Abstract Submitted
for the DNP17 Meeting of
The American Physical Society

Proton Induced X-Ray Emission (PIXE) Analysis to Measure Trace Metals in Soil Along the East River in Queens, New York SAJJU CHALISE, SKYE CONLAN, ZACHARY PORAT, SCOTT LABRAKE, MICHAEL VINEYARD, Union College — The Union College Ion-Beam Analysis Lab's 1.1 MV tandem Pelletron accelerator is used to determine the presence of heavy trace metals in Queens, NY between Astoria Park and 3.5 miles south to Gantry State Park. A PIXE analysis was performed on 0.5 g pelletized soil samples with a 2.2 MeV proton beam. The results show the presence of elements ranging from Ti to Pb with the concentration of Pb in Astoria Park (2200 200 ppm) approximately ten times that of the Gantry State Park. We hypothesize that the high lead concentration at Astoria Park is due to the nearby Hell Gate Bridge, painted in 1916 with lead based paint, then sandblasted and repainted in the '90s. If the lead is from the repair of the bridge, then we should see the concentration decrease as we go further from the bridge. To test this, soil samples were collected and analyzed from seven different locations north and south of the bridge. The concentrations of lead decreased drastically within a 500 m radius and were approximately constant at greater distances. More soil samples need to be collected within the 500 m radius from bridge to identify the potential source of Pb. We will describe the experimental procedure, the PIXE analysis of soil samples, and present preliminary results on the distribution of heavy trace metals.

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Date submitted: 31 Jul 2017 Electronic form version 1.4