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WATER-RESOURCES STUDIES IN UTAH

July 1, 1976 to June 30, 1977

GL03607

A Summary of Progress of Activities of
the U.S. Geological Survey
mostly in cooperation with
the State of Utah

July 1977

**UNIVERSITY OF UTAH
RESEARCH INSTITUTE
EARTH SCIENCE LAB.**

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WATER RESOURCES STUDIES IN UTAH BY THE U.S. GEOLOGICAL SURVEY
July 1, 1976 to June 30, 1977

INTRODUCTION

This report summarizes the progress on water-resources studies in Utah by the U.S. Geological Survey during the period July 1, 1976 to June 30, 1977. Much of the work was done in cooperation with the State of Utah; additional supporting funds were transferred from other Federal agencies or appropriated directly to the Geological Survey. The principal State cooperators were the Utah Department of Natural Resources (Divisions of Water Rights and Water Resources) and the Bear River Commission.

The program in Utah at the end of the reporting period consisted of 21 projects, and a discussion of each project is given in the following pages. In addition to the 21 projects, work has been or is being completed on reports for other projects. The status of the reports is as follows:

- Utah 96 "Water resources of northern Uinta Basin area, Utah and Colorado." In district review.
- Utah 110 "Hydrology of Beaver Valley, Beaver County, Utah with emphasis on ground water." Transmitted to National Headquarters for approval for publication as a Utah Department of Natural Resources Technical Publication.
- Utah 122 "A digital model of ground water in Spanish Valley, Grand and San Juan Counties, Utah." Transmitted to National Headquarters for approval for release to the open file.

Short descriptions are given at the end of the report for five proposed projects to be started on or after July 1, 1977.

The following reports were released to the open file:

Ground-water conditions in the Navajo Sandstone, central Virgin River valley, Utah: U.S. Geological Survey Open-File Report.

Ground-water resources of the Parowan-Cedar City drainage basin, Iron County, Utah: U.S. Geological Survey Open-File Report 77-312.

Hydrologic reconnaissance of the Dugway Valley-Government Creek area, west-central Utah: U.S. Geological Survey Open-File Report 77-263.

Hydrologic reconnaissance of the Tule Valley drainage basin, Juab and Millard Counties, Utah: Utah Department of Natural Resources Technical Publication 56 (in press).

Hydrologic studies by the U.S. Geological Survey in oil-shale areas of Colorado, Utah, and Wyoming, 1976: U.S. Geological Survey Open-File Report.

Reconnaissance of water quality in the Duchesne River basin and some adjacent drainage areas, Utah: Utah Department of Natural Resources Technical Publication 55 (in press).

Seepage study of the Sevier Valley-Piute Canal, Sevier County, Utah: U.S. Geological Survey Open-File Report 77-326.

Selected hydrologic data, Parowan Valley and Cedar City Valley drainage basins, Iron County, Utah: U.S. Geological Survey Open-File Report (duplicated as Utah Basic-Data Release 28) (in press).

Subsurface-temperature data for some wells in western Utah: U.S. Geological Survey Open-File Report 77-132.

The following reports were published:

Characteristics of aquifers in the northern Uinta Basin area, Utah and Colorado: Utah Department of Natural Resources Technical Publication 53.

Chemical and physical data for the Flaming Gorge Reservoir area, Utah and Wyoming, 1973-75: U.S. Geological Survey Open-File Report (duplicated as Utah Basic-Data Release 27).

Estimating runoff volumes and flood hydrographs in the Colorado River basin, southern Utah: U.S. Geological Survey Water-Resources Investigations 102-76.

Fracturing and subsidence of the land surface caused by the withdrawal of ground water in the Milford area, Utah: U.S. Geological Survey Journal of Research, v. 4, no. 5, p. 505-510.

Ground-water conditions in the Navajo Sandstone, central Virgin River valley, Utah: U.S. Geological Survey Open-File Report.

Ground-water conditions in Utah, spring of 1977: Utah Division of Water Resources Cooperative Investigations Report 16.

Hydrologic evaluation of Ashley Valley, northern Uinta Basin area, Utah: Utah Department of Natural Resources Technical Publication 54.

Hydrologic evaluation of the upper Duchesne River valley, northern Uinta Basin area, Utah: Utah Department of Natural Resources Technical Publication 57.

