

Guiding rescuers at Ground Zero



Karen Adams Manion '92 used geographic information systems to produce maps for rescue efforts.



Tim Miller Photography

Since using her computer skills to help rescue efforts at the World Trade Center site, Karen Adams Manion '92 has been promoted to information technology manager for geographic information systems at URS Corp.

by Rebecca Rhodin

Facing the danger of gas explosions as they combed the debris, New York firefighters relied on a team of five deep infrastructure experts, including **Karen Adams Manion '92**, to tell them where utilities lay deep under the ruins of the World Trade Center as they searched for survivors following the Sept. 11 terrorist attack.

"During the impact it was like an earthquake when the first tower fell," explains Manion, a civil engineering graduate and senior environmental engineer for URS Corp. "Many pipes moved and connections broke."

The original building documents had perished with the towers, so Manion and her all-woman team used their special knowledge of New York's pipelines, and technology called geographic information systems (GIS), to produce maps for guiding rescue workers.

With GIS, which Manion first studied at Lafayette with **Roger Ruggles**, associate professor of civil and environmental engineering, she manipulated sets of data, merging them with diagrams to determine the locations of underground water, sewer, gas, steam, transportation, and telecommunications lines.

About 50 maps were created for the rescue efforts, as well as to keep fearful residents informed and mass hysteria at bay, she says.

"Never have I imagined the importance of GIS as a life-saving, life-protecting tool," says Manion in an article she co-wrote about the experience. "To apply the skills one has learned—bridging compassion, urgency and science—is very rewarding."

In horror, Manion had followed the attacks on New York and Washington that day from her office in New Jersey, relieved to hear that her husband Peter, who worked in Midtown, was fine and headed home.

A few days later she checked in on a client and found that the City of New York needed to know what utilities lay at Ground Zero.

A previous project mapping New York's hodgepodge array of water main pipelines, some wooden and decades old, made her the obvious person to recruit. Soon Manion was reporting at the recovery command center at Pier 92 off Manhattan's West 52nd Street for three months of service.

"It was unsettling," she says. "They were always doing drills and the pier would sway. You'd be sitting there and then you'd be moving."

In the anxious atmosphere of Manhattan, one of the team's first tasks was

to collect information on utility lines near potential terrorist targets such as the Empire State Building and the Brooklyn Bridge.

Manion's group also retraced the data destroyed in the towers to engineering firms that had originally helped build the WTC.

In lighter moments, Muhammad Ali, Bill Clinton, and baseball Hall of Famer Reggie Jackson visited the pier command center, along with Saudi Arabian princes surrounded by guards. Manion, too, had her escorts, as armed agents protected her maps and tables.

"The data sets in the wrong hands could have caused many casualties," she says.

When the recovery of bodies ceased, demolition of the ruins started and her maps were again required. Manion and her team also used aerial photography to determine medical assistance areas after the plane crash a few weeks later in Queens.

"It was a relief when it was all over," she says of the experience. "When I got back to work in Paramus, I could refocus on clients I had put aside, and begin to heal."

"It took every ounce of my training at Lafayette and my professional life to function in that atmosphere," Manion adds. "And yet I never felt more comfortable with what we were doing, relying on all of our skills and contacts. Everyone worked so hard and had the right attitude—had the city's interest at heart."

She has since been promoted to information technology manager for GIS. In their spare time, she and her husband enjoy professional sports, hiking, bicycling, and travel. "To be able to go to such a good school was a gift," says Manion. The native of Altoona, Pa., was a standout performer in varsity track and field at Lafayette. She coached at Paramus High School and Montclair State College after graduation in her effort to "give back."

The women she knew in her freshman year "are still my closest friends. I had a great time," she adds.

Ruggles helped her get a grant as a sophomore for GIS research in the summer at Lafayette. In other college research, she also happened to analyze emergency planning procedures for evacuating nuclear power sites.

Little did Manion imagine how very practical her education would prove to be. But then no one had yet dreamed of 9/11.