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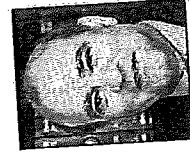
RISING SEAS

Area planning for sea rise uneven

By Dinah Voyles

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Twenty years ago, Palm Coast and Flagler County officials started buying and pre-serving floodplain to defend against the risk of a powerful hurricane swamping the coast and the city's 26 miles of salt-water canals.



Hadeed

Today, city and county officials say that forethought puts them a step ahead as local governments throughout coastal Florida consider how to prepare for rising seas.

"We weren't thinking about sea level rise, but we

did have respect for the exposure, the vulnerability to the uncertain forces of the sea," said County Attorney Al Hadeed.

That greenway along the coast now is part of the AIA Scenic & Historic Coastal Byway. But it also represents miles of land that won't be developed with homes in high-hazard areas, said Hadeed. "It will make it a

little easier for us to address problems, as opposed to a very built-up community where they have high density and very high populations."

Palm Coast, which already has identified its most vulnerable assets through a partnership with the Northeast Florida Regional Planning Council, may be several steps ahead. But officials with at least two other

local governments say they also have taken steps toward planning for sea level rise.

Volusia County is working to identify strategies that could help the county adapt as sea level rise occurs. And Ormond Beach has looked ahead to rising seas as it modernizes and expands its stormwater system.

See RISING SEAS, A9

AMAZING TEACHERS

Longtime Campbell teacher meets whatever needs students have



Trump's criticism fuels NFL protests

Most players locked arms with teammates, some standing, others kneeling in show of solidarity during

RISING SEAS

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Officials for other cities, including New Smyrna Beach and Edgewater, say they have not taken steps to plan for sea level rise. Daytona Beach did not respond to requests for information about whether the city is preparing.

It concerns New Smyrna Beach City Commissioner Jake Sachs that his city is one of those “disregarding the warnings.”

“We should be retreating from higher stormwater and coastal flooding,” Sachs said. “We’re kind of going in the opposite direction and granting variances to build closer to the ocean.”

As a few local govern-



Sachs



McCue

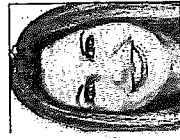
ments begin moving forward, it seems to be convincing others to take their own actions,

said Tara McCue, director of planning and community development for the East Central Florida Regional Planning Council, which includes Volusia County. Grim photos of damage from coastal flooding along the eastern seaboard also may be playing a role, she said.

McCue has worked on sea level rise since she was hired 14 years ago, but only in the last few has she seen the mindset begin to change. “It’s picking up momentum,” she said. “We’re making progress after all this time.”

Both Palm Coast and Flagler County participated in a sea level planning project with the University of Florida and the Guana Tolomato Matanzas National Estuarine Research Reserve between 2012 and 2015. The final report included a broad range of adaptation strategies for the region.

Palm Coast Mayor Melissa Holland said the city has done “an exceptional job” of strategic planning to address issues with flood plain zones and construction in or near those areas. She points to a recent example where a developer wanted to change his proposal that would have impacted protected land. The city denied the requested amendment.



Holland

“They would not budge on the fact that those wetlands are critical to the needs,” Holland said.

The East Central Florida planning council has



Palm Coast City Administration Coordinator Denise Bevan and Planning Manager Ray Tyner stand on the Long Creek kayak launch dock. Bevan worked with Flagler County Attorney Al Hadeed to set aside floodplain in the community.

(NEWS-JOURNAL/DAVID TUCKER)

A Florida GateHouse Newspapers project

Sea level rise and its implications for Florida are of keen interest to everyone in the Sunshine State. In the coming months, reporters for Florida GateHouse Newspapers — the Daytona Beach News-Journal, the Sarasota Herald-Tribune, the Gainesville Sun and the Northwest Florida Daily News — will talk to residents and property owners, researchers and officials to examine changes already taking place as a result of sea level rise. We will look at the physical and economic impacts forecast in the decades ahead, and explain what cities around Florida are doing to prepare. We will also explore how coastal migration will impact inland cities, and how rising seas will affect insurance and property values. And we’ll explain steps the military is taking to defend its bases from the ocean’s advance.

More online

To read more articles in the Rising Seas series, go to gatehouseprojects.com/RisingSeas. To see the potential effect of sea level rise in your community and elsewhere, go to this National Oceanic and Atmospheric Administration interactive website map: coast.noaa.gov/digitalcoast/tools.slr.

“There’s a very preliminary study of roadways and (water) inundation,” McCue said. But the council has not begun looking at storm-water outfalls.

