

Prepared in cooperation with the
Suffolk County, New York Water Authority

Documenting Hydrogeologic Information Obtained from Deep-Borehole Drilling in Suffolk County, New York

The U. S. Geological Survey will be collecting and analyzing detailed hydrologic information necessary to help characterize the hydrogeology of aquifer systems throughout Suffolk County.

Background

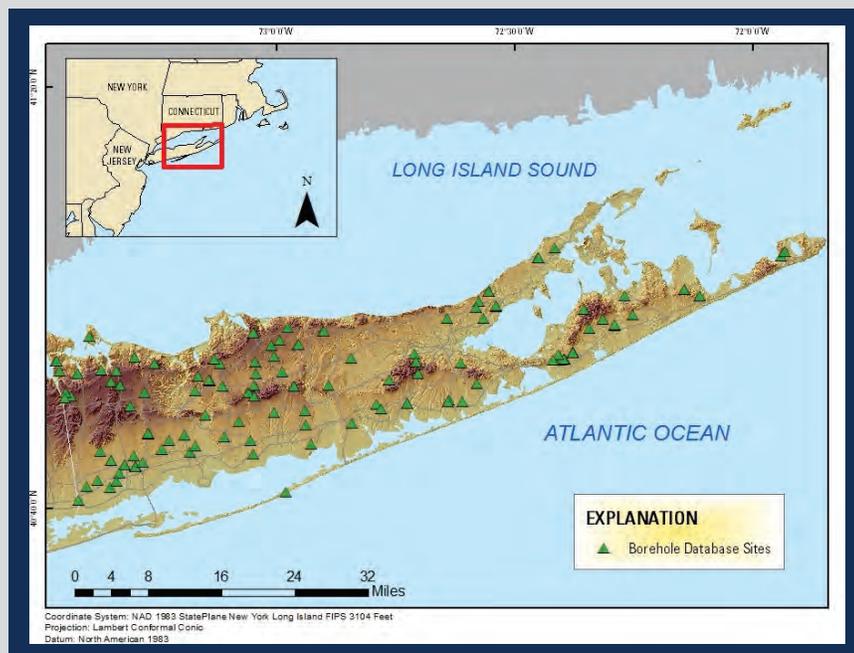
Borehole drilling and well-installation are costly procedures, and securing funding for new well installation for the sake of research is often difficult. The Suffolk County Water Authority (SCWA) maintains a large network of deep wells for public supply that is constantly being upgraded as water demands increase. During the drilling process, contractors record drillers' logs and collect cores and, subsequently, often perform borehole geophysical logging for determination of aquifer properties. However, although these data may suffice for

selecting a screen zone, they are lacking in more detailed hydrologic information necessary for a better understanding of Suffolk County's hydrologic system. A comprehensive database documenting pertinent hydrologic information obtained from borehole drilling is needed. The main objective will be to coordinate data-collection activities with the SCWA's drilling operations for the purpose of collecting, analyzing, updating, and archiving hydrogeologic information. The database information will help understand and characterize the hydrogeology of aquifer systems throughout the County. This information will be used to determine altitudes of

major hydrologic units penetrated by wells located throughout the County, and to facilitate developing and updating maps and sections of sub-surface hydrogeology. These objectives are to be met by the following:

1. having a hydrologist at select test and production wells during drilling and (or) coring for up to one week at eight sites annually to maintain a geologist's log;
2. collecting, describing, and archiving sediment cores and sieve samples at specified intervals and (or) facies changes;
3. importing drillers' and (or) geologists' logs and geophysical logs in paper format into a geographic information system (GIS) for archival;
4. archiving other hydrogeologic data (for example, core photographs) in an electronic database;
5. digitally capturing a few (2–3) critical legacy geophysical paper logs annually with a large-format digitizing tablet and archiving the resulting electronic logs in the borehole database; and
6. supplying new data that facilitates developing and updating hydrogeologic maps and sections.

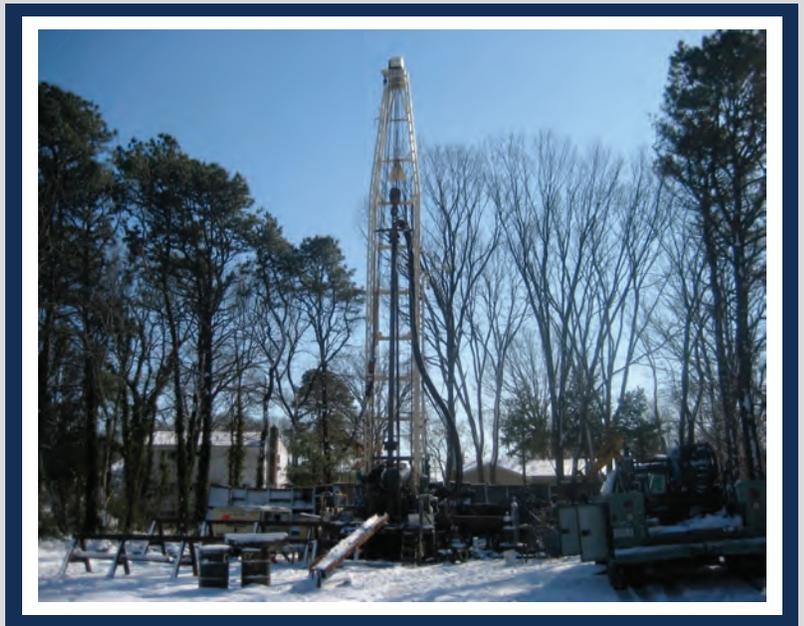
Coordinating with the SCWA's drilling operations will allow for cost-effective hydrologic data collection. Data evaluation by an on-site hydrologist will help provide information that can be used to define facies boundaries and zones with the potential to have the greatest yields. Electronic and GIS archives of hydrogeologic data (and the personnel to interpret the data) will be invaluable in understanding the County-wide and site-specific hydrogeology for siting future production-well locations, and will allow for more accurate definition of hydrogeologic boundaries and map generation.



