

Johnstown Flood

National Memorial
Pennsylvania

National Park Service
U.S. Department of the Interior



Market Street area of Johnstown before the flood. Iron mills and worker housing are in the background.



The wave reduced the area to rubble in 10 minutes. Some buildings were spared where the waves split.

"A Roar Like Thunder"

On June 1, 1889, Americans woke to the news that Johnstown, Pennsylvania, had been devastated by the worst inland flood in the nation's history. More than 2,200 were dead, with thousands more injured. When the full story of the flood came to light, many realized that this was more than a "natural" disaster—that greed and self-interest were powerful accomplices.

Johnstown in 1889 was a steel company town of German and Welsh families. It was a growing and industrious community of 30,000, known for the quality of its steel. Founded in 1794, Johnstown began to prosper with the building of the Pennsylvania Mainline Canal in 1834 and the arrival of the Pennsylvania Railroad and the Cambria Iron Company in the 1850s.

There was one drawback to living in the city. Johnstown had been built on a floodplain at the fork of the Little Conemaugh and Stony Creek rivers. Over the years the growing city had stripped forests from the surrounding hills and narrowed the river banks to gain building space. Without the trees to slow runoff, rainwater was forced into the constricted river channel; heavy annual rains had dramatically increased flooding.

And, there was something else. Fourteen miles up the Little Conemaugh, two-mile-long Lake Conemaugh was held on the side of a mountain—450 feet higher than Johnstown—by the old South Fork Dam. The dam was poorly maintained, and

there was talk that the dam might not hold. But it always had, and the supposed threat became a standing joke around town.

On the afternoon of May 31 town residents heard a low rumble that grew to a "roar like thunder." After a night of heavy rain the South Fork Dam had finally broken, sending 20 million tons of water crashing down the narrow valley. Most people never saw anything until the 36-foot wall of water, boiling with huge chunks of debris, rolled over them at 40 miles per hour, consuming everything in its path. Those who saw the water said it "snapped off trees like pipestems," "crushed houses like eggshells," and "threw around locomotives like so much chaff." A violent wind preceded it, blowing down small buildings. Making the wave even more terrifying was the black pall of smoke and steam from burst boilers that hung over it—the "death mist" remembered by survivors.

Thousands of people desperately tried to escape the wave, but they were slowed as in a nightmare as the deepening water covered the town. One observer from a hill said the streets "grew black with people running for their lives." Some remembered reaching the hills and pulling themselves out of the flood path seconds before it overtook them. Those caught by the wave found themselves swept up in a torrent of oily, yellow-brown water, surrounded by tons of grinding debris that crushed some and provided rafts for others. Many became helplessly entangled in miles of barbed wire from a destroyed

wire works. People indoors when the wave struck raced upstairs seconds ahead of the rising water, which reached the third story in many buildings. Some never had a chance, as homes were crushed or ripped from foundations, adding to the churning rubble. People clinging to debris struggled to keep their balance as their rafts pitched in the flood.

It was over in 10 minutes—but for some the worst was still to come. Thousands of people in attics or on rooftops of buildings that withstood the initial wave were threatened by the 20-foot current tearing at the foundations. In the growing darkness they watched buildings topple, not knowing if theirs would last the night.

The most harrowing experience for hundreds came at the stone railroad bridge below the junction of the rivers (see diagram below "The Flood Paths"). Thousands of tons of debris scraped from the valley, along with a good part of Johnstown, piled up against the arches. The 45-acre mass held homes, machinery, freight cars, railroad track, bridge sections, boilers, telegraph poles, trees, animals, and hundreds of people. The oil-soaked jam was immovable, held against the bridge by the current and bound tight by the barbed wire.

Those who were able scrambled over the heap toward shore. Many were trapped in the wreckage or snared in the wire, unable to move. Then the oil caught fire. As rescuers worked

in the dark to free people, flames spread over the whole mass, burning with "all the fury of hell," according to a Johnstown newspaper. More than 80 people died at the bridge, some still in their own homes.

The next morning an eerie silence hung over Johnstown. The water receded during the night, leaving vast heaps of rubble in the streets (where there were streets). Entire blocks were razed. Hundreds of people, alive and dead, lay buried in debris and mud.

Many bodies were never identified, and hundreds of the missing were never found. Disease followed in the wake of the flood, and typhoid added 40 more lives to the 2,209 lost in the flood. Emergency morgues and hospitals were set up, and commissaries distributed food and clothing. The nation responded to the disaster with an outpouring of time, money, food, and clothing. Contributions from the United States and other countries totaled more than \$3,700,000.

Property damage was \$17 million. The cleanup operation took years, with bodies still being found months (and years) after the flood. The city regained its population and rebuilt its manufacturing centers, but it was years before Johnstown fully recovered.

