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The Adverse Coastal Effects of Off-Roading, Neglect, and Private Land in Moriches Bay

The towns of and villages that surround Moriches Bay are regarded highly as historical sites ("Havens Homestead."). Curiosity about the past is inherently good, however, this absorption into the past often obscure the mind about what needs to be done in the present, so our future may look less grim. Some of these towns, such as Westhampton and Westhampton Beach, have a significant amount of private property. Immediate skepticism behind the acts of these locals is innate due to the mysterious omnipotence these people possess over their land. Recreational off-roading has been recorded as a serious threat to local flora and fauna native to Moriches Bay. This is likely due to the massive tires altering the sediment, crushing plants, and even massacring inconspicuous animal nests buried in the sand ("Significant Habitats…").

This is a daunting problem because human neglect regarding the individual's perception of the importance of our immediate, natural environment has often turned into denial. People across the country living in, or near, coastal habitats are frequently disregarding how their daily actions are affecting life around them. For instance, temporal maps illustrating the local organisms have proven that dredging is reducing the biodiversity of Moriches Bay (O'Conner). Long-term dredging in Moriches Bay is also of concern because it is creating more artificial barrier islands, meaning that the beaches will be less susceptible to natural processes such as breaching and overwash. The implementation of building dense-housing infrastructures on Moriches Bay's mainland shoreline is projected to reduce the quality and size of the vital freshwater and tidal watersheds ("Significant Habitats…"). GIS will solve these problems by quickly creating and aggregating visual representations of what must be done in Moriches Bay to increase biodiversity and create a harmonious relationship between humans and their immediate, natural environment.

Dataset Title	Source	Measurement Framework	How to Obtain
Private Land	Reports and Data from the Towns of Westhampton and Westhampton Beach	Vector polygons	Towns of Westhampton and Westhampton Beach
Animal Nests	Reports and Data Section of NOAA or a local organization	Vector, Raster	NOAA or a local organization
Flora of Concern	Reports and Data Section of NOAA or a local organization	Vector	NOAA, ArcGIS, or a local organization
Elevation Analysis & Surface Properties for Dredging Analysis	Reports and Data Section of NOAA or ArcGIS Metadata	Raster	NOAA and ArcGIS
Residential Land Analysis	Reports and Data from Towns of Central Moriches and Moriches Bay. Data from NOAA	Vector, Raster	Towns of Central Moriches and Moriches Bay. Soil data from NOAA

GIS will concisely assess these large-scale issues by illustrating privately-owned land, which will be used as a comparison to address the quality of life among it is neighboring public beaches. With this data, conservationists can allocate optimal positions for bird and sea-turtle nests along the barrier islands. Elevation analysis in conjunction with surface properties will highlight the differences between heavily dredged and relatively natural shorelines. This assessment can demonstrate how dredging is affecting the biodiversity as well as the water quality of Moriches Bay. These operations will also aid in the location-allocation of optimal areas to place condominiums and apartment complexes that may have already been given legal clearance. Asking and successfully conducting these geospatial operations will inform the public

about the state of their home, comfort the middle-class about the lives of their wealthy neighbors, as well as provide a biodiverse home where children can learn and thrive.

Since sea turtles are often considered a flagship species, there must already be some Long Island non-profit organization(s) tracking and conserving the Loggerhead's that sometimes migrate to Moriches Bay. However, this project will ensure that both sea turtles and threatened bird species, such as the piping plover, have a secure beach area to lay their eggs. If precise locations of nests can be determined, man-made barricades will provide a safer and more conspicuous zone, which will warn humans to stay off. A likely outcome from this will be more insight into the pros and cons of long-term dredging. Skepticism within the construction industry will skyrocket when illustrating how severe the impacts of building dense residencies right on top of the wetlands would be. This project will produce answers as to how, when, and to what extent we may interfere with the natural environment of Moriches Bay to create optimistic and biodiverse results.

References

"Havens Homestead." *Havenshomestead,* Moriches Bay Historical Society, www.havenshomestead.org/wha.

O'Connor, Joel S. "The Benthic Macrofauna Of Moriches Bay, New York." *The Biological Bulletin,* vol. 142, no. 1, 1972, pp. 84–102., doi:10.2307/1540248.

"Significant Habitats and Habitat Complexes of the New York Bight Watershed." *Moriches Bay,* nctc.fws.gov/pubs5/web_link/text/mb_form.htm.

Recommendations

- USGS and environmental departments hold a lot of public information about environmental permits and data.
- Using high resolution elevation models is crucial as well as using the most up to date SLR models.

- Check each of your rasters' values otherwise map algebra will be wrong or not work at all.