



Grand Rapids to reimagine Grand River floodwalls after years of fighting feds

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"Now we have an opportunity to do it right" - engineer Jim Smalligan, on building a flood protection system for the Grand River

GRAND RAPIDS, MI – For years after the devastation of Hurricane Katrina, when the Federal Emergency Management Agency started calling on Grand Rapids and other cities to heighten their floodwalls, city leaders here didn't want to do it.

Leaders had just spent \$13.5 million building and improving the downtown walls that hem in the Grand River to their current height - about a foot above the 100-year flood level.

Fast-forward a decade to the cusp of 2015: There's a plan to restore the rapids to the Grand River, an emerging vision to make the water more of a recreational asset, and an expectation among city leaders that climate change will produce more intense rains in the future. The White House even appointed Mayor George Heartwell to serve on a task force that studied how cities should respond to that forecast.

Now, after years of fighting with FEMA, Grand Rapids is willing to alter its floodwalls after all – only not so much with concrete.

Imagine taking out a stretch of concrete floodwall and replacing it with a stepped embankment that people could go up and down to launch a kayak or just splash around when water levels are low. When the river floods, water would rise and submerge the steps. But the water would be hemmed in by the embankment in a kind of riverside holding tank.

That's the new take Grand Rapids has on its downtown floodwalls. The city is studying 16 sites along the river where it might build multi-purpose floodwalls that double as public access points.

"They're not floodwalls. They're a flood protection system," said Jim Smalligan, a Fishbeck, Thompson, Carr & Huber engineer working with Grand Rapids. "Ten

Grand Rapids is studying how to provide better flood protection and better river access at the same time. Some parts of the riverbank could look something like this artist rendering.
courtesy of Grand Rapids Whitewater and River Restoration, Inc.

years ago we weren't thinking about (Grand Rapids) Whitewater. We weren't thinking about GR Forward (the new downtown planning process). So we were thinking about flood protection somewhat in a vacuum.

"Now we have an opportunity to do it right."

RELATED: Recap how close Grand Rapids came to catastrophe during 2013 flood

When the Grand River reached a record crest during April 2013 flooding, city leaders – even as the community rallied volunteers to sandbag vulnerable areas – boldly hailed the walls a success. An MLive/Grand Rapids Press investigation found that Heartwell even delayed declaring a state of emergency during the flood to avoid the perception that it might concede to FEMA that the floodwalls were not high enough.

But since then, Grand Rapids and FEMA have come to terms on a compromise that won't require the walls to go 3 feet above the 100-year flood level, meaning that existing walls can be certified when FEMA issues new flood maps for the first time in 30 years. That matters because it could impact insurance rates for thousands of Grand Rapids properties.

A draft report on what exactly Grand Rapids needs to do to get its walls certified is expected to come from FEMA later this month.

The challenge for Grand Rapids will be meeting FEMA's modified requirements by installing new flood infrastructure before new flood maps come out, Smalligan said.

"The consequence is that there's 6,000 parcels, many of them residential parcels, that may have to purchase flood insurance at premiums that average \$1,000 a year," Smalligan said. "It also affects development and redevelopment in those areas.

"It's just not an option that the flood insurance rates come out showing that (these are in a flood-prone zone). We're hoping to buy more time as far as doing this right, understanding that this is a huge endeavor in the city of Grand Rapids."

The MLive/Grand Rapids Press investigation detailed how close the city's sewer treatment plant came to going under during the April 2013 flood, and explained why it didn't take record rains to cause the record crest. An **editorial that capped the series** urged Grand Rapids to avoid flood amnesia by giving the river due attention.

To that end, Grand Rapids is responding with a \$4.7 million bond to reinforce and heighten an existing berm around the sewer plant on Market Avenue SW, and shore up weaknesses in the floodwall downtown. The

money also is paying Smalligan's firm \$500,000 to take a look at the 16 sites along the river and figure out how to enhance flood protection and public access to the water at the same time.

Sub-consultants on the work are Boston-based Stoss Landscape Urbanism, which also is working with Downtown Grand Rapids, Inc. on a **new plan for the river corridor**, and River Restoration, Inc., a Colorado firm teaming with Grand Rapids Whitewater on **removing the dams from the Grand River**.

Almost 40 percent of the city's riverfront is walled off – vestiges of its industrial legacy. Rather than further "canyonize" the river by raising concrete floodwalls, the city and its consultants are exploring ways to "amenitize" the floodwalls by installing recreational assets like floating boardwalks, kayak docks or yoga decks. They're also looking at how to further develop and improve the network of trails that run along the river's edges.

Instead of high floodwalls, Grand Rapids may be able to put in a series of small levees that offer flood protection without hindering recreational access.

"It's not just a big wall. It's a bunch of little walls," said Scott Bishop, a landscape architect with Stoss. "We want to think about this in a more diverse way. We can make this serve more than one function.