Retreat for the Rich

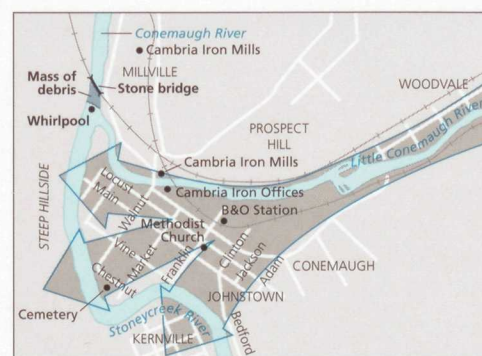
The South Fork Fishing and Hunting Club was an exclusive and somewhat secretive retreat for the Pittsburgh rich. They bought an abandoned reservoir, repaired the old dam, raised the lake level, and built a clubhouse and cottages. The members enjoyed hunting, sailing, and two excursion steamers that plied the lake. The lack of adequate maintenance on the dam weakened it dangerously.



JOHNSTOWN AREA HERITAGE ASSOCIATION ARCHIVES

The Flood Paths

When the flood hit Johnstown the wave of water divided: part followed the river channel and the rest headed downtown. Large buildings split that second wave again. Water roared down Clinton and Jackson streets; the rest plowed directly through town. This central wave crashed into the sheer hillside at Stony Creek, causing a backwash up the river and a violent whirlpool above the stone bridge.



A Wild Ride

Victor Heiser, 16, recalled: "The townspeople, like those who live in the shadow of Vesuvius, grew calloused to the possibility of danger." Heiser was in the family barn when the flood struck and saw his home, with his parents in it, crushed and swept away. Clinging to the barn roof, he had a wild ride down the Conemaugh River and then up Stony Creek on the backwash, ending up in Kernville.



NPS

Aid from the Red Cross

Clara Barton, "Angel of the Battlefield," and her staff of 50 doctors and nurses arrived in Johnstown five days after the flood. It was the first test of her newly formed American Red Cross. She surveyed the injured, set up hospital tents, built six "Red Cross hotels" for the homeless, and distributed food, clothing, and medicine. Although 67 she worked hard, staying in Johnstown until October.



PHOTO BY MATHEW BRADY; COURTESY LIBRARY OF CONGRESS

Unknown Flood Victims

Grandview Cemetery (right) contains graves of the unknown flood victims. In the disaster 99 families were wiped out, and 98 children lost both parents.

After the flood, Major John Wesley Powell wrote: "Modern industries are handling the forces of nature on a stupendous scale . . . Woe to the people who trust those powers to the hands of fools."



JOHNSTOWN AREA HERITAGE ASSOCIATION ARCHIVES

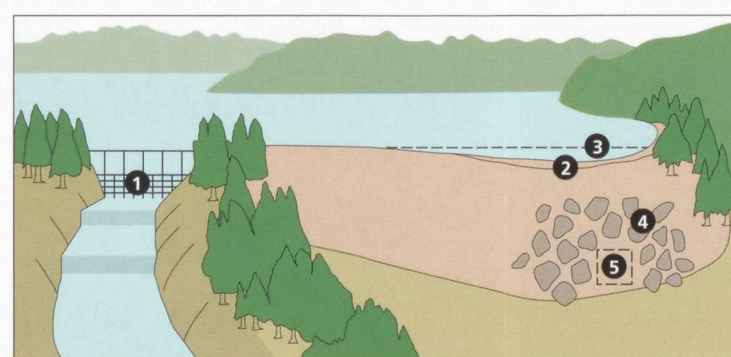
"Our Misery Is the Work of Man"

Warnings about a possible flood reached the people of Johnstown three times in the hours before the dam broke—but they had heard those kinds of warnings before. The South Fork Dam, one of the largest earthen dams in the world, had always held during high water. Besides, wasn't the dam maintained by some of the richest men in America?

The South Fork Fishing and Hunting Club, made up of Pittsburgh industrialists and businessmen such as Andrew Carnegie and Andrew Mellon, had bought the lake and dam nine years earlier to use as a summer retreat. The reservoir was originally built to supply water for the Pennsylvania Mainline Canal, and the dam met accepted engineering practices of the time. But the canal system was obsolete by the time the dam was completed in 1853, and the Pennsylvania Railroad bought it four years later. In 1862 a break occurred near the discharge pipes (see diagram at right), draining the lake, but little damage resulted because the lake level was low at the time. The railroad abandoned the dam and it deteriorated until 1879, when it was bought by the South Fork Club.

