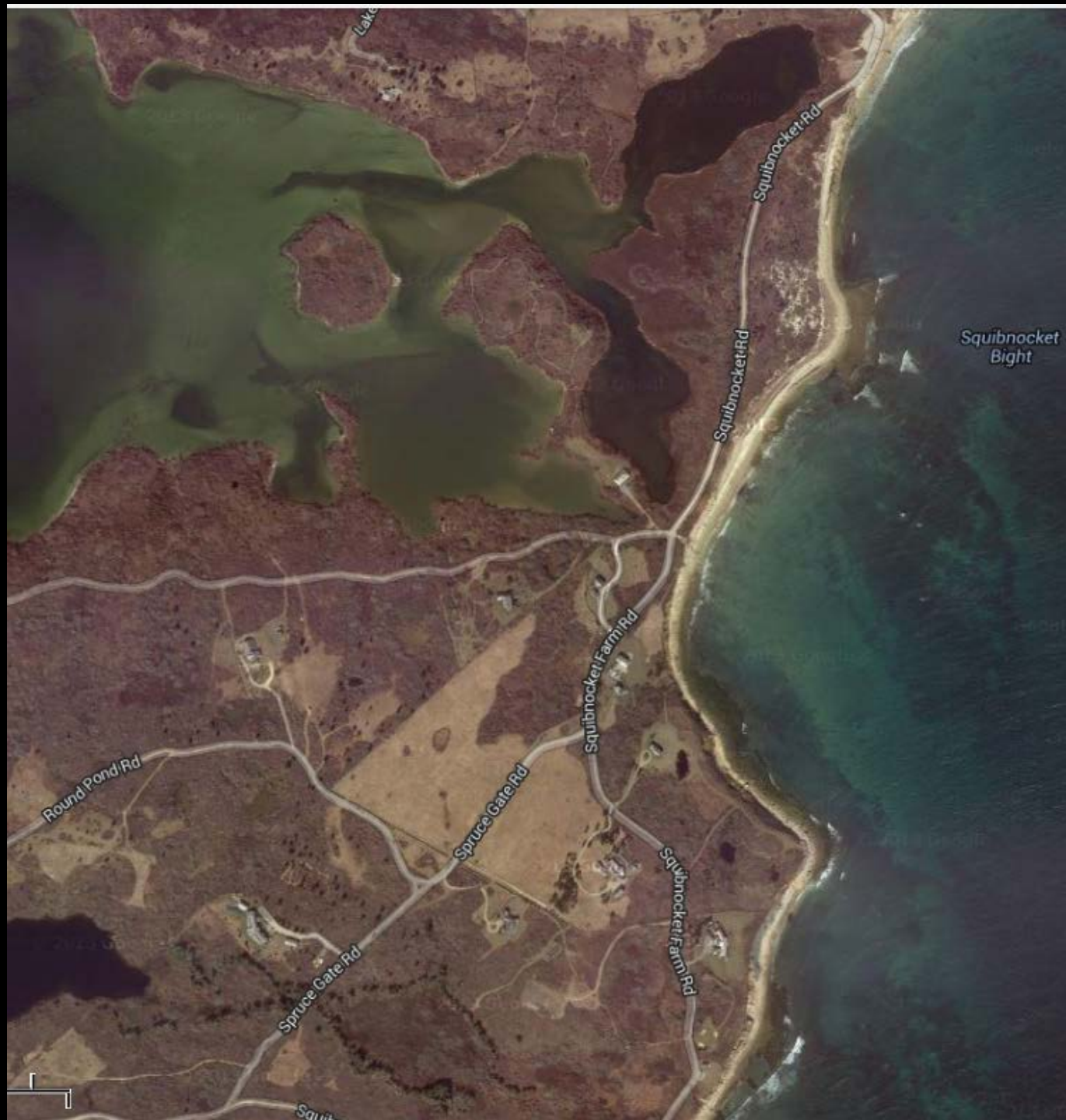


Squibnocket Elevated Roadway



MARCH 11, 2014

ROPES & GRAY



Existing Revetment

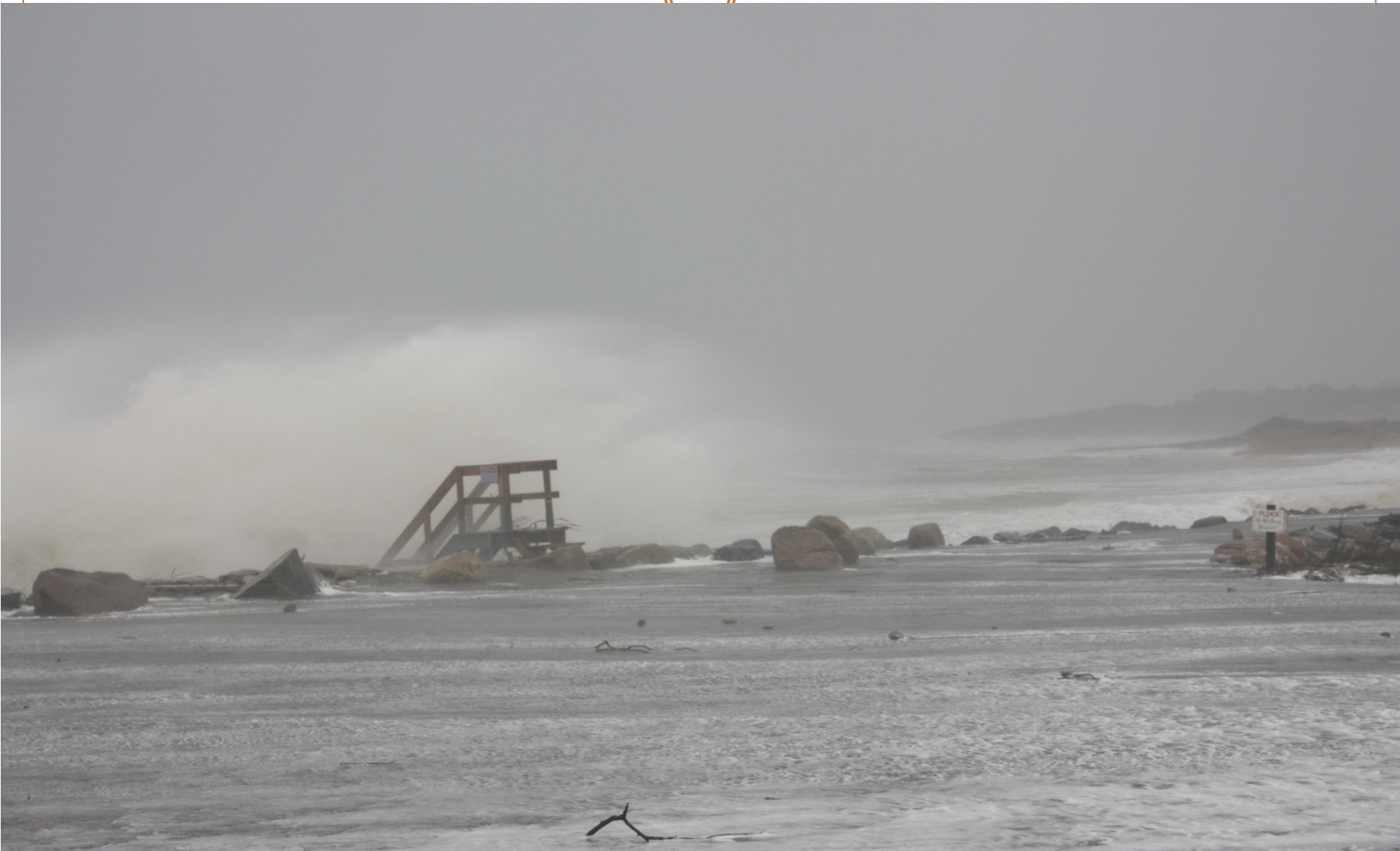


The Problem



- Squibnocket Road provides the sole means of routine and emergency (police, fire, ambulance) access and utility service to the Squibnocket Farm subdivision and adjacent properties.
- The portion of the Road that traverses the existing Town Beach parking lot routinely experiences erosion and damage during major storms. Access was disrupted several times in 2012-13. Storms are predicted to become increasingly more intense along the Eastern seaboard.

