



# Water-Supply Considerations within the Marcellus Shale Gas-Play Area of New York State



## Stratified Drift Deposits in Main Valleys

### Community Supplies

These areas represent the *highest priority* for water-resource protection. Example percentages of county populations served by community groundwater supplies are: Broome (47%), Tioga (48%), and Chemung (26%).

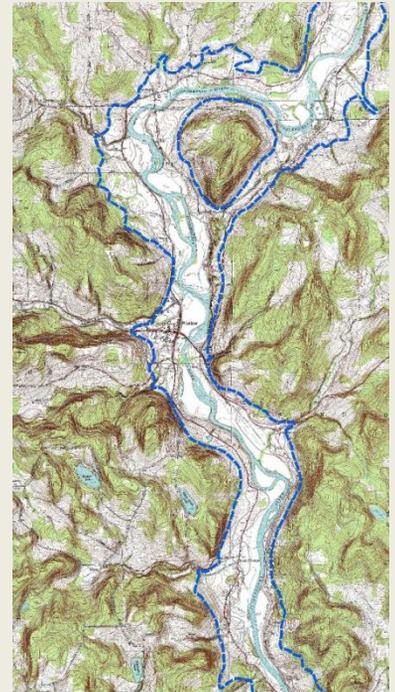
### Non-Community, Non-Transient Non-Community, Transient Supplies

Non-community public supplies generally supply small populations such that only the largest would be feasible to assess. However, if several supplies (and domestic wells) are clustered within an aquifer area, a criterium for cumulative population served could be used as a guide for assessment.

### Largely Unutilized Areas with High Water-Resource Potential

Definition of unutilized areas of previously mapped stratified drift with high water-resource potential (and likely recharge sources) can inform decisions on safeguarding water resources for the future, or provide alternatives if current resources become impaired.

Delineation of Stratified -Drift



## Variable Till Cover in Upland areas

### Domestic Supplies

Nearly all domestic wells in upland areas tap the fractured bedrock aquifer. Protection of individual wells on a site by site basis is not feasible; however, delineation of upland areas with little or no till overlying bedrock highlights those bedrock aquifer areas at high risk of contamination from activities at land surface. Introduction of contaminants in these areas will result in relatively rapid infiltration into the aquifer and flow in the subsurface down hillslopes. Domestic wells in downslope areas would be especially vulnerable to contamination.

Upland areas in eastern Broome and southeastern Chenango Counties show wide variation in the thickness of till deposits overlying bedrock (0 to ~250 ft). Till is typically thinnest of hilltops and on hillsides facing N-NE, facing the direction of glacial-ice advance. Till is typically thickest in hollows on the lee side of hills (S-SW side) relative to the advance of glacial ice. Natural-gas drilling activities on bedrock provide many pathways for contaminant migration into the fractured bedrock aquifer, whereas thick till (50 – 75 ft +) provides a relatively impermeable barrier that at least locally protects the fractured - bedrock aquifer. Therefore, delineation of thick and thin till can inform drill-site decisions in upland areas.

Delineation of Till Thickness

