

Backyard Defense Keeps the Red Away

In 28 years, Jim and Pat Papacek of Fargo, North Dakota, never laid one sandbag in defense of their home—even with a river some 350 feet from their back door.

But in April 1997, they broke that record. A winter of eight blizzards, five winter storms and 117 inches of snow gave way to a spring of monumental flooding. And suddenly, the Red River of the North became a formidable enemy.

The Papaceks were determined to give it all they had to protect their home. They built a wall of sandbags to stave off raging floodwaters. They helped their neighbors sandbag too, knowing that just one breach in the defense could flood their own properties as well as the whole neighborhood.

When it was over three weeks later, the Papacek's home had survived. The house was not, however, unscathed. Water had spilled over their basement window wells, leaving about an eighth of an inch on the floor. The ground below the basement heaved, cracking the concrete floor.

Though the damage to their house could have been worse, the Papaceks were scarred by the experience. Their feeling of safety had been shattered. If the river could come close once, it could happen again. They had to find a permanent solution.

So they attended neighborhood flood-recovery meetings sponsored by the City of Fargo. There, the couple learned that one solution to their problem wasn't any farther than their own backyard.

Jim Papacek literally built up his backyard to provide a defense against the Red River which flows by his house about 350 feet from his back door. The stone wall helps support the extra fill dirt he added to guard against a river height of 39 feet.



Better Flood Protection

City officials offered a landscaping program to residents, like the Papaceks, who lived in the Belmont Park neighborhood on Fargo's east side. The program was simple. By raising the elevation of the land behind their house, the Papaceks could create better flood protection for their home and get the city to help pay for it.

It was a deal they couldn't refuse.

“We didn’t want to leave our house,” said Pat Papacek, “and we knew as we approached older age we couldn’t do what we did in 1997. We wanted to ensure our house would be safeguarded the next time.”

The city could benefit from the program, too. The Belmont Park neighborhood is between the Red River, which runs the entire length of Fargo’s east side, and the city’s \$68 million water treatment plant. As such, it is a vulnerable area where the city needs some method of permanent flood protection—both for that critical facility and the neighborhood.

Many residents wanted the city to just extend its nearby dike behind their homes. But doing so would create both problems and liabilities for the city, according to Dave Johnson of Fargo’s engineering department.

So Johnson helped develop the Belmont Park Flood Protection Assistance Program for properties that adjoin the riverfront. To qualify for funding, property owners had to create an elevation that would protect them to at least a 39-foot-high river level. The landscaping could not encroach into the floodway. If the improvements extended into the 100-year floodplain, homeowners had to obtain floodplain development permits.



Papacek sloped the center portion of his backyard to provide drainage for rain runoff. The area is all he will have to sandbag if the river gets close to his house again.

Also, before beginning any work, homeowners had to submit their landscaping plans to the city for approval. When the work was completed, the city then inspected the project to ensure that the proper flood-protection elevation had been achieved. Finally, the property owner had to sign a legal document assuring the city that the elevation would be maintained for the life of the property.

In return, the city funded 50 percent of the cost of the landscaping materials (homeowner labor was not eligible for reimbursement). If residents chose to raise their property to 40 feet, the city’s share increased to 60 percent. The city’s share of the costs—about \$30,000 for six properties—was paid with Community Development Block Grants.

“The program was conceived to encourage the property owners to take their own protective measures,” said Johnson, “and to reduce the city’s liability of working and trying to build a dike in

people's backyards. Doing the landscaping still doesn't remove them from the floodplain but it does provide enhanced protection."

The Real Work Begins

Papacek began designing his project in the summer of 1997, even before he was approved for the cost-share. To him, the issue was protecting his home and he was willing to do it regardless of whether the city reimbursed some of the expenses.

By the summer of 1998, Papacek's design began taking shape. He started at the home of a neighbor who was physically unable to do the work, but willing to pay for materials if Papacek would landscape his yard, too.

One wheelbarrow at a time, Papacek hauled in yards of fill dirt to create a new elevation. It not only helped his friend, but the elevation provided an important element in Papacek's own protection plan.

"I could not protect my property if his corner wasn't raised," Papacek said. "So I raised the elevation of his yard to 39.9 feet and then I terraced it into my yard."

In that same corner, Papacek added a sump pump, with drain tiles on his property and a 4-inch pipe on his neighbor's property to carry water away from the houses.



Standing at the back boundary of his yard, Jim Papacek knows that the river which flows close behind him will one day come calling again.

Next, he built a terraced wall of London stone and added fill dirt above and around the wall to a height of 39.9 feet. Below the wall, he added crushed granite, instead of soil, to provide better drainage for a tree he wanted to keep. Surrounding the tree with several inches of soil could have killed it.

Papacek then added more dirt and a second stone wall about 5 feet below the first terrace. The second wall helps bolster the wider base needed to support a nearly 40-foot elevation.

In the summer of 1999, Papacek raised the other corner of his yard to 39.4 feet and helped the adjoining property owner elevate his own backyard as well.

To ensure that rainwater didn't pool between his house and his backyard—now higher than

the foundation itself—Papacek put in a slight dip in the center of the yard to create a drainage channel. The low spot meets the project's 39-foot requirement.

Since then, there have been several heavy rains and the new landscaping has successfully channeled the water away from the house.

Fewer Emergency Measures Needed

Now, if there were a flood threat, Papacek estimates it would only take about 50 sandbags to build up that low spot—a much more manageable number than the hundreds of sandbags they used in 1997.

In all, the project took approximately 124 yards of fill dirt, 32 yards of crushed granite, 32 yards of topsoil and about 400 London stones. The materials cost him about \$8,800; the city reimbursed him for half of those costs.

Johnson says the flood protection program provides a number of benefits both for the city and the property owners.

“It’s going to make a big difference when the river significantly exceeds flood stage,” said Johnson. “It obviously reduces the manpower needed to fight a flood. We can cut down on the number of sandbags, labor involved in hauling them there, and cleanup afterwards. By doing this, we eliminate some headaches and some worry areas. Also, this now provides additional flood protection in the area.”

Since the time Papacek finished the project, the river has not threatened his property. But, he says, it is just a matter of time before another flood hits Fargo.

“The fear of flooding is always there,” Papacek said. “We know that a little bit of water on a flat plane like we have here magnifies quickly. From what we see happening in North Dakota in general, we think subsequent flooding will be higher and higher and faster and faster.”

Still, he adds, the effort and expense of the landscaping has been worth it. He believes without the increased elevation, another flood could easily damage his house.

“We definitely have a better comfort zone now because of the way the dike is made and the way the drainage is,” he said. “The city has been very accurate with its predictions and they told me 39 feet and 40 feet would be a safe level. I’m going on their expertise.”