Parking Lot During a Storm



Access Causeway During Storm



After the Storm



After the Storm, cont'd



The Culprit: Sea Level Rise



- Sea level rise associated with climate change is more rapid and extreme along the northeast coast of the United States than elsewhere in the country. (See Sallenger, et al., "Hotspot of accelerated sea-level rise on the Atlantic coast of North America," published in *Nature Climate Change*, June 24, 2012) [<http://dx.doi.org/10.1038/nclimate1597>].
- Our experts predict that the combination of rising sea level and increased storm intensity may cause the ocean to circumvent the existing revetment and breach into the Squibnocket Pond. Breaches have occurred in the distant and near past, including one in the 1990s.
 - *We can't know when the next catastrophic storm and breach will occur. It could be within a decade, within a year, within a month. But it will happen.*

Sea Level Rise (cont'd)



- The Vineyard Conservation Society, through its Climate Change Adaptation Initiative, has identified Squibnocket as a sea level rise hot spot of imminent concern:
 - “***time appears to be running out*** (in 2013 town residents sought refunds for their parking passes due to the loss of beach sand), and the town must now plan not only for losing the beach, but also the challenge of decommissioning a seawall and parking lot before they crumble into the sea.”
 - Full report available at:
<http://www.vineyardconservation.org/a>

Sea Level Rise (cont'd)



- The Town's Experts confirm our experts' view that this portion of Squibnocket Road is at increasing risk of more frequent and debilitating storm damage.

“the beach fronting the revetment will continue to *lower* in elevation resulting in greater wave energy hitting the revetment more than likely resulting in more frequent damage to the revetment with concomitant higher maintenance costs to rebuild the revetment following coastal storms. In addition, end scour or flanking erosion due to the revetment will increase as well.” (CAS Report, 2/14, at pp. 3-4).

- Greg Berman and Jim O'Connell will elaborate on their findings later.

The Status Quo



- If nothing is done, it will be necessary to conduct more expensive and more frequent repairs to the revetment and parking lot.
- It is the Town's responsibility under the existing lease to fund such work.
- If necessary repairs are delayed for funding or other reasons, there will be longer disruptions to access and utility service, further harming property values and tax base, exposing the Town to other liabilities, and most critically, threatening life safety.

Solutions?



Option 1: *Extend the current revetment.*

- **The existing revetment system cannot be extended or reinforced to address this problem.** The Massachusetts Department of Environmental Protection (“DEP”) prohibits this because of the harmful environmental impacts that result from “hard” engineered solutions to coastal erosion problems. (310 CMR 10.30(3)).

The existing revetment illustrates the reasons for the prohibition on hard solutions. It has accelerated local erosion rates.

Solutions ?, cont'd



Option 2: *Increase vegetation and place coir logs along the coastal banks to reduce erosion of the roadway (“soft” solution):*

- The homeowners planted additional vegetative cover and placed coir logs in 2011 after DEP vetoed a proposed extension to the revetment. Sandy destroyed the soft solution.
- Soft solutions have been proven unworkable in this location.

The Soft “Solution” After Sandy



Solutions?, cont'd



Option 3: *Elevate the roadway.*

- **The preferred solution functionally and environmentally is to elevate the roadway on piles and allow the ocean to overtake the existing parking lot over time.**
- **DEP Comm'r Ken Kimmell has clearly stated the environmental and regulatory advantages of raising structures rather than armoring them:**

“We . . . need to focus on long-term solutions. Unfortunately, global climate change means more frequent and violent storms, and sea level rise will hasten the rapid loss of shoreline We all need to be cognizant of this fact and make informed decisions to protect homes by moving them out of harm's way. This likely means moving them back and/or placing them on *pile supported structures*.”

Elevated Roadway (View 1; Money Hill Landing)



Elevated Roadway (View 2; Blacksmith Valley)



