in University of Arizona Bulletin Series, Physical Science Bull. 3, Contribution No. 7, Program in Geochronology.

Cenozoic alluvial deposits in the vicinity of Mammoth are divided into five units, ranging in age from probable early to middle Tertiary to Recent. The

four older of these units, together or in various combinations, have been referred to as the Gila conglomerate. The mapping and stratigraphic analysis of the separate units point to their deposition contemporaneously with two cycles of thrust faulting, at least one cycle of normal faulting, and at least one cycle of through drainage older than the one in existence since the late Pleistocene. The San Manuel fault is interpreted as a thrust on the basis of stratigraphic relationships.

Memorandum on the geology and ground-water conditions in the Gila Bend Indian Reservation, Maricopa County, Arizona, by L. A. Heindl.

The Gila Bend Indian Reservation lies astride the Gila River at the south end of the Gila Mountains. Rocks in the area include crystallines, fanglomerates, and volcanic rocks in the Gila Bend Mountains, the alluvial fill of the basin, and flood plain deposits along the Gila River. Ground water in quantities adequate for irrigation purposes is obtained from the alluvial fill of the basin and flood plain deposits. The ground water in general contains between 2,000 and 5,000 parts per million of dissolved solids.

Reconnaissance geology and ground-water resources of lower Bonita Creek area, Graham County, Arizona, by L. A. Heindl and R. A. McCullough.

The lower Bonita Creek area includes about 70 square miles on the east slope of the Gila Mountains, about 15 miles northeast of the City of Safford. Rocks in the area include Cretaceous(?) sedimentary, volcanic and intrusive rocks, Tertiary volcanic and alluvial rocks, and Tertiary-Quaternary and Quaternary alluvial rocks. The largest single known source of ground water is the late Quaternary alluvial channel deposits along Bonita Creek. Supplementary supplies may exist within Tertiary volcanic rocks underlying the piezometric surface controlled by the present gradient of Bonita Creek.

REPORTS IN PROGRESS

Geology and ground-water resources of the Snowflake-Hay Hollow areas, Navajo County, Arizona, by Phillip W. Johnson.

This report describes a reconnaissance investigation conducted intermittently from 1951 through 1957. The geology of the area is described in some detail and the water resources are explained in as great detail as the limited amount of data permits. The Coconino sandstone is the chief aquifer in the area although some water is supplied to domestic and stock wells from the Moenkopi formation of Triassic age. Some surface water is also available in the area. Most of the recharge to the ground-water reservoir of the area occurs from precipitation in the mountainous Mogollon Rim country.