"This is about how you create a new lifestyle surrounding the river."

It helps that the federal government may be willing to support that new lifestyle by pitching in on a \$30 million river restoration that would revive the rapids to the Grand River as it falls 16 feet between Leonard and Wealthy streets. The concept would remove part of the Sixth Street Dam, bring rocks and shoals back to the riverbed below the dam, and create a new barrier for sea lamprey above the current dam.

Shortly after the April 2013 flood, the White House added the river restoration project to its Urban Waters Federal Partnership. Inclusion brings support from more than a dozen federal agencies, including FEMA.

While there's no guarantee of federal money, Heartwell said it sure improves the chances. And that makes it more feasible for Grand Rapids to fund more flood protection.

"We start looking at what's possible," Heartwell said. "If we wanted to find ways to tear down the floodwalls so we can get people to the river, might we not be able to build into the design and the engineering for our river restoration project the higher FEMA standard, the 'Katrina Standard,' and still have an enhanced waterway with better public access to the water?"

Heartwell said the river restoration project "has been the driver" of the city's new tack on flood protection. In turn, Grand Rapids Whitewater co-founder Chip Richards said the city's latest work on flood protection is "complementary to our goals."

Chip Richards, left, and Chris Muller are organizers of an effort to remove Grand River dams through downtown Grand Rapids and

"We want to work on the bottom (of the river) so people can play on the top," he said. "The whole thing is about access, and if we can't get to the river then it's all about the fish."

restore the water's rapids. The idea has attracted state and federal support, and is influencing the city's plans for flood protection.

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What was a "very adversarial relationship with FEMA" now has morphed, Heartwell said, and both the city and the federal agency "kind of backed away from the precipice and said 'Let's figure out if there's a better way to do this.'"

Under FEMA's Levee Analysis and Mapping Procedures, or LAMP, process being piloted in Grand Rapids and two dozen other cities around the country, the feds are working with a local workgroup "to provide input and data about the Grand Rapids levee and floodwall system and discuss how flood hazards should be mapped landward of this infrastructure using the new (modified) methodology," spokeswoman Cassie Ringsdorf said.

Once the draft report comes out, feedback from the local group will inform FEMA's final report, due in March. At that point, "FEMA's flood mapping process will progress as the city pursues their course of action for the levee," Ringsdorf said. That process could last another 18 to 24 months.

"The main thing is if we can get an agreement with FEMA that will keep a good chunk of the West Side from having to buy flood insurance, that's basically what the benefit is," said Kent County Drain Commissioner Bill Byl, who's part of the workgroup and whose office is bonding the city's floodwall work.

"To me, the real question then is 'OK, what's the cost to get to the level of the compromise and then what's the incremental cost to do everything with 3 feet of freeboard?' and look at the differential," Byl said. "OK, we're spending X. Is it worth spending X plus 1 to get a higher level of protection? The city would have to make that call."

Echoing statements made by city leaders in the wake of the April 2013 flood, Heartwell on a **conference call earlier this month** reiterated that "the floodwalls held. They were high enough. They were strong enough to contain this record crest."

They were. But even though the river rose to a record level, the rains that caused it were far from record-breaking. Weather observers note that regional land-use patterns have changed since the early 20th-century flood that prompted construction of the first floodwalls in Grand Rapids. These days, it doesn't take as much rainfall to raise the river because so much more water runs off parking lots and agricultural fields into the river upstream.

That's a caution because "the likelihood of more frequent, heavier rain events occurring is pretty high," said Jim Maczko, a National Weather Service meteorologist in Grand Rapids.

Flood model demonstrates Grand River Basin flooding

National Weather Service hydrologist Mark Walton uses a model of the Grand River Basin to show flood tendencies as he explains the reasons why the flooding occurs.

"We're entering a time in our climate where we're seeing more extreme rain events and we're seeing them more often," he said. "As temperatures continue to warm, we'll have more moisture in the atmosphere.

"We have more stuff (at risk of flooding). We have a lot more buildings. We have a lot more people in vulnerable areas. At the same time, we're increasing our risk because the climate is shifting."

Heartwell, who just served on a presidential task force that studied how cities could become more resilient to climate change, buys into that science, saying "it would be irresponsible for me today to ignore the needs of the city 50 years from now." He's touting tree-planting, porous asphalt and roadside rain gardens to soak up rain water before it gets to the river.

And, while maintaining that the city's floodwalls did their job in 2013, Heartwell's now convinced they may not be good enough to handle floods years into the future.

But as for beefing up the walls by adding a bunch of concrete?

"Imagine how unattractive that would be and how it would further canyonize our river, making it an unnatural water body," Heartwell said. "We've seen more data and come to the conclusion that we have a responsibility to go beyond even what FEMA would require of us. Let's be smart. Let's be cautious. But let's build it into a better design for the Grand River.

"It's really the confluence of a lot of different things that's given us the opportunity to think about it in a whole new way."

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