

protests by environmental activists. As a result, county commissioners shut down all burning three weeks after it began. The major problem that arose during burning operations was commingled debris that did not burn efficiently. At USACE burn sites, the resultant ash was tested to determine if it was hazardous and disposed of accordingly. After debris collection and staging areas were cleared of all debris, the county conducted soil and water testing for hazardous waste contamination.

## Communication

Metro-Dade County used different communications strategies for each stage of the debris management effort. In the days following the hurricane, city officials gave about 10 television and radio interviews each day, in which they asked residents to carry their garbage to the nearest cleared street. Later, the county used television, radio, and direct mail advertisements. Newspaper advertisements were not an option since the hurricane had temporarily halted publication of Miami's daily newspaper. Because most access into the hurricane zone was by highway, the county also distributed

flyers at highway toll plazas. Through all of these communication vehicles, the county told residents and building contractors how to set out debris, the status of debris collection in each zone, and the sanctions against illegal dumping. The county also added new telephone lines and work stations and hired and trained new staff to handle thousands of calls each month about debris. Every call complaining about debris piles or illegal dumping was recorded, routed to the appropriate agency for action, and mapped on a geographic information system to help identify problem areas.

## Outside assistance

Metro-Dade County received extensive assistance from USACE in managing its hurricane debris. Within three days, two general contractors had been awarded debris removal contracts for \$3 million and had begun removal efforts. USACE took responsibility for the harder hit southern half of the county, while the county crews concentrated on the northern half. USACE debris removal work went on for over two years and totaled over \$375 million.

**Hurricane Andrew**



# Mecklenburg County, North Carolina

## Hurricane Hugo

In September 1989, Hurricane Hugo created a solid waste crisis for Charlotte, North Carolina. In Mecklenburg County, North Carolina, alone, the equivalent of 10 years' worth of green waste was generated in just over three hours.

### Collection and recycling

The Charlotte/Mecklenburg Emergency Management Office was well prepared to handle the variety of medical, housing, and communication needs presented by this disaster. Mecklenburg County did not, however, have a plan to deal with the enormous quantity of debris generated by the storm. When Hugo hit, the county was down to its last municipal solid waste landfill, which had only 2½ years of capacity remaining. The county did not want to use

up its remaining landfill capacity. Because of existing air pollution problems, burning was not a viable option either. County officials determined the best option would be to collect and shred the green waste—by far the largest category of waste—and distribute the resulting product for use as mulch and boiler fuel.

The city of Charlotte and six other municipalities in Mecklenburg County were responsible for collecting the hurricane debris. Working together, these communities spread collection and storage locations throughout the county. Eleven public properties were designated as green-waste dropoff sites, including former, present, and future landfill sites and a parcel of land at the Charlotte airport. Private citizens also volunteered land for collection sites.

More than 175,000 vehicle loads dumped a total of 400,000 tons of green waste at the collection sites over a 10-month period. Officials feared that such a large quantity of green waste would be accompanied by a high level of non-organic contaminants. The contaminant level was very low, however, due primarily to three factors:

- During the three weeks immediately following the storm, the county landfill accepted all storm-related, non-green-waste debris free of charge. This debris totaled 6,300 tons and consisted primarily of C&D waste.
- All entrances to green-waste sites were staffed during operating hours, and staff strictly enforced the prohibition of other types of waste.
- The city of Charlotte resumed weekly curbside trash collection two days after the storm, providing convenient disposal of other types of waste for all residents.

While awaiting shredding, wood was piled 10 to 15 feet high over 100 acres of land. One problem with storing this much wood was the fire hazard.

Green-waste mulch also was piled 10 feet high. When piled that high for more than a

Hurricane Hugo