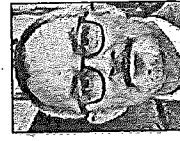
“The stormwater system is the first thing that’s going to fail,” said McCue. “If you have high tide and it’s inundated with the rising sea level, that rain water has nowhere to go. If you put on top of that a storm, a hurricane or a tropical storm at the same time, it’s going to make it worse.”

“There definitely needs to be a much more intense look at the stormwater system or at least the conversation,” said McCue, “to evaluate which are vulnerable to sea level rise and how they could be changed.”

Locally, city officials in Ormond Beach and Port Orange have worked to address stormwater issues after a couple of flood events.

Though Ormond Beach has not specifically addressed rising sea levels, the city has worked since 1998 and spent \$22.7 million to try to reduce its flood risk, city officials said. That’s the year a study found low-lying areas were prone to flooding from rising water levels in the Halifax River.

After a May 2009 storm dumped more than 27 inches of rain over the area, canals from Ormond Beach to Port Orange rose to record levels, driven in part by high tides during the storm. A post-storm study for Ormond Beach recommended the city complete two phases of



Ervin

Like other counties, Volusia has coastal management policies adopted as part of its comprehensive land use plan. Ervin said Florida requires language that states local governments will monitor sea level rise and act

accordingly.

The county also has worked with the planning council, the River to Sea Transportation Planning Organization and the state Department of Transportation to model sea level rise and flooding from storm events. Ervin said the county is looking at ways to add surfaces that allow water to soak through to help deal with runoff from storm events, rather than impervious surfaces such as concrete.

The county has developed a sustainability action plan, and one of the objectives is to plan for adaptation to sea level rise and dynamic climate conditions, said Katrina Locke, the county’s sustainability and natural resources director.

They’ve been looking at how “green infrastructure” could improve coastal resilience, including how so-called “living shorelines,” using native plants rather than sea walls, could protect shorelines and prevent erosion, Locke said. The county also has hosted several National Oceanic and Atmospheric Administration workshops to help coastal communities plan for climate adaptation and coastal resiliency.

Both regional planning

councils have additional projects in the works.

The East Central Florida council is scheduled to receive some state funding for a resiliency action plan for Brevard and Volusia counties, said McCue. The goal is to complete the action plan within the next two years, she said. “We’ll have some really intensive conversations with cities and their staffs and hopefully elected officials and the public.”

The North Florida Regional Planning Council’s early efforts have focused on leadership from its business community and they’ve been working on a round of action items since July 2015, said Margo Moehring, managing director for policy and planning.

A local think tank the council put together, the Community Institute, and its Public Private Regional Resiliency Committee “believe in doable things,” she said. “They don’t advocate for changes in law.”

The council is planning a coastal resilience assessment for its region, looking at storm surge, sea level rise projections and which infrastructure improvements might be necessary, said Moehring. She expects to see recommendations for projects, “with an emphasis on what could be done using natural systems to change the vulnerabilities.”

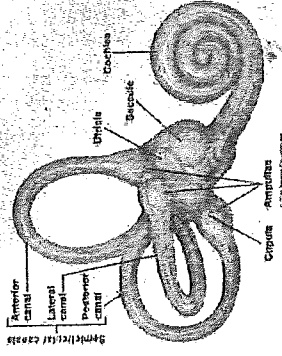
She has heard no conversations about not rebuilding in areas destroyed by hurricanes and flooding or of restricting building in vulnerable areas. She said efforts in that direction need more data and analysis.

“We’re doing what works for Northeast Florida,” she said. “If we want to thrive in change we have to do what we can now.”

Ask the Doctor

The Vestibular System: Our Sixth Sense, Part 1

Do we have a sixth sense? Yes we do, but it is not responsible for sensing paranormal activity! The vestibular system, our sixth sense, is a subunit of the inner ear. In essence, it is a biological gyroscope that helps our brains perceive two basic things: changes in acceleration of the human head and the pull of gravity. But how does the human body utilize this vital information?



The human brain creates a map of where we are in space based on the information sent by the vestibular system. When the vestibular system isn’t working well we have trouble navigating ourselves in space.

Our inner ear also provides us with clear, stable vision during complex head and body movements. Have you ever seen a movie where the camera is bouncing around during an action scene? The camera does not have a gyroscope to stabilize it when the camera operator is running. The reason why our vision does not bounce when we run is because our vestibular system stabilizes our eyes during the natural up-and-down movement of our stride. Amazing!

Finally, our sixth sense tells our muscles how to resist the pull of gravity. Normal postural stability is reliant upon the vestibular system. It would be very difficult to stand upright without a vestibular system. In fact, even our neck muscles need the vestibular sense to keep our head straight on our shoulders!

Our inner ear is an amazing organ that is vital to our daily activities. Fortunately, Atlantic Hearing and Balance is offering comprehensive vestibular care. We