

As climate warms, R.I. adapts to a changing coastline / Gallery

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The Providence Journal / Kathy Borchers

Communities damaged by Superstorm Sandy provide example of how R.I. as whole can change in face of rising seas.

1.21.2015 - Houses along Atlantic Avenue in Westerly have been rebuilt and raised on pilings. Westerly building official David Murphy described cottages that are both particularly small and particularly high as "lollipops." The Providence Journal/Kathy Borchers

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BY ALEX KUFFNER

Journal Staff Writer

akuffner@providencejournal.com

WESTERLY, R.I. -- Janet Freedman stood on a deck overlooking the Atlantic Ocean. Montauk could be seen in the distance behind her left shoulder. Block Island was off to her right.

"This was formerly the Andrea Hotel. Now, just the Andrea," said Freedman, coastal geologist with the Rhode Island Coastal Resources Management Council.

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Just the Andrea, as she put it, because the hotel, which had survived the hurricanes of 1938 and 1954, was almost destroyed in 2012 by superstorm Sandy's 5-foot surge and 15-foot waves.

Although the family who owns the property received permission to rebuild the hotel, they decided to minimize their risk and keep only the restaurant that had long been part of it. Today, that restaurant consists of a small building surrounded by a large deck raised up from the beach — and protected — by massive rocks. The beach-stone fireplace that used to be inside the hotel now sits outside.

The Andrea was just one stop on a tour this week organized by state and town officials so federal Environmental Protection Agency leaders could see how Rhode Island is responding to climate change. Although Sandy was an isolated event, storms like it are expected to become more common as the earth warms.

The Misquamicut section of Westerly was hit as hard by Sandy as any other place along the state's 400 miles of coastline.

Houses and businesses that were washed away by the storm surge have responded in different ways.

The Andrea has scaled back. Other restaurants have moved their kitchens into shipping containers that can be trucked away in the next storm. Some beach cottages have been raised on pilings. Westerly building official David Murphy described one that is particularly small and particularly high as “a lollipop.”

There is no surefire way to protect against the threats to the Rhode Island coast posed by climate change.

“It’s a moving target,” said Curt Spaulding, administrator for the EPA’s New England region. “It’s going to be moving faster.”

That’s the challenge for planners and academics at the Coastal Resources Management Council, the Coastal Resources Center at the University of Rhode Island and the research and education program Rhode Island Sea Grant — the hosts of the tour.

Over the course of two days, officials from the groups explained that Rhode Island has gone a long way to identifying the problems that will come with more frequent storms and seas that are expected to rise by as much as 5 feet by the end of the century.

They’ve created the Sea Level Affecting Marshes Model to predict how coastal wetlands will retreat in places and expand in others. They’ve designed StormTools, an interactive online program that allows users to see detailed maps with projected flooding from rising seas and storm surges. And they’ve written a guide for coastal property owners to answer questions about erosion, flood zones and insurance.

The next step is responding. That’s where Westerly and other communities damaged by Sandy become important. They offer examples of what can be done to be more resilient — to use a word that state officials repeated during the tour on Wednesday and Thursday that also included stops in South Kingstown, North Kingstown and Warwick.

In a way, it may be easier to tell property owners to move out of the most vulnerable areas, but that’s not realistic in Misquamicut, an important tourist destination, where the businesses and expensive homes on and around Atlantic Avenue make up a critical part of Westerly’s tax base.

“It’s hard to tell folks not to rebuild,” said Amy Grzybowski, the town’s director of planning and code enforcement.

But the town and state have been able to influence how property owners rebuild. That often means elevating a structure, 18 feet off the ground or more, which, said Grzybowski, can cost upwards of \$100,000.

In some areas even lifting a structure higher isn’t the answer. Grover Fugate, director of the CRMC, described what’s happening in the Potowomut section of Warwick, where sea water is moving inland and pushing groundwater up.

That’s a problem not just because of flooding but because houses on the tiny peninsula on Greenwich Bay use septic systems, which raise the possibility of contamination.

“There’s no easy solution there other than moving,” Fugate said.

Rhode Island is doing more than other states to confront these issues, said Spaulding. He went on a similar tour on Cape Cod last summer, and said that Rhode Island is further ahead of efforts there. In an interview he described the state’s work as “cutting-edge” and said that he hopes to use it as a model for what can be done elsewhere.

“You guys have taken a puzzle and identified the problems. And you’ve done it probably better than anywhere,” he said during one information session. “But now you’re getting into problem-solving. The mind of the leadership has to be opened up to how we solve this.”

A mound of broken concrete footings sits atop a corner of South Kingstown Town Beach. Until a month ago, they held up the pavilion at this sandy stretch along the shore of Matunuck.

But the steady erosion — which has seen the beach recede 305 feet in places since measurements started in 1951 — was only exacerbated by Sandy. The bluff here retreated 23 feet in one day. So at the recommendation of the Coastal Resources Center, town officials decided to move the pavilion and its septic system back 300 feet.

The project cost \$400,000 — less than half the estimate for building anew — and 70 percent was funded through a Federal Emergency Management Agency grant.

“We’re excited that we’ll be able to start the season knowing that the building won’t float away in the next big weather

event,” said Terry Murphy, leisure services director for the town.

But sea-level rise is expected to accelerate. Higher seas will amplify any storm surge. Murphy said the move should keep the pavilion out of the reach of the sea until 2050. What happens after that is uncertain.

Rhode Island state geologist Jon Boothroyd explained that water may be washing out the beach so dramatically because the underwater geology has focused the power of incoming waves.

“So do you think it’s going to keep coming?” asked Spaulding.

Boothroyd didn’t hesitate in his answer.

“Yes,” he said.



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