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No easy answers to fortify our shoreline

GUEST SPOT

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The Army Corps of Engineers' plan to replenish sand along a 1.6-mile stretch of beach at Hashamomuck Cove is fraught with financial risk.

I commend Southold Town Supervisor Scott Russell and other town leaders for recognizing the reality of the situation and for their unwillingness to commit public dollars to construct and maintain "folly beach."

Federal and state participation would comprise roughly 89 1/2 percent of the initial $14.5 million construction cost, and 85 percent of long-term maintenance costs.

The local sponsor is obligated to cover the remaining balances (10 1/2 percent and 15 percent, respectively). A substantive commitment to put it mildly.

The less-transparent variable in the agreement: what is the real cost of keeping sand on the beach for the 50-year lifespan of the project? While the Corps provides cost estimates based on five-year maintenance intervals for sand replenishment, it's fuzzy math.

Beach stability is influenced by four primary factors — the supply of sand, shape of the beach, wave energy and sea level rise. These elements constitute a dynamic equilibrium which determines its location and viability.

The presence of groins in the project area is disrupting the longshore transport of sand. Similarly, bulkheads and stone revetments, which comprise approximately 55 percent of shoreline, are adversely affecting sand supply by retaining bluff-derived sediments and accelerating beach erosion by reflecting wave energy.

Initial construction design calls for the placement of approximately 216,000 cubic yards of sand to create a 25-foot-wide berm. In coastal resiliency terms, a meager strip of sand that will prove deficient in buffering the destructive influences of shoreline-hardening structures, which will undoubtedly be in play during high-energy storm events when surge becomes a factor.

The Corps' analysis fails to factor in the adverse effects these erosion-control structures will have on beach fill stability.

Another important design criteria brought into question is the compatibility of the imported sand with resident beach sediments. Because the Sound shoreline is a high-energy environment, beach sediments that persist are of a heavier composition. Coarse sands, gravel and cobble are the predominant size classes.

Because the beach fill is slated to be trucked in from an undetermined sand mine on Long Island, consistency is critical. If the material skews toward a smaller grain size, it's likely to disappear rapidly under wave attack.

While the project team has made assurances of sediment compatibility, my past experience with an array of sand replenishment projects substantiates the uncertainty of the process. We'll only know for sure when it comes off the truck.

With reoccurring maintenance expenditures determined by sand loss/replenishment (estimated at 64,000 cubic yards every five years), the consistency of the material matters greatly.

Sea level rise is the elephant in the room. I maintain the Corps holds a cavalier attitude in response to imminent and dramatic change — an engineering equation solved by the addition of sand.

The disconnect is further demonstrated by the sea level rise projections applied to project design — conservative projections when compared to the values formally adopted by New York State in February 2017. Regretfully, the Corps' prescription for sea level rise: dredge more, truck more and armor the coast.

The reality is that in the near future we will be forced to retreat from the shoreline. We now understand that hard structures, while appearing to stabilize the shoreline, ultimately destroy the beach. We also know that beach replenishment is costly and only temporary. Moreover, replenishment will become increasingly less feasible as the lifespan of beaches

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grows exponentially shorter, apace with sea level rise.

We urge government leadership to engage the affected property owners and public-at-large to find solutions to the inevitable, moving out of harm's way — a daunting challenge, but the reality of living on the edge in the face of climate change.

The author is the founder and president of Defend H20 and is the former Peconic Baykeeper president.