Ground-Water Recharge and Aquifer Recharge Potential for Cape May County, New Jersey

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Glossary of selected terms:

Aquifer Recharge: The amount of water that infiltrates the land surface and enters groundwater storage. This is often estimated using hydrologic models that consider factors such as precipitation, soil type, land use, and evapotranspiration.

Aquifer: A permeable layer of rock or sediment that can store and transmit groundwater. Aquifers are critical sources of water for human use and support ecosystems.

Baseflow: The portion of streamflow that is derived from groundwater discharge. It is the steady, slowly fluctuating component of streamflow and is important for maintaining base water levels in rivers and streams.

Curvature-number: A method used to estimate monthly precipitation, soil, land-use, and land-cover data for generating ground-water-recharge estimates.

R-factor: A factor used in the curve-number method to estimate monthly precipitation and its infiltration into the soil.

R-constant: A constant used in the curve-number method to estimate the amount of water that infiltrates the soil.

Climate stations: Networks of weather stations that measure and record meteorological data, including precipitation, temperature, and humidity. These data are used to support hydrologic models and ground-water-recharge estimates.

Water-table aquifers: Aquifers that are replenished by groundwater discharged through the land surface. These aquifers are important for water supply and can be recharged by rainfall or irrigation water.

Evapotranspiration: The process by which plants lose water to the atmosphere in the form of water vapor through the leaves and stems. It is an important component of the water cycle and affects groundwater recharge.

Infiltration: The process by which water enters the soil and is stored as groundwater. Infiltration is influenced by soil type, land use, and land cover.

Discharge: The rate at which water flows through a stream or aquifer. It is measured in units of volume per unit time (e.g., cubic meters per second).

Ground-Water Recharge Methodology:

Ground-water recharge is calculated as the water table rising, the ground water is a vital natural resource. The recharge also affects infiltration, evapotranspiration, and discharge. Furthermore, saturated and unsaturated zones are influenced by the recharge process.

The recharge process can be represented by the following equation:

\[ \text{Recharge} = \text{Infiltration} - \text{Evapotranspiration} - \text{Discharge} \]

The equation describes the balance of water entering the soil and being lost to the atmosphere or discharged into streams. The recharge process is influenced by factors such as climate, soil type, and land use.

The recharge process can also be represented by the following equation:

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Ground-Water Recharge Potential

This map shows the potential for ground-water recharge across different parts of Cape May County. The map uses a color-coded system to indicate areas with high, medium, and low potential for ground-water recharge. The map also includes a legend that explains the color codes.

The potential for ground-water recharge is determined using a combination of factors such as climate, soil type, land use, and land cover. The map shows that the potential for ground-water recharge is highest in areas with high precipitation, well-drained soils, and low evapotranspiration. The map also shows that the potential for ground-water recharge is lowest in areas with low precipitation, poorly drained soils, and high evapotranspiration.

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