HYDROGEOLOGIC CROSS SECTIONS

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INTRODUCTION

The five cross sections on this plate show the horizontal and vertical extent of aquifers and geologic units encountered in Chisago County. They also show groundwater residence time and the groundwater residence time of a groundwater sample at each cross section. Each cross section is based on a combination of geologic, hydrogeologic, and hydrogeochemical data. The cross sections are drawn to scale, with the horizontal scale adjusted to fit the page and the vertical scale exaggerated. The cross sections are drawn with a horizontal exaggeration of 10:1, which means that the vertical scale is 10 times greater than the horizontal scale.

The hydrogeology of Chisago County is influenced by the extensive water bodies geologic units. The geology of the county is characterized by a series of horizontal and vertical bedrock aquifers, each with different characteristics. The bedrock aquifers are separated by a series of aquitards, which are geologic units that are impermeable to groundwater.

The three major aquifers in Chisago County are the Cambrian-Ordovician, the Chippewa River, and the St. Croix. The Cambrian-Ordovician aquifer is the most widespread and the most productive, with high permeability and good aquifer characteristics. The Chippewa River aquifer is the second most widespread and productive, with moderate permeability and good aquifer characteristics. The St. Croix aquifer is the least widespread and productive, with low permeability and poor aquifer characteristics.

The hydrochemistry of the county is characterized by a series of horizontal and vertical bedrock aquifers, each with different characteristics. The bedrock aquifers are separated by a series of aquitards, which are geologic units that are impermeable to groundwater.

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RELATIVE HYDROGEOLOGIC COMPLEXITY

The county is divided into several hydrogeologic zones, each with different characteristics. These zones are defined by the geology of the area, the hydrogeology of the area, and the hydrochemistry of the area.

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GEOLOGIC ATLAS OF CHISAGO COUNTY, MINNESOTA

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COUNTY ATLAS SERIES

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Hydrogeologic Cross Section