INTRODUCTION

The reservoir created by Clark Canyon dam has provided irrigation water for approximately 28,000 acres of land in Beaverhead and Madison Counties. This new irrigation area is called the East Bench Irrigation Unit and water is supplied to the area by the East Bench Canal. The land to be irrigated includes portions of the flood plain of the Beaverhead River and portions of the bench land east along the river between Barretts Diversion and the town of Twin Bridges. Figure 1 is a plan map of the area showing the location of the area of investigation.

To evaluate the effects of irrigation on existing ground-water patterns in the area, the Bureau of Reclamation in cooperation with the U.S. Geological Survey conducted a hydrogeological study of about 300 square miles and intensively examined an area of about 100 square miles that will be most directly affected by the irrigation project. The results of this USBR-USGS study together with geological and aquifer test data from the Montana Bureau of Mines and Geology have provided a general understanding of ground-water conditions in this area.

PHYSIOGRAPHY AND CLIMATE

The area of investigation is in a large intermontane basin bounded on the south and east by the Ruby Range and on the north by McCartney Mountain. The area of principal interest is between the Beaverhead River and the East Bench Irrigation Canal. The area is about 30 miles long and ranges in width from one-half to seven and one-half miles. The major physiographic features of the

1 Hydrogeologist, Montana Bureau of Mines and Geology, Butte, Montana.

The author wishes to thank Mr. Gale McMurtrey of the U.S. Geological Survey for providing data on water levels and water quality and for his helpful discussion of the paper. Thanks are also extended to the U.S. Bureau of Reclamation for supplying geological logs of wells in the area; to Mr. Ernest Bond of the Montana Bureau of Mines and Geology for his able assistance in drafting; and to Mr. Roger Pierce, city engineer in Dillon, for his cooperation and assistance in conducting aquifer pump tests.