

LONG ISLAND SOUND
RESOURCE CENTER

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September 29, 2003

Dear Mrs. Jacobson:

In response to your request I can make the following general observations:

The geology of Long Island's north shore is quite different from the geology of coastal Connecticut. In eastern Long Island, sand, gravel, clay, and boulders transported and shoved by the last glacier form the coast. Crystalline bedrock is over 1,000 feet below the surface, and has no influence on the shape and character of the shoreline. The beach along the eastern north shore is a wave-cut terrace cut into the glacial moraine, and long-shore currents are reworking the glacial material. Sediment transport and reworking (high energy environments) are common.

The Connecticut shoreline is bedrock dominated. Crystalline bedrock is at or near the surface in many places. The north-south grain of the bedrock creates many small embayments. Beaches are largely confined by rocky headlands that interrupt sediment transport. In the embayments and leeward of islands, low energy environments are common and deposition of fine-grained sediment is typical. Differences in the character and composition of the opposing coasts coupled with contrasting energy regimes and environments of deposition create very different ecological conditions along the north and south shores of eastern Long Island Sound.

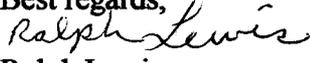
In the Stony Creek area, things are further complicated by the unique bedrock geology that creates so many islands and ecological niches. As you know, this is very different from most of the Connecticut coast in that so many islands are concentrated in a small area. I have no data for the area, but I assume that there are quite a few ups and downs in the irregular bedrock surface. This could complicate horizontal drilling unless the hole is kept deep enough to stay in bedrock by going under whatever valleys are present.

Summaries of my work pertaining to the geology of Long Island Sound can be found in two volumes of the Journal of Coastal Research, as follows:

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LEWIS, R.S. and Stone, J.R. 1991. Late Quaternary stratigraphy and depositional history of the Long Island Sound Basin: Connecticut and New York: in Special Issue No. 11, Journal of Coastal Research - Quaternary Geology of Long Island Sound and Adjacent Coastal Areas, Gayes, P.T., LEWIS, R.S. and Bokuniewicz, H.J., Eds., Coastal Education and Research Foundation, Inc., Fort Lauderdale, FL, U.S.A., p. 1-23.

LEWIS, R.S. and DiGiacomo-Cohen, M.L. 2000. A Review of the geologic framework of the Long Island Sound Basin, with some observations relating to postglacial sedimentation: in Thematic Section, Vol. 16, No.3, Journal of Coastal Research – Regional Processes, Conditions, and Characteristics of the Long Island Sound Sea Floor, Knebel, H.J., LEWIS, R.S. and Varecamp, J.C. Eds. Coastal Education and Research Foundation, Inc., Royal Palm Beach, FL, U.S.A., p 522-532.

Best regards,

Ralph Lewis
Connecticut State Geologist (Ret.)