

A man wearing a blue jacket, a grey cap, and jeans is walking on a paved path that runs along a body of water. He is looking down at the ground. The path is bordered by tall, dry grasses. In the background, there are several houses and trees, suggesting a waterfront community. The overall scene is somewhat desolate, reflecting the theme of abandonment mentioned in the text.

The lure of oceanside living has always drawn people to the coasts. Now, climate change is forcing waterfront communities to imagine their own abandonment.

Sounding the Retreat

STORY BY JIM MORRISON / PHOTOGRAPHS BY PARKER MICHELS-BOYCE

On Richmond Crescent in Norfolk, Va., more than a dozen homes rise in varying heights, forming a streetscape bar graph tracing the past decade's increasing threat of flooding from an inlet of the Lafayette River. A green house with a prominent front porch is a modest four feet off the ground. Two doors down, a 70-year-old cottage has been newly raised 11 feet on blocks, at a cost of \$154,000, nearly all of it federal and state money. On the corner, a one-story white-brick ranch looms about seven feet up, matching the height of the sage-colored brick house next door. A few homes still on ground level hunker among the high and dry houses looking down their proverbial noses at them.

George Homewood, Norfolk's planning director, has chosen the city's affluent Larchmont neighborhood for our walking tour on this unseasonably warm December day. He pauses in the middle of Richmond Crescent, where repeated tidal flooding has cracked and buckled the asphalt, and wetlands grasses fringe the street. Nodding toward a new house that towers 12 feet above sea level, he poses the hard questions that cities and counties are only beginning to acknowledge as waters along the U.S. coasts continue their inevitable invasion. Will the city be better off if people live in that house for another 30 to 50 years but are unable to get in or out during high tides or lingering storms? How long, he asks, does the city maintain the street? Or keep the storm-water and sewer systems operating? What happens years from now, when emergency services can't get to these homes because the street has flooded? "At some point, the investment in infrastructure can't be sustained," he says. "That's the bottom line."

Hurricanes get the headlines, but on this street, it will be the repeated jabs of flooding day after day from climate change, with its rising tides and increasingly stronger storms, that will force the city to make tough choices. By 2040, projections by the Virginia Institute of Marine Science show, the river will overflow its banks and flood this street twice daily during high tides. Norfolk plans to protect the city with \$1.8 billion in storm-surge barriers and flood walls, but those projects — if built — won't stop the rising tides in Larchmont. The water will come. This is where Norfolk will eventually begin its retreat.

The city doesn't use that politically explosive term, the Voltemort of climate adaptation. Planners here and elsewhere refer to it as the "r-word." They're happy to talk about the other r-word — resilience, which includes projects like sea walls, retention ponds, rebuilding wetlands and improved storm-water capacity. Retreat signals surrender, while resilience screams reassurance: Don't worry. Stay. We'll protect you. That medicine goes down easier. It has been embraced by dozens of cities and states that have added resilience officers. Norfolk's Vision 2100 plan, widely praised for envisioning a city withdrawing from some neighborhoods by making only "judicious" investments in protecting homes from rising waters, uses the word "retreat" only once, and then to say that the city will not retreat but will emphasize "living with the water." The idea — for now — is not to force residents to abandon

neighborhoods like Larchmont, but to have them gradually decide to leave as the inconvenience of staying grows. "I would like to abdicate as much to the marketplace as possible so that we're not actually making the hard decisions that impact people, but we're finding ways to encourage people to make smart decisions for themselves," Homewood says. "We're not saying that happens on a dime, but over time as that happens with more and more property, then we begin to have that managed retreat."

