

# The New REPUBLIC

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## Waterworld

The coming seawall craze.

Steve Nash | September 2, 2010 | 12:00 am

This fall, construction is set to begin on a \$4 million pop-up floodwall near the National Mall in Washington, D.C. It's designed to be assembled quickly in the event that torrential rains cause the nearby Potomac River to spill into the city. (Four years ago, heavy storms led to the flooding of buildings like [the National Archives and the offices of the IRS](#).) The ten-foot wall is high enough that it should be able to stop even monster floods like the one in 1942 that caused millions of dollars in damage.

But the new barrier will have one glaring flaw. According to the Army Corps of Engineers, the wall's design doesn't take into account future sea-level rise caused by climate change. As the planet warms and the ice caps melt, the seas will begin advancing. In a tidal river like the Potomac, whose height rises and falls with the oceans, that can make a big difference when major storms hit. Every foot of sea-level rise will reduce the floodwall's effectiveness, making the capital more vulnerable to storm surges.

What makes D.C.'s obliviousness to sea-level rise so striking is that the warnings are perfectly clear. Greenhouse-gas emissions are rising at an alarming rate. Each year brings new studies finding that the polar ice sheets are disintegrating faster than worst-case projections. [A slew of estimates](#) now peg the likely resulting sea-level rise at three to four feet by the end of the century. And even that may be a lowball figure: A new book by geoscientists Orrin Pilkey and Rob Young, *The Rising Sea*, warns that we should plan for at least seven feet. After all, Atlantic hurricanes can already produce storm surges of 16 feet or more at landfall.

Sea-level rise won't just hit all at once at the end of the century—it's incremental. By 2050, the oceans could well have risen one and a half feet. In Maryland, Virginia, and North Carolina, that would mean the periodic swamping of more than 400 miles of major roads and highways, 150 miles of railroad, and one-third of the land base of the region's major ports. [A 2009 federal infrastructure report](#) compares the potential impacts of these floods to the nationwide air-traffic jams that follow a storm closing down a major airport. The difference is that flood damage would last far longer.

And yet, despite a series of detailed studies on the issue, federal and local governments are doing very [little to prepare for sea-level rise](#). In many places, they're actually making things worse.

**There are three broad options** for dealing with sea-level rise. We can build walls to ward off the sea. We can put our coastal buildings and infrastructure up on stilts. Or we can plan a slow retreat and move our built environment farther inland. All of these options would take a long time to implement, and many of them would be absurdly expensive. Jim Titus, chief sea-level-rise expert at the Environmental Protection Agency (EPA), estimates that shore protection for the lower 48 states could cost around \$1 trillion.

And seawalls—a necessity to protect places like Manhattan—could create as many problems as they solve. Dikes, levees, and bulkheads will destroy many coastal wetlands by preventing them from migrating inland as the seas advance. Most of the coastal wetlands in the mid-Atlantic could disappear by the end of the century if they have no place to go and the seas rise three feet or more. These wetlands are highly

valuable, reducing the impact of floods, protecting against storms, and shielding freshwater supplies from the ocean. They're also key nurseries for fish: About two-thirds of the commercial fisheries off the Atlantic depend on wetlands, where invertebrates and small fish that feed on decomposing matter support rockfish, menhaden, blue crab, and other large species.

There's another problem with seawalls: In some areas, as they are built higher to hold back the rising waters, more and more people on the dry side will end up living well below sea level. Titus points out that this would leave us with "more than a hundred cities and towns that look like New Orleans"—giant bathtubs that can fill up from one well-placed hurricane.

That leaves strategic retreat—moving farther away from the water—as the ideal option. Yet, in the United States, we're moving in the opposite direction. As a 2009 study in [Environmental Research Letters \(ERL\)](#) points out, government policies are encouraging development in the areas most vulnerable to sea-level rise. Along the Atlantic, 60 percent of the coastline that sits less than three feet above sea level has been opened for new houses, hotels, businesses, and roads. (By contrast, only 10 percent has been set aside for conservation.)

Inevitably, when the seas rise to threaten new houses and strip malls, so will calls for costly protection. "At every step along the way, development seems like a good idea to the person who owns the land," says Titus. "And then, to the person who buys that house, shore protection seems like a good idea. But where that all carries us is toward a coast that is almost entirely developed and with some kind of shore protection. ... Then, we end up losing our wetlands in most areas."

It doesn't help that the federal government is offering incentives for such shortsighted development. The *ERL* study notes that the Army Corps of Engineers abets this frenzied construction by routinely approving shoreline-hardening projects with little scrutiny. Dave Olson, a Corps spokesman, says that the agency's hands are tied: By law, it has to approve protection for any new development that state and local authorities allow—and, besides, sea-level rise projections are too uncertain to base decisions on. But critics say the agency is an obstacle to saner planning. "Get the Corps off the shore," Pilkey and Young argue in *The Rising Sea*. "It has too long a history of checkered competence, high-cost construction, and inefficiency due in significant part to its close dependence on Congress for pork barrel funding."

Then there's the Federal Emergency Management Agency. Fema, says Skip Stiles of [Wetlands Watch](#), encourages high-risk coastal development by subsidizing flood insurance for property owners. "Fema's sending the wrong market signals," Stiles says. He argues that the insurance program should be overhauled so that no local projects get fema aid unless they have detailed plans for sea-level rise. Likewise, local building codes should take the prospect of rising oceans into account.

So why hasn't any of this happened yet? For one thing, the politics of sea-level rise are still hazy—no one seems to agree on whether it's a local, state, or federal responsibility. And Congress is not doing much to resolve these issues. The climate bill that passed the House last year merely calls for more research, even though more blue-ribbon panels seem superfluous at this point. "Do you need cost-benefit analysis to know that you're going to protect Manhattan?" asks Titus. "That you're not going to allow the Jefferson Memorial to go underwater? That Miami is going to continue to exist?" Those aren't trick questions. But, for now, they're going unanswered.

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