At first the 72-foot-high dam frightened some residents of Johnstown. Said one: "No one could see the immense height to which that artificial dam had been built without fearing the tremendous power of the water behind it . . . People wondered and asked why the dam was not strengthened, as it certainly had become weak, but nothing was done, and by and by they talked less and less about it." Others, realizing their continuing vulnerability, called the dam "the sword of Damocles hanging over Johnstown." Daniel J. Morrell, president of Cambria Iron, worried about the dam. Benjamin Ruff (South Fork Club's first president) refused Morrell's requests that the dam be strengthened: "You and your people are in no danger from our enterprise."

On the morning of May 31, 1889, in a farmhouse above the dam, Elias Unger (current president of the South Fork Club) awoke to the sight of a lake swollen after a night of torrential rain. Unger rushed to the dam to assess the situation. Horrified, he saw that the water was nearly cresting the dam. Unger acted quickly in an effort to save it. Soon a group of men were atop the South Fork Dam—some



South Fork Club's maintenance of dam: 1 Fish trap built across the spillway. In heavy rains, debris clogged trap and spillway. 2 Two-to four-foot sag developed along dam wall; club did not repair it.

3 Dam height reduced by one- to three-feet. This and the sag meant that the center of dam—the part bearing the greatest pressure and which should have been its highest point—was only four feet

above the bottom of the spillway. 4 Stone "riprap" covering the face of dam poorly maintained. 5 Original discharge pipes not replaced. Culvert holding pipes carelessly filled in.



John Parke, the club engineer who tried in vain to save the dam, rode his horse at breakneck speed to South Fork to warn Johnstown.

plowing the earth to raise it, some digging another spillway at the other end, and some trying to plug leaks with whatever materials they could find.

John Parke, an engineer for the South Fork Club, briefly considered cutting through the dam's end, where the pressure would be less. Feeling that he would be held responsible for flooding the valley, Parke decided against it. Unger, Parke, and the others worked until they were exhausted.

When the dam started to break at 3:10 p.m., Parke wrote later, "the fearful rushing waters opened the gap with such increasing rapidity that soon after the entire lake leaped out. . . . It took but forty minutes to drain that three miles of water." One observer said the water "roared like a mighty battle." Twenty million tons of water took its natural course, dropping 450 feet in 14 miles, at times in a wall 70 to 75 feet high and reaching speeds of 40 miles per hour. Telegraph lines were down, and Johnstown received no more warning messages. In 57 minutes the wave engulfed the town. More than 2,200 people were unaware that death was moving down the valley.



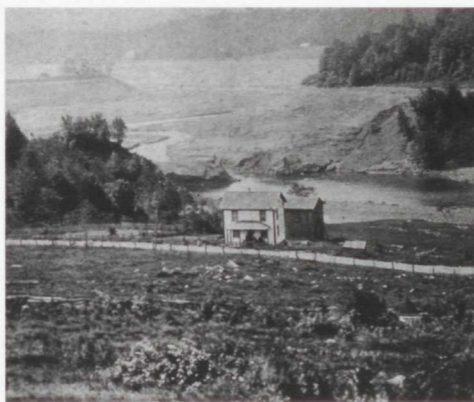
Two worn abutments are all that remain of what was one of the largest earthen dams in the world in 1889. The old lakebed behind the dam and the quiet Little Conemaugh River give little

indication of the awesome power released on the day that the dam broke, causing the deadliest inland flood in the nation's history.

Understanding the Johnstown Flood

In the Flood's Wake

Lake Conemaugh broke through the South Fork Dam at the velocity and depth of the Niagara River as it goes over the falls. Farmers below the dam described the wave as "a turbulent wall of water, filling the entire valley." At times the tons of debris gathered by the wave caused it to choke up in the narrow valley, stop momentarily, then explode forward again with greater power. The debris actually spared Johnstown even worse destruction, as it slowed the wave to a maximum speed of about 40 miles per hour. The water would have reached 60 to 90 miles per hour if it had rushed unimpeded down the valley. You can follow the flood's path on the map below (read the numbers from right to left).



ALL PHOTOS NPS UNLESS OTHERWISE NOTED

The South Fork Dam did not instantly burst (left). Observers remember the water gouging out a "big notch," then cutting down rapidly through the earth. "The whole dam seemed to push out all at once. Not a break, just one big push."



The 78-foot Conemaugh Viaduct (left) stopped the flood temporarily when debris jammed against its arch. A lake deeper than the original formed—then the viaduct collapsed.

In the town of Woodvale (right) only the mills in the background withstood the wave. The rest of the town was reduced to mud flats. Destruction of the wire works released miles of barbed wire, adding to the terror of those caught in the flood.