At its core, managed retreat is about getting people to leave a place called home. Though the coronavirus pandemic is the focus of our anxiety today, climate change is continuing unabated in the meantime. As it advances, bringing rising sea levels, increasingly devastating storms and more disastrous flooding, communities across the nation will be contending with the question confronting Norfolk: How do you unravel the allure of living on the waterfront? In recent decades, more and more Americans have moved to the coasts. Managing the inevitable retreat is studded with legal, financial and political sinkholes, a puzzle that will take decades to piece together. And the time to start doing that, experts say, is now. "Relocation is so difficult that you need to start planning for it long in advance," says A.R. Siders of the Disaster Research Center at the University of Delaware's Biden School of Public Policy and Administration. "We need to start learning how to do this."

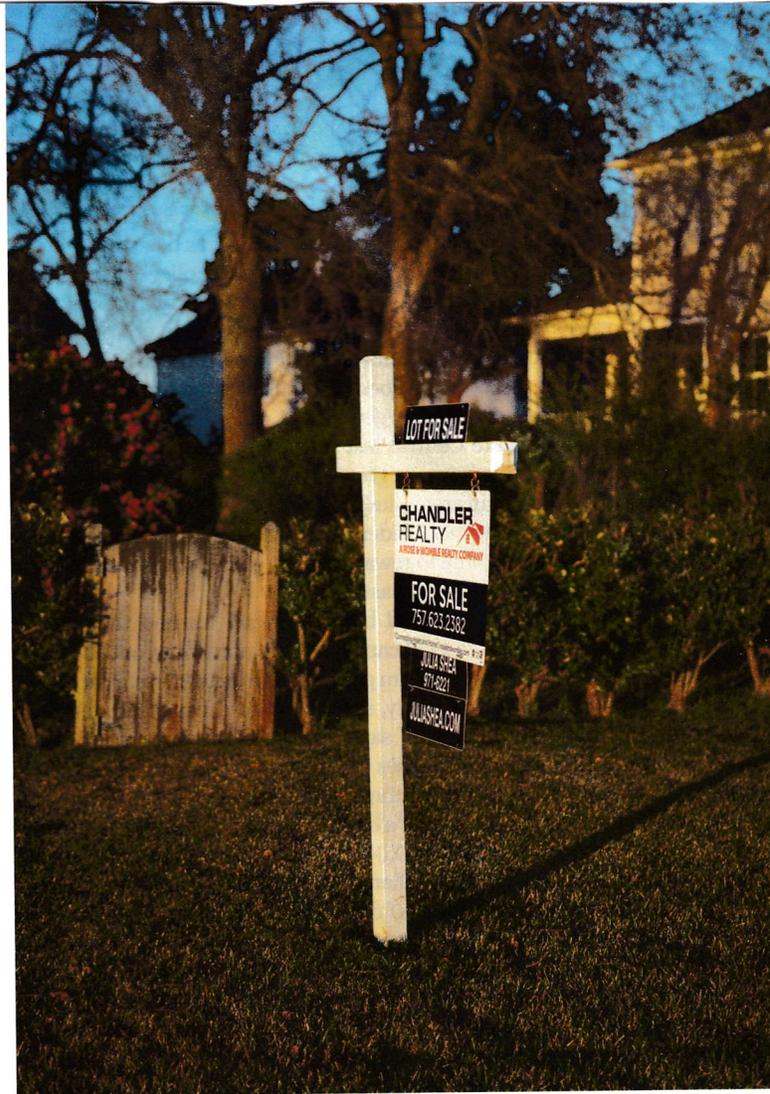
Norfolk's small steps prodding people to move out of harm's way are rare among local governments. Too rare, say researchers and climate crisis advocates. Rather than discussing retreat, most threatened communities are studying and, in some cases, building billion-dollar projects to protect against coming encroachments. The Center for Climate Integrity, an environmental advocacy group, last year issued a study concluding that by 2040, building sea walls for U.S. coastal cities with more than 25,000 residents will require at least \$42 billion. Expand that to include communities of fewer than 25,000 and the cost skyrockets to \$400 billion. That's nearly the price of building the 47,000 miles of the interstate highway system, which took four decades and cost more than \$500 billion in today's dollars. Researchers say those numbers are conservative because they consider only sea walls, not other ways to mitigate flood risk, including buying out homeowners and improving storm-water systems.

