

Urban Ecology- NYC Water Quality Mapping Activity

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Time: 45 min (1 class Period)
Hands On? Yes; Internet? No

Standards Met: *Living Environment: Standard 1; PI 1.4, 2.1, 2.2, 2.3, 2.4, 3.1, 3.2, 3.3 Standard 1; PI 1.4, 2.1, 2.2, 2.3, 2.4, 3.1, 3.2, 3.3; Standard 4; PI 1.1, 6.1, 6.3, 7.1, 7.2; Earth Science: Standard 1; Key Ideas 1, 2, 3 : Standard 2; Key idea 1 Standard 1; Key Ideas 1, 2, 3 : Standard 2; Key idea 1 Standard 4: PI 1.2*

Title: NYC Water Quality Mapping Activity
Grade and Subject: 11th (Urban Ecology)
Number of Days for Completion: 1
Overreaching Goals/ Outcomes: Students will interpret data collected on field trips to map water quality across the New York City area.
Learning Goals/Outcomes: SWBAT- Summarize raw data, display tabular data in map form, and interpret results to determine how water quality changes across the New York City area based on runoff, permeability, sewage overflow, and proximity to the Atlantic Ocean.
Materials: Summarized table of Raw Data on student data sheets (Raw Data collected on field trips to 3 water bodies in the NYC area), NYC area subway maps modified to include a key for water quality parameters and labels of relevant sites (the location of each water body, the location of our school, etc), colored markers
Introduction: This is a 1-day classroom activity to pull together a 3-day field data collection effort.
Instruction/Direct Experience: <i>10min:</i> Students will be given an introduction to the mapping activity including a discussion about the importance of map keys and symbology (see file "SubwayMapPPT"). <i>5min:</i> Students will be asked to make predictions about the general water quality for each of the 3 field sites they visited. Predictions will be based on qualitative (experiential memory) and quantitative (raw data) recall. <i>25min:</i> Students will work in groups of 4-5 to complete the mapping activity. Each group will map and compare at least two sets of data to answer a quantitative water quality question (see files "SubwayMapWorksheet" and "SubwayMapQuestions") <i>10 min:</i> Each group will present their map to the class, and discuss how they decided what data to use, how they made decisions about map symbology, and how they used their mapped data to answer their question.
Pivotal Questions: What water body is your data coming from? What do the values of the test indicate about the quality of the water? How are pH and Salinity related? How would you expect an inland water body to differ from the Bay or Ocean water? What factors would influence unhealthy water? What role does weather play in water quality?
Assessment: Students will discuss their results with the class and present their completed map.
Connections: This lesson is a synthesis of each lesson in the Water Quality unit and will be built upon in GK12 final research project—Urban Water Cycle (storm water).