

## **NEH Hudson River Workshop Lesson Plan 2011**

**Teacher:** Janet Villas

**Subject:** Earth Science

**Grade Level:** 6<sup>th</sup> - 8<sup>th</sup> Grade

### **Summary:**

Students will learn how New York City has been changed by human intervention. Students will have previously learned the geologic history of New York State and will subsequently be learning coastal ecology. This lesson will act as a bridge between how the land has been shaped in more modern times by human construction and how that impacts coastal wetlands.

Heading: Changing Manhattan for better or worse

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**Rationale:** Students will learn how New York City has been changed by human intervention. Students will have previously learned the geologic history of New York State and will subsequently be learning coastal ecology. This lesson will act as a bridge between how the land has been shaped in more modern times by human construction and how that impacts coastal wetlands.

**Essential Questions:**

How is land changed after it is formed?

Is modern man a constructive or destructive force of nature?

Has the land been essentially changed or been layered upon by humans?

Are humans a greater force of nature than nature itself?

**Objectives:** Upon Completion of this lesson or unit, students will be able to

Read and compare maps. Understand topography. Infer destructive and constructive changes.

Appreciate how humans can build and fill wetlands and change the ecology of the area.

**Materials:**

The Mananatta Project map, (<http://welikia.org/m-map.php>)

*The Outer Lands*, by Dorothy Sterling (W.W. Norton & Co.)

*Earth Science* by Spaulding, Namowitz (New York Edition)

Netbooks, if available

**Procedure:**

1. Preparation assignment: Students will read the first 2 chapters of *The Outer Lands* with emphasis of how the glaciers have shaped the coastline. Students will review estuaries in *Earth Science*.
2. Teacher will display The Mananatta Project map on a smart board and focus on an area the students are familiar with, the Brooklyn Bridge. After showing the difference between a modern map and the map from 1610, students will be asked, "What has changed and how was it changed?" After a discussion of the obvious shoreline enhancement, we will pursue the more difficult question: How do people increase the size of a shoreline. Students will be guided to answer difficult questions of filling and dredging and how it destroys marshes but improves shipping. Students will also be guided to discuss how making your own land is an inexpensive way to create valuable real estate, and how the Dutch are masters of this craft. (Images of Holland can be used, but may be confusing)
3. Other landmarks are then compared: Water street, Penn Station, Central Park and Harlem.
4. Students may view their own address or other landmarks if there is time.

**Assessment:** Students should be able to answer these questions:

1. Where did the water go on Water Street? Does it still return? How could you find out?
2. Why do you think they created a lake in Central Park? What was there before and why would they want to change it?
3. If Harlem was mostly a wetland, how do you think the Dutch would use it?
4. Look at the trestle of the 1 train on 125<sup>th</sup> street. What is it going over? Is it still there?
5. Give three environmental problems that are caused by dredging and filling wetlands.