There won't be enough money to protect every endangered place. The Army Corps of Engineers, for instance, has a \$98 billion backlog of authorized construction projects yet receives annual construction appropriations of only about \$2 billion, according to a Congressional Research Service report. Andy Keeler, the head of public policy at the Coastal Studies Institute and an economics professor at East Carolina University, worries that resilience efforts create a negative spiral of people believing their risks are lower than they are and remaining in threatened areas they should be abandoning. This means that their property values continue to rise, which reinforces economic and political arguments for spending more money on resilience efforts. "How do we make the transition from protecting ourselves to leaving?" asks Keeler. "The big question is time. When is the time to stop investing in protection and start shifting the resources over to people leaving?"

Ann Phillips, a retired rear admiral who is the special assistant for coastal adaptation and protection for Virginia Gov. Ralph Northam, says that cities and counties have legitimate concerns about discussing retreat. They fear losing some of their tax base. They don't want to scare away business development. She is concerned about the social justice aspects of managed retreat. Homeowners in a wealthy neighborhood like Larch-



Above from left: Joe and Sarah Kennedy in front of their home on Richmond Crescent in Norfolk, Va.; a lot for sale on the same street, which floods. Previous pages: William Stiles of the group Wetlands Watch inspects a collapsed water retaining wall in Norfolk.



mont have more resources and options than those in Ingleside, a mixed-income neighborhood that is also threatened but hasn't been the beneficiary of home-raising funds. As flooding becomes more frequent in such places, the population transitions from homeowners to renters and the neighborhood deteriorates. "The challenge is, how do you get these people options before you get to the collapse?" Phillips asks as we take a morning walk through Ingleside. She is working on a master plan for Virginia that defines the threat and deals with the various challenges. What happens, for instance, to struggling rural counties that won't have the means to either armor in place or leave? Finding a way to create incentives for the watermen and farmers and others who have lived on their land for centuries will be a challenge. "As a nation, we should be looking at this risk to our future and evaluating it from a national perspective, and I don't see that happening," Phillips says,

echoing others I interviewed.

Part of the reason that conversation hasn't happened is the magnitude and complexity of the potential retreat in the United States. More than 126 million people, about 40 percent of the U.S. population, live in coastal counties that produce more than \$8.3 trillion in goods and services, according to the National Oceanic and Atmospheric Administration. A 2019 study found that sea-level rise of six feet by 2100 could displace 13 million people, including more than 2.5 million refugees from Miami alone. Another study examining maps of flooding along rivers concluded that 41 million Americans live within the reach of a 100-year-flood with a potential for \$1.2 trillion worth of damage. "There is no local, state or federal managed retreat plan or strategy," says Rob Moore, senior policy analyst for the Natural Resources Defense Council. "It's just a theoretical construct. The reality facing communities is that we need to move very rapidly from this being theory to being practice, and it's very difficult to make that happen."

Beyond the financial, legal and logistical barriers to retreat are the psychological barriers of planning for the long term. "One of the challenges that these early conversations about retreat have run into is that we're so focused on loss rather than focusing on what can be gained," says Miyuki Hino, a researcher in the environment, ecology and energy program at the University of North Carolina, "whether it's the new park, a safer community, reduced spending by local governments and by the federal government."

The first step to managed retreat will be a radical rethinking of federal, state and local policies and subsidies that distort the true risk of living in floodplains. Federal disaster and mitigation funds, for instance, provide little incentive to restrict rebuilding in these areas. That's fine with cities and counties, because rebuilding in a risky area keeps their tax base intact in the short term. In the long term, though, it's bad policy, says William Stiles of Wetlands Watch, a Norfolk-based nonprofit organization that works with local governments and other nonprofits on solutions to sea-level rise. "As seas rise, it costs more in public funds to maintain the streets, flood walls, sewer systems and EMT services than the properties generate in taxes," he says. A study by Zillow and Climate Central last year found that after Hurricane Sandy in 2012, the housing growth rate in New Jersey was nearly three times higher in areas likely to flood once a decade than in safer areas. "Think about that," Siders says. "More homes, more families at risk. And we're going to reward that by giving states more money the next time they have a disaster."

