

Flying High and Dry, Airport is Better Protected from Floods

North Dakota aviator Tom Nord can remember at least five floods in his 45 years as manager of the Fort Pembina Airport.

But none was so devastating as the flood of April 1997, which ravaged countless communities throughout the eastern part of the state, including the airport, where Nord worked and lived.

Tucked away in the northeastern corner of North Dakota, the airport has been an aviation legend.

Built in about 1930 on the site of Fort Pembina, the oldest settlement in the state, the airport was designated as a port of entry for the United States. Northwest Airways built a hangar there in 1932 to support its airmail service and small passenger planes that flew between Canada and the U.S. From the 1930s until about 1945, it housed a regional weather observation station.

But in the spring of '97, floodwaters extensively damaged the facility. Five feet of water filled the wooden hangar. Powerful river currents had pushed through the building, bulging out the lower part of the back wall. Water scoured out the soil beneath the structure, causing the concrete floor to break and the building to shift. Mud and debris soiled everything in sight.

In Nord's office and living quarters, originally built for the airline's flight crews, the water came up 4 feet after filling a 1,300-square-foot basement where the water heater and furnace were housed.

Across the runway, floodwaters wrenched two 2,000-gallon aircraft fuel tanks from a protective berm and carried them away. Nearby, 50 inches of water filled a smaller hangar, used as a maintenance and repair shop.



Tom Nord says he's glad the airport has been rebuilt. Now, it has a future and a better chance of surviving another flood.



This new hangar has been built with special features that will help minimize future flood damages. Large overhead doors in the front (shown open) and the back of the building now should allow floodwaters to flow in one side and out the other.

It took weeks for the water to subside. When officials assessed the damage, the news wasn't good. Estimated repair costs were staggering—more than 50 percent of the buildings' market value. The hangar was in such bad shape that the county condemned it.

The only way to keep the airport from permanently closing was to replace the hangar, office and living quarters. And in doing so, special flood-protection measures would have to be added to comply with local ordinances governing new construction in a floodplain.

The new buildings, finished in the summer of 2000, have become a welcome sight for those who feared that the flood of the century would spell the end of a legend.

"The new facility is terrific," said Nord. "I only wish I could have had it 20 years ago. The way they've built it with the added features is the only way to go."



The main floor of the new office and living quarters is 5 feet above the ground level to reduce the chance of flooding again.

The hangar, a 120-by-80 metal structure, features a wide overhead door that can be raised well above expected flood levels. The old hangar had two doors that each slid sideways on metal tracks inlaid in the concrete floor. Because the doors were at ground level, they were easy targets for damaging floodwaters.

In the back of the new hangar, two 10-by-10 overhead doors were installed as well. Now, in the event of a flood, all the doors can be raised, which allows floodwaters to easily flow through the building and reduces the possibility of structural damage.

Elsewhere in the hangar, all mechanical and electrical equipment has been elevated a foot above the '97 flood level—again to reduce the chance of flood damage. Also, heavy metal chains now hang from the ceiling so that light aircraft, such as gliders,

can be raised if flooding occurs before the planes can be moved out. (In '97, Nord and his son Terry, also a pilot, were able to move all the planes out of the hangar before the flood hit).

The new office and manager's living quarters have been protected, too. The main floor now sits 5 feet above the ground level. There is no basement. Additionally, the land across the front and on one end of the building has been sloped to channel water away from the structure. At the other end of the building, a concrete ramp provides handicap accessibility.

The old fuel containers have been replaced with new steel-reinforced tanks. The tanks, each with a 2,000-gallon capacity, now sit 5 feet above the ground on special concrete bases. The tanks are bolted to the bases so they will remain in place during a flood.

Rebuilding costs are expected to be less than \$300,000, much of which will come from the Federal Emergency Management Agency and the State of North Dakota through a program that repairs or replaces disaster-damaged public facilities. The Federal Aviation Administration helped pay for the runway repairs.



New 2,000-gallon aircraft fuel tanks now are elevated and secured to concrete bases to ensure they don't float away in another flood.

Nord, who is among the handful of aviators chosen for the North Dakota Aviation Hall of Fame, retired in the summer of 2000 just as workers were putting the finishing touches on the new facility. Wistful at times, he recalls the floods he fought and survived—and the one he didn't beat.

But he is pleased to see the airport that has been his life, now has a future.

“If we hadn't gotten this building, the airport never would have reopened,” Nord said. “All it would have been was a landing strip. This way, at least we saved the airport. The things we've done here to protect against future floods are definitely worth it.”