SURFICIAL GEOLOGY OF YORK COLLEGE CAMPUS (QUEENS) AND MONTAUK POINT (LONG ISLAND): AN OPEN ACCESS TO GEOSCIENCE EDUCATION

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To evaluate compositional and textural differences among the samples collected from York College (YC) campus (Queens), Montauk Point (MP) and Hither Hills (HH), Long Island, emphasis is given to the general geologic setting, overall grain size distribution, and recent glacial activity that sculptured the landscapes. K9 surficial geology encompasses outwash plains (York College), fluvioglacial and glacial (Montauk Point) and beach and dune complex (Hither Hills). YC samples were collected from depth ranging 40 cm to 250 cm and are mostly an assortment of medium to coarse sand, granule to cobble sized, minor silt, and clay. Presence of low angle cross bedding was noted within the sandy unit located around 150 cm from the surface and melt-water dominated transport can also be associated with this feature. MP sand samples largely collected from the beach were mostly free of finer fraction and preponderance of coarse-sand sized grains is highly noticeable. Scattered presence of purple sand often containing garnet, magnetite, rutile, monazite, and tourmaline is suggestive of hydraulic sorting due to wave action and provenance of purple sand is presumed to be intermediate to mafic clasts associated with coastal bluffs. Magnetite abundances within the purple sand range from 5% to 20%. HH sands are representative of both beach and dune complex and showing prominent cross bedding with foresets accentuated by heavy minerals. Dominant grain size is medium to fine-grained and well sorted sand. Subtle differences in terms of mineral assemblages including quartz, feldspar, muscovite, biotite, garnet, zircon, monazite, rutile, and tourmaline within the YC, MP, and HH samples suggest slight variation of the source rock composition and overall grain size trends also point to a particular sedimentary environment of deposition. These locations are easily accessible and form a great field geology sites for understanding surficial geology of Queens and Long Island and recent glacial activity that sculptured the landscapes. K9-16 earth science students can greatly benefit by having this opportunity located close to the urban setting of New York.

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**Lab Investigation**

Sand samples were washed thoroughly to get rid of the salt. Oven-dried, sieved, and plotted on probability paper to determine textural parameters following Folk (1962). Representative sand samples, based on individual mesh, were investigated for mineral and trace element distributions by using microscope and X-ray fluorescence (XRF), respectively.