In 21 states, buyers and builders aren't warned that they're moving into a flood zone. "I can go on Carfax and find out about the car I'm going to buy, but if I'm going to take out a 30-year mortgage and tie up myself financially, in some states I can't find out if the house has been damaged," says Siders. "Home buyers are being tricked into buying properties that they would not otherwise buy."

On that stretch of Richmond Crescent in Norfolk, Joe Kennedy and his wife figured they got a bargain on waterfront property when they moved in to their \$380,000 yellow house at No. 1240 in May 2017, reassured by the sellers that flooding would be a minor inconvenience for maybe 10 days a year. Kennedy, who works in commercial real estate, soon discovered otherwise. The sellers transferred their grandfathered federal flood insurance policy to him, and when he got the documents, he learned that the house had suffered flood damage in 2003, 2009 and 2011, totaling more than \$32,000 in payouts. Why didn't he know that? Norfolk has more than 1,000 properties that suffered repeated damage underwritten by federal insurance, but a 1974 federal law forbids disclosing those addresses.

Kennedy has two children younger than 2 and a third on the way. His wife works at a hospital. They need to get in and out regularly on a street that already floods. They're about to refinance to a 30-year mortgage. Does Kennedy think the house will be habitable in 30 years? "My wife and I ask this question to each other all the time, because we're planting our flag here in Norfolk," he says. The couple are considering their options. If they could sell and not lose money, they would. They may build an addition and raise the house. If they do that, it won't be with public help. Norfolk has spent \$5 million of federal and state funds in the past decade to raise about 50 homes. In January the city received \$3.2 million from the Federal Emergency Management Agency to raise 11 more, but after that, it will stop elevating houses in floodplains.

If they sell, Kennedy says, he will inform buyers of the flood risk. That's not what many others do. A recent nationwide study found that 3.8 million properties in floodplains may be overvalued by \$34 billion because buyers would pay less if they knew about the houses' vulnerability. Failing to properly price the risk also means there is continued development in floodplains, making future retreat harder. "The decisions we make today are going to be very influential in 30, 40, 50 years — the way we design cities and communities and where we put infrastructure," says Hino, a co-author of the study. "Once we've put it there, it is really, really hard to remove it."

Lack of information isn't the only barrier to promoting retreat. The National Flood Insurance Program, a political punching bag \$20 billion in debt that Congress repeatedly promises to reform

and then doesn't, sets risk based on flood projections that are decades out of date. For example, some areas that flooded during Hurricane Sandy in 2012 had maps that had not been updated since 1983. The program subsidizes rebuilding in increasingly risky areas. Critics — and there are many — say taxpayers in West Virginia are helping to pay for people to live on the waterfront in Virginia. Between 1978 and May 2018, more than 36,000 properties insured by the NFIP filed repeated claims for damage, according to updated statistics from an earlier NRDC study. On average, the properties flooded five times; some flooded more than 30 times. The damage claims for single-family homes worth less than \$250,000 exceeded their value. Owners received average payments of \$149,980 for homes with an average value of \$114,764. Since 2000, according to the study, the NFIP has spent \$46.6 billion to repair and rebuild properties, but just \$804 million to buy out homeowners willing to relocate. "Many of those homeowners would like nothing more than to never file another flood insurance damage claim. They would like to get out of this cycle of flood, rebuild, repeat," says Moore of the NRDC. "But the flood insurance program isn't in that business. The flood insurance program is in the rebuild-your-home business. What it won't do is help you actually move somewhere safer."

