

# HYDRAULIC GRADIENTS IN RECHARGE AND DISCHARGE AREAS AND APPARENT GROUND-WATER AGE DATES FROM THE CHARACTERIZATION OF MULTIPLE REGOLITH-FRACTURED BEDROCK GROUND-WATER RESEARCH STATIONS IN NORTH CAROLINA

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As part of the North Carolina Piedmont and Mountains Resource Evaluation Program, research stations were established in representative, regional geologic belts to study ground-water flow and quality. Two major findings from the five research stations (more than 120 wells) include (1) similar vertical gradient directions from the regolith to the transition zone, such as downward gradients in recharge areas, and upward gradients in discharge zones (vertical gradients in the bedrock are variable depending on the fracture network tapped by the well); and (2) similar apparent ground-water ages and evidence of longer apparent flowpaths for older ground water in discharge areas compared to younger water in recharge areas. Additionally, shallow ground water in the regolith is older in discharge areas compared to recharge areas, indicating a longer flowpath and residence time.