



**Summary:** Soils containing the mineral, glauconite, are common throughout the New Jersey Coastal Plain. Glauconite and associated clay minerals naturally contain elevated concentrations of arsenic and several other hazardous trace metals, along with abundant aluminum, iron and manganese. Even with “low-flow” methods, collection of groundwater samples by pumping inevitably disturbs the soil matrix surrounding a monitoring well. This often results in elevated sample turbidity and trace metal concentrations that are not representative of actual groundwater quality. During this investigation, specialized techniques were used to obtain representative groundwater samples with trace metal concentrations significantly lower than reported initially based on low-flow sampling. Statistical evaluations supplemented these efforts, linking trace metals in groundwater to natural sources in the surrounding soil.

Princeton Geoscience generally with the highest discharge related performed an extensive soil concentrations noted at origin. Princeton Geoscience and groundwater remedial downgradient then compared groundwater investigation at a site located in locations. Because the soil of concentrations of the trace the New Jersey Coastal the aquifer matrix was known metals at the site to Plain. During the early stages to contain trace metals, it was concentrations of the metals of the project, a background evident to us that the elevated NJDEP had acknowledged study identified natural arsenic metals concentrations in were of natural origin and concentrations in soil at groundwater samples resulted found a moderate to strong concentrations as high as 100 mainly from turbidity correlation for each of the trace mg/kg. Research indicated that introduced into the wells metals in question. Although the arsenic was associated with during purging. When NJDEP has not revised its glauconite, a mineral traditional techniques (i.e., low statement with respect to the



constituent of the soil matrix, and NJDEP accepted that the soil concentrations of arsenic were of natural origin. Later in the project, arsenic and several other trace metals, including lead, chromium and beryllium, plus aluminum, iron and manganese were detected in groundwater samples,

-flow purging, redevelopment trace metals in groundwater, no of the wells) failed to produce remediation has been required low-turbidity samples, to address this issue and Princeton Geoscience Princeton Geoscience has developed other specialized indicated an intention not to techniques to obtain include metals as groundwater representative characterization contaminants in the of natural vs. facility-related groundwater impacts. Based on results of these activities and a statistical comparison to published ranges of metal concentrations in New Jersey glauconitic soils, NJDEP conceded that concentrations of aluminum, iron and manganese were likely of natural origin, but maintained that the trace metal detections were of indeterminate or



Classification Exception Area information to be submitted for this site.