Moving out of harm's way saves lives and money. The Great Flood of 1993, when the Mississippi and Missouri rivers and their tributaries overflowed their banks, killed 50 people and caused \$15 billion in damages across nine Midwestern states. An Army Corps of Engineers study later found that to reduce the damage would have required more than \$6 billion in levee improvements, but voluntary buyouts to remove structures from harm's way would have cost only \$209 million. Joshua Behr and Carol Considine, researchers at Old Dominion University, modeled the effect of a hurricane on a vulnerable Portsmouth, Va., neighborhood and concluded that if the city invested \$1 million annually in voluntary buyouts over 31 years and transformed the area into green space for floodwater retention, it would save about \$40 million. (The only problem: The cash-strapped city doesn't have the money.) Similarly, Louisiana has a plan, described as a first step, to buy thousands of threatened homes along the coast, many owned by poor and elderly residents who stayed after Hurricane Katrina in 2005. It's an about-face from a plan just three years ago that championed staying in place. "People often think of retreat as the opposite of resilience," Hino says. "Actually, in many cases, the most resilient thing we can do is to get out of the way."

Figuring out how to get out of the way and pay for it will take time. Examples of moving large numbers of people are rare globally and nonexistent in the United States. Japan has relocated 145,000 homes in the years since 2011, when a tsunami washed over the northwest coast of Honshu, by forbidding rebuilding in endangered areas. "Japan tells us it can be done if the motivation is there," says Nicholas Pinter, director of the Center for Watershed Sciences at the University of California at Davis. Still, he concedes, the lessons it offers "are grim. It takes the death of 16,000 to 20,000 people to motivate that kind of massive social change."

On the morning of Aug. 1, 1993, Dennis Knobloch, the mayor of Valmeyer, Ill., stood in a cemetery on a hill overlooking the town, helplessly watching as the levees that had protected the village for four decades failed when the Mississippi River crested at more than 49 feet, almost 20 feet above flood stage. A wall of water roared through Valmeyer, swallowing homes, rising five feet up the living room walls of Knobloch's house.

A year later, I joined Knobloch as he wheeled his black pickup over rutted ground being graded on a limestone bluff high above

Projected rise in sea level for 2100

2 feet rise
 4 feet
 7 feet
 9 feet

2018 repetitive flood-loss areas



the flood plain. “We’re actually on a street right now,” he told me. “To the left will be the downtown business area.” After two devastating bouts of flooding, the town’s 350 families had voted to rebuild on this higher ground a mile and a half east of the old town. When Knobloch first spoke to FEMA and suggested moving the town, he was told it would take about a decade. He refused to accept that timeline, lobbying Congress and state and federal officials. By January 1994, the first ground had been broken.

Today, Valmeyer is thriving. The old town had 900 people. The new one has 1,300 and is growing by the day. A white water tower stands sentinel over winding streets radiating from a town center. A handsome red brick school on South Cedar Bluff Drive and a village hall on nearby Knobloch Boulevard form the heart of the new community.

Valmeyer is a model — on a small scale — of managed retreat. But it’s also an illustration of the rare combination of people and circumstances that need to come together to make it happen. Knobloch says the total cost for moving 225 families, businesses and churches was about \$70 million — \$30 million for infrastructure and the new school and \$40 million more to buy out homeowners and businesses. The move wasn’t without losses. Local businesses couldn’t wait for residents to populate higher ground, he says, and many set up shop in nearby towns.

Successful relocations, Pinter says, follow similar models:

They start while feet are still wet, they have relocation blueprints in hand or create them quickly, and they have a strong leader. Knobloch, who has consulted with other towns looking to relocate, says that Valmeyer hit the rare sweet spot of available funding and political will. “If you look at our situation,” he says, “it was probably the only period in recent history where we could have done this, because at both the state and federal level, the people that were involved, both on the political side and on the side of the agencies, embraced this idea, and they had the resources to help make it happen.”

