**Introduction**

High-volume (1-5 trillion barrels) of co-produced water are generated daily during production operations for oil and gas in North Dakota. Most produced water is from limestone, with varying compositions of total dissolved solids. Produced waters have historically been considered a waste stream and disposed of directly, without surface injection. In the study area, groundwater studies for produced water treatment and disposal have shown that produced water is brackish, produced water disposal wells are referred to as saltwater disposal wells (SWD wells).

**The Dakota Group**

Overlaying the Dakota Group is a sequence of Cretaceous and Tertiary rocks deposited in the Parshall 100K region. The Dakota Group comprises formations that provide a complex system of rock units that range from sandstone to shale. These rocks are ideal for producing water for injection. The Dakota Group is a sequence of formations that provide a complex system of rock units that range from sandstone to shale.

**The Dakota Group**

- **Slopes County**
- **Elkhorn**
- **Butte**
- **Baker**
- **Golva**

These formations, and the overlying marine units, provide a complex sequence of rock units that range from sandstone to shale.

**Other Features**

- **Inyan Kara Sandstone Isopach Map**
- **Belfield 100K Sheet, North Dakota**

**Isopach Map**

This map presents isopachs of interpreted, significant sandstone bodies present within the Inyan Kara Formation in the Belfield 100K area. The isopachs are used to identify favorable areas where the potential for reservoir-quality sandstone beds can be explored at a lower cost. These sandstone bodies are ideal for producing water for injection. The Dakota Group is a sequence of formations that provide a complex system of rock units that range from sandstone to shale.

**Control Well Descriptions**

- **Well Productivity**
- **Porosity and permeability**

**Average Productivity**

- **Porosity and permeability**

**Cross Sections**

In order to analyze injected water generation in the basin, a series of cross sections were prepared to assess the nature and magnitude of potential reservoir sandstone bodies. These cross sections are ideal for producing water for injection. The Dakota Group is a sequence of formations that provide a complex system of rock units that range from sandstone to shale.