Report In Brief

U.S. Department of Commerce Office of Inspector General

March 30, 2007

Why We Did This Review

Then-Senator Mark Dayton (D-Minnesota) asked us to examine the National Weather Service's (NWS') actions in connection with a deadly tornado that struck Rogers, Minnesota, on September 16, 2006, killing a 10-year-old girl, injuring six others, and damaging dozens of structures. We sought to determine (1) whether NWS policies, and procedures for tracking severe weather and forewarning the public are adequate and were followed, (2) whether the Chanhassen weather forecast office, which is responsible for issuing warnings and watches for the region, has state-of-the-art severe weather forecasting and observations technology, and (3) if that equipment was operating properly on September 16.

Background

Although the area was under both a tornado watch and severe thunderstorm warning, NWS did not issue a tornado warning before the tornado hit. The local weather forecast office received no reports of tornado sightings during the 12 minutes the tornado was on the ground. But a damage assessment performed the following day determined that an F2 tornado had indeed hit the city.

To view the full report, visit http://www.oig.doc.gov/oig/reports/2007/Rogers%20DEN-18354.pdf.

National Oceanic and Atmospheric Administration

Rogers, Minnesota: Complex Weather Conditions, Radar Limitations Delayed NWS Warning of Deadly Tornado (DEN-18534)

What We Found

The Chanhassen weather forecast office (WFO), NWS Central Region, and Storm Prediction Center generally followed policies and have the best available technology. But several factors may have adversely impacted Chanhassen's handling of the situation:

~ **The WFO did not follow policy to the letter**. NWS policy requires that severe thunderstorm warnings issued for areas concurrently under a tornado watch must state that tornadoes are also possible. The Chanhassen warning did not contain such a statement.

~ **Dividing staff to monitor conditions left Rogers with reduced coverage.** Shortly before the tornado hit, Chanhassen assigned warning responsibility for a region southwest of Minneapolis/St. Paul to two forecasters because this area appeared most likely to spawn tornadoes. The remaining forecaster was assigned an area north, which included Rogers. Dividing staff to focus on more limited areas during volatile weather conditions is normally a best practice. But the rapidly developing event that affected Rogers may have warranted coverage by two forecasters.

~ **Storm Prediction Center notice suggested improving conditions.** As the tornado was on the ground in the vicinity of Rogers, the NWS Storm Prediction Center issued a notice stating the risk for tornadoes was diminishing across the area that included Rogers. While this notification did not say the possibility for tornadoes had ended, it appeared to send a message that conflicted with actual conditions.

~ **Weather spotter's report was misinterpreted.** At 10:13 p.m., a weather spotter enroute through Rogers from Albertville, Minnesota, called the Chanhassen WFO to report storm damage in Rogers. The Chanhassen technician who took the call mistakenly assumed the spotter was traveling from Rogers to Albertville, and miscalculated the time of the observation as occurring 10 minutes before the tornado struck the city. This misinterpretation was a major factor in the controversy surrounding NWS' performance.

~ **Access to FAA radar data could have aided decision making.** NWS weather forecast offices rely on the Next Generation Radar system to monitor atmospheric conditions, and some augment radar capabilities with FAA's Doppler radar. This technology was not available to Chanhassen because of funding priorities.

What We Recommended

To enhance its forecasting abilities, NWS should take the following actions:

1. Reinforce agency requirements for preparing weather products to ensure they contain all required information, and research ways to automate the inclusion of such information.
2. Explore ways to improve coordination between the Storm Prediction Center and WFOs so that communiqués clearly distinguish between current and possible conditions.
3. Assess alternative staffing models that allow WFOs to assign at least two forecasters to individual areas of severe weather when conditions warrant dividing responsibilities.
4. Develop a standard protocol for collecting spotter observations to ensure field staff ascertain complete and accurate details.
5. Assess the feasibility of connecting Chanhassen and other WFOs to FAA's Doppler radar, where available, and deploying all available technology upgrades.