Propelling the Valmeyer relocation was post-disaster funding by the state and FEMA to pay residents for their homes. Twenty-five years later, buyouts remain a key retreat tool, although a recent study showed that they had gone down even as the threat from flooding has risen. They are expensive and the process takes years, often discouraging people who want to sell. A study by Hino, Siders and others published last year of 43,000 FEMA buyouts between 1989 and 2017 found they disproportionately benefited wealthy urban communities that have the staff to cut through the paperwork and apply for federal money. Rural communities, which have fewer resources overall to deal with the climate crisis, were less likely to apply. And purchases were piecemeal, a few properties in an average county, unlikely to effectively restore wetlands that help mitigate storm surge and flood damage.

There are a few locally funded buyout programs in the United States. Since 1999, Charlotte — an example of an inland city with a network of creeks and streams that overflow their banks when it rains — has spent \$64 million to remove 460 structures and replace them with grasslands. And New Jersey’s Blue Acres program has spent \$375 million to buy about 1,000 of the 346,000

homes destroyed or damaged by Hurricane Sandy, most of them threatened by river flooding.

No Driving Beyond This Point” admonishes the sign on East Seagull Drive on the southern end of Nags Head, N.C. It’s an unnecessary remnant of days past. The signpost is half buried. The street has disappeared beneath five feet of drifted sand. All but two of the eight homes that once stood on the surf side of Seagull Drive have been demolished, bought and removed by the town at a cost of \$1.5 million. One defiant pink house remains, rising two stories on stilts. Another, damaged by a storm more than a decade ago, is a ramshackle, boarded-up shell with “No Trespassing” signs adorning its stilts. The owner won a long and expensive legal battle with the town, which tried to condemn the property. He has refused a \$35,000 buyout offer. Instead, he’s waiting for the next big storm to knock the house down so he can collect up to \$250,000 in federal flood insurance.

For the town, whose population of 2,900 balloons to as many as 40,000 on summer weekends, rising seas are an existential threat, eroding some portions of the beach by as much as six feet annually. But it has no plans to retreat. In fact, Nags Head removed the idea of retreat from its comprehensive plan years ago. Why? The town can afford to delay the inevitable, preserving a waterfront tax base



by spending tens of millions of dollars rebuilding beaches. It's working. Despite the devastation of three hurricanes in the past four years, property values in Dare County, home to Nags Head, Kill Devil Hills, Kitty Hawk and other destinations, have boomed to nearly \$16 billion, 25 percent more than seven years ago.

Nags Head levies a special tax on beach properties to rebuild the beach. In 2011, the town spent \$36 million to replenish the sand on 10 miles of beach. When Hurricane Matthew swept away about a third of that sand in 2016, the town rebuilt again at a cost of \$43 million, \$16 million of which came from FEMA. Western Carolina University researchers who compile a database on rebuilding beaches say that nearly \$503 million has been spent in the past 15 years in North Carolina.

Nags Head Mayor Ben Cahoon says the town will continue to replenish for the foreseeable future, planning to spend \$10 million or more every six to eight years. "Retreat in the abstract makes perfectly good sense, but it gets more complicated when you consider what if it's just one of the most gorgeous places to live?" he says, sitting in a conference room at the town hall. "What happens if you make a retreat decision? What does that look like? It's not an instant thing. You're not going to buy out rows and rows of multimillion-dollar houses at one time and say, now we've retreated from the beach." In his view, not rebuilding the beaches means a house here or there will be lost, creating a patchwork of vacancies over decades. Septic tanks will be exposed. Streets will surrender to the tides. "That, in fact, is what retreat would look like," Cahoon says. "That's not a sustainable solution either."

After two devastating bouts of flooding, residents of Valmeyer, Ill., decided to relocate the town to higher ground in the early 1990s. Today, Valmeyer is thriving. The old town had 900 people. The new one has 1,300 and is growing by the day.