Visiting the Park

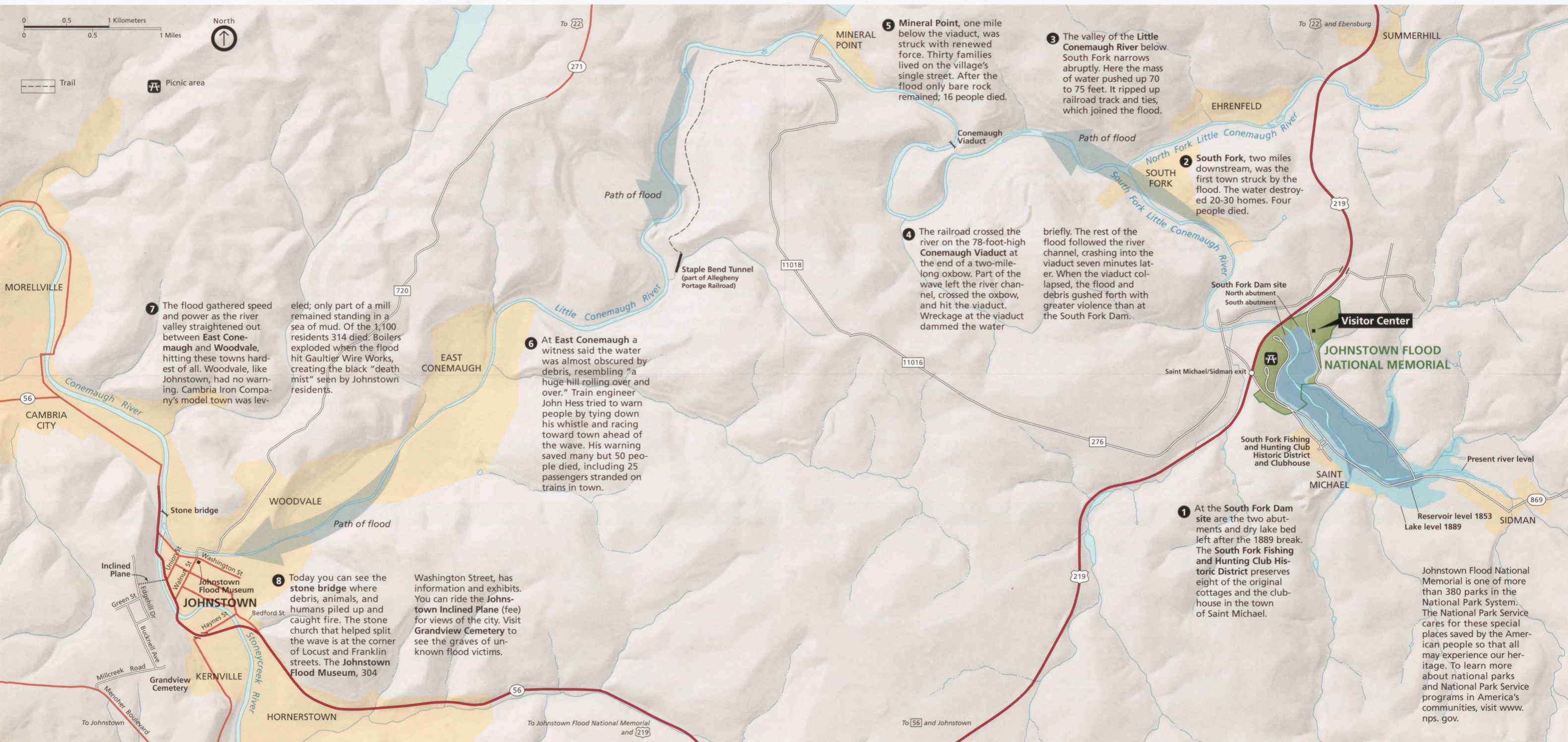
Visitor Center Start here for information, exhibits, maps, and a film about the flood. Contact the park about hours, programs, and activities.

Accessible The visitor center, picnic area, and trails to the dam area are accessible for visitors with disabilities.

Getting Here Take U.S. 219 to Saint Michael/Sidman exit. Go east on Pa. 869. Turn left onto Lake Road to the park.

Safety and Regulations Camping, hunting, and open fires are prohibited. Do not disturb, damage, or remove plants, animals, or historical objects—all are protected by federal law.

For More Information Johnstown Flood National Memorial
733 Lake Road
South Fork, PA 15956
814-495-4643
www.nps.gov/jofl



Shattered buildings were thrown into jumbled piles three stories high, completely filling some blocks.



The flood snapped large trees like sticks and turned them into battering rams that pierced walls.



Cambria Iron Company's prompt reassurance that mills would be rebuilt heartened the Johnstown citizens who depended on them.



A jam at stone bridge caused a 10- to 30-foot lake over Johnstown. The fire caused by oil and hot coals burned for two days. More than 80 people died here.



As soon as the water receded, rescue workers began searching for survivors and bodies. Some waited days to be rescued.



Locomotives at East Conemaugh trainyard were tossed around like toys, some ending up a mile away.