From Higher in Blacksmith Valley: elevated road will be invisible



Elevated Roadway Design

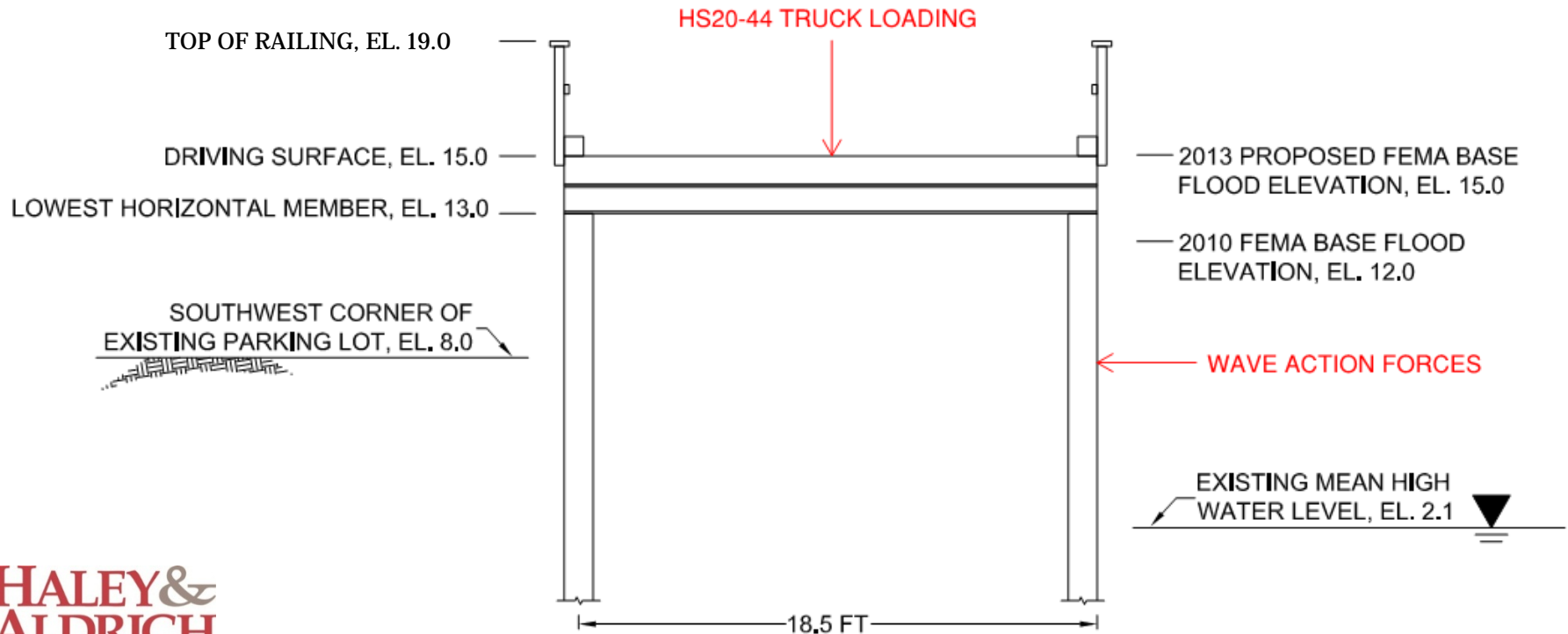


The elevated roadway has been designed to withstand all storm types, including relevant hurricane categories. *Unlike the existing parking lot and road, it will not wash away.*

Elevated Roadway Design Assumptions



- HS20-44 Standard MassDOT Highway Loading (40T truck)
- Wave Action Forces up to 2013 Proposed FEMA Flood Level (El. 15)



Town's Concerns



- The same forces that threaten the continued existence of the roadway have already eliminated the Town beach at high tide, and threaten to eliminate the parking area.
- The Town suggested to the Homeowners an opportunity to work on a private-public project to provide an expanded Town Beach, new parking area and boat launch in Squibnocket Pond, all to be accessed using the Elevated Roadway.

Homeowner's Response



- The Homeowners support the Town's initiative, and have agreed to:
 - Purchase additional land for the new Town beach, parking area and boat launch
 - Construct an additional lane on the elevated roadway to accommodate public traffic
- This represents significant extra expense beyond what the Homeowners would incur just to solve their access problem.

Stakeholder Concerns



- The project might be unnecessary because fears about rising sea levels, storm intensity, erosion and breach are exaggerated.
 - But experience and expert opinions prove that the problems are real and urgent, and that the proposed solution is more sensible and environmentally benign than any alternative.
- The project might be too costly for the Town.
 - But the elevated roadway will be built at no expense to the Town.
 - The Homeowners will be acquiring additional land in order to host the Town as tenant on the new beach and parking lot. The land purchase cost is far in excess of the \$400,000 proposed Town lease payment.
 - The lease payment to the Homeowners will be funded with Community Preservation Act funds that are already in the Town's account. The Town does not need to incur any new debt or raise taxes in order to make the lease payment.
 - The Town already incurs expense in operating the current Town beach.

Stakeholder Concerns, cont'd



- The project represents unwanted “change”
 - The project is intended to *avoid* change. Without the project, Town residents will no longer have access to a beach at Squibnocket, a privilege that they have enjoyed since the 1950’s.
 - Without the project, the homes at Squibnocket may become inaccessible and unusable.
 - The project is very conservative, and preserves much more than it changes.
- The process has not been transparent.
 - The Town’s special Beach Committee held a series of public meetings on these topics last spring and summer.
 - This is the third Selectmen meeting at which the project has been presented and public comment solicited.
 - The Planning Board has held a series of public meetings to discuss zoning changes related to the project.
 - The project will be fully presented again and discussed by the entire Town Meeting as a general question in April and again at a special Town Meeting in the Fall.