Keeler, of the Coastal Studies Institute, says rebuilding beaches may make sense in the short term, but it's not sustainable, like other protections. It sets up towns like Nags Head for a catastrophe. "If you keep nourishing [the beach], then people are going to keep investing, and if people keep investing, you're going to keep nourishing right up to the crash," he says. "You may be there longer, but the losses will be a lot bigger and the disruption will be a lot greater, especially if it takes place after a mondo hurricane."

For cities like Norfolk, which is more than a billion dollars in debt, buyout options are limited. Norfolk has spent \$650,000 to buy four homes and return those parcels to nature, but the city has more than 1,000 properties at risk, a number that will grow as the water rises. Next door, Virginia Beach shifted from focusing on elevating homes to buyouts, with an initial \$1.5 million investment and a \$500,000 annual budget. The city's new study on sea-level rise identified 2,500 vulnerable properties for buyouts. "We have to get creative," says Erin Sutton,

the director of the Virginia Beach emergency management office. “The federal government is not creative. The way for us to do that is to start a program and see how it goes and hopefully continue to fund it.”

Norfolk is working with Wetlands Watch to explore buyouts using the transfer of development rights through a program with a third-party nonprofit land trust. Under the city’s zoning ordinance, developers looking to build on higher ground need a certain number of “resilience points.” In its simplest form, the developer pays the land trust and gets resilience points in return. The land trust uses the money to buy a property that has flooded at least twice within a decade. The homeowner gets a tax credit. The developer gets to build new properties. And the city gets threatened parcels removed and returned to nature. And the marketplace drives the transactions, not government.

That’s similar to a program Keeler has been championing, using buyouts but renting the property back to the homeowner until a certain date or until certain triggers — damage to the home, sea-level rise or a street becoming impassable a certain number of days within a year — come into play. Managing retreat through buyout programs, Keeler says, offers the promise of controlling the transition rather than facing what New Orleans endured after Katrina, with more than 40,000 abandoned homes. “There are no magic bullets. We’re hoping for a set of public policies that create a situation where people can avoid the worst consequences,” Keeler says. “I’m optimistic that if we’re smart, that a century from now, we can have relocated a lot of population that would have been at horrible risk if they stayed.”

A wipeout from a hurricane or a lingering storm is what

George Homewood wants to avoid for Norfolk neighborhoods. But he also recognizes that property rights mean the city can’t force people to leave. “Somebody who has more resources than I have and is willing to put them at risk to enjoy looking out over water, that’s a choice they get to make,” he says.

On Richmond Crescent, Brian McDonald has made that choice. He sits in his dining room overlooking the Lafayette River as the setting sun highlights whitecaps propelled by a north wind. He bought the 80-year-old house next door, lived there for three years, sold it for a small profit, then carved out this lot and built his palace, 12 feet above sea level. A recent appraisal put his home’s value at more than \$500,000. The flooding isn’t that bad, he says. He knows the water will come — there was a mark from Hurricane Isabel in his old house — but he doesn’t feel threatened. He’s in the best school district in Norfolk for his two children. He’s along the Elizabeth River biking and walking trail. And he pays only \$500 a year in flood insurance. “Sure,” he says, “there were hesitations, but I think the good outweighs the bad. I mean look at this sunset. I don’t feel threatened at all by the water.”

He’s never heard of the city’s 2100 plan. “They’re gonna let the water come into Larchmont?” he asks, incredulous. “I don’t believe that. This is their tax base. You’re not going to let your taxpayers’ houses fall into the river.” He adds, laughing: “My house might be on the market next year now that you told me that. But who’s to say what’s going to happen 80 years from now?”

Jim Morrison is a writer in Norfolk. To comment on this story, email wpmagazine@washpost.com or visit wapo.st/magazine.

IT'S VIRTUALLY IMPOSSIBLE NOT TO SEE THE *Beauty of Life at Ingleside*



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