Model for evaluating the effects of dikes on the water and salt balance of Great Salt Lake, Utah: Utah Geological and Mineral Survey Water-Resources Bulletin 21.

Seepage study of canals in Beaver Valley, Beaver County, Utah: Utah Department of Natural Resources Technical Publication 52.

Water resources of Dinosaur National Monument, Utah and Colorado: U.S. Geological Survey Open-File Report 76-580.

Water resources data for Utah, water year 1975: U.S. Geological Survey Water-Data Report UT-75-1.

Current Project

Title and Number: HYDROLOGIC ENVIRONMENTAL IMPACTS OF ENERGY-RELATED DEVELOPMENT IN UTAH; UT 75-115 F.

Staff: Don Price, Project Chief
District personnel as assigned

Period of Project: Continuing

Objective: To provide input to water-resources sections of environmental impact analyses as requested by other Federal agencies. Collect and evaluate such hydrologic data as may be required for immediate environmental evaluations in response to unforeseen events for which hydrologic data are lacking or completely inadequate.

Approach: For each assignment collect and compile all available file data; collect additional data in the field as required. Evaluate data and compile water-resources sections on existing environment, impacts, mitigations, alternatives, etc. as required by the specified assignment, and by the Council of Environmental Quality guidelines for preparation of environmental impact statements. Prepare reports from data collected for use in possible future hydrologic studies of the specific impact area.

Progress: (1) The water-resources sections have been compiled in the draft supplemental environmental impact statement for the U.S. Department of the Interior's oil-shale leasing program (for in-situ development of the shale). (2) Water-resources sections have been compiled in the environmental impact analyses by the Area Mining Supervisor for four underground coal mine proposals. (3) Three hydrologic-data maps have been compiled as part of Geologic Division's environmental studies in the Kaiparowits coal basin area, Utah.

Plans for Next Year: (1) Complete as required for approval, work on the supplemental environmental impact statement for the oil-shale leasing program. (2) Complete as required for approval, work on two of the hydrologic-data maps for the Kaiparowits coal basin area environmental studies. (3) Provide hydrologic assistance to the Area Mining Supervisor, as requested, until a hydrologist is assigned to that office. (4) Provide assistance as requested in preparation of the environmental impact statements for the southern and central Utah coal regions.

Reports:

Price, Don, Map showing general chemical quality of ground water in the Kaiparowits coal basin area, Utah: U.S. Geol. Survey Misc. Geol. Inv. Map I-1033-A (in press).

Price, Don, Map showing general availability of ground water in the Kaiparowits coal basin area, Utah: U.S. Geol. Survey Misc. Geol. Inv. Map I-1033-B (in press).

_____, Map showing principal drainage basins, principal runoff-producing areas, and selected streamflow data in the Kaiparowits coal basin area, Utah (in review).

_____, Map showing general chemical quality of surface water in the Kaiparowits coal basin area, Utah (in review).

Current Project

Title and Number: HYDROLOGIC RECONNAISSANCE OF GEOTHERMAL RESOURCES IN THE EASTERN PART OF THE GREAT BASIN, WESTERN UTAH, AND CONTIGUOUS AREAS;
UT 75-117 G

Staff: F. E. Rush, Project Chief

Period of Project: March 1975 to June 1977

Objectives:

1. Describe general geohydrologic framework.
2. Evaluate geologic, geochemical, and geophysical information.
3. Outline further work that might be needed.

Approach:

1. Review literature.
2. Consult with other workers.
3. Gather and evaluate existing data.
4. Collect field data.
5. Make field reconnaissance of selected areas.
6. Prepare reports.

Progress: Project completed except for review of reports.

Plans for Next Year: None

Reports:

Rush, F. E., 1977, Subsurface-temperature data for some wells in southwestern Utah: U.S. Geol. Survey Open-File Report 77-132, 36 p.

_____, Brief overview of the hydrothermal resources of Utah: U.S. Geol. Survey Prof. Paper (in review).

_____, Possible effects of geothermal development on shallow groundwater systems of Utah: U.S. Geol. Survey Admin. Report (in review).

Galyardt, G. L., and Rush, F. E., Geology of Crater Hot Springs KGRA and vicinity, Juab and Millard Counties, Utah: U.S. Geol. Survey Misc. Inv. Map (in review).