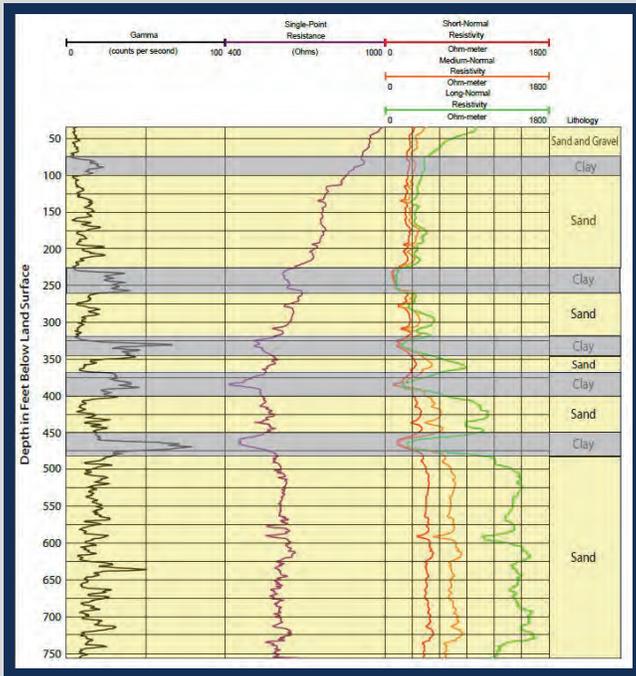
Spatial distribution of drilling sites from the Suffolk County borehole database project

Related Links

<http://pubs.er.usgs.gov/publication/ha709>



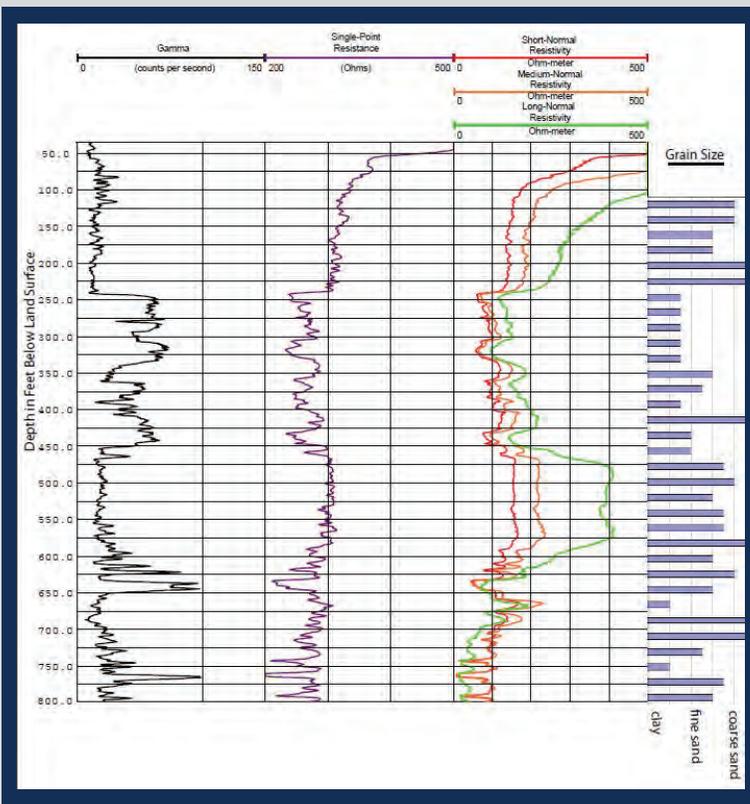
Drill rig at Sawyer Avenue replacement well



Suite of geophysical logs and lithology for the Sawyer Avenue replacement well



Core samples from Herricks Lane North test boring showing contact between the upper glacial (Pleistocene) and Magothy (Cretaceous) aquifers



Suite of geophysical logs and grain size distribution for the Northville Turnpike test boring

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