Exceedance Locations and Levels
On Friday, May 8, 2015 an exceedance of the 8-hour average National Ambient Air Quality Standard (NAAQS) for ozone (75 ppb) was recorded at one (1) monitoring station in New Jersey: Washington Crossing with a concentration of 81 ppb. The highest 1-hour average ozone concentration recorded on May 8, 2015 was 94 ppb (also at Washington Crossing), which is below the 1-hour NAAQS of 120 ppb.

There is a group of monitoring stations in designated counties of 5 states; New York, Connecticut, Pennsylvania, Delaware and Maryland, that are included in New Jersey’s ozone non-attainment areas. From this group of stations in the other neighboring states, there were exceedances of the 8-hour ozone NAAQS recorded on Friday, May 8, 2015 at three (3) stations: Danbury, CT; Middletown, CT; and Rockland City, NY. The highest 8-hour average ozone concentration recorded was 84 ppb at the Danbury station in Connecticut. The highest 1-hour average ozone concentration recorded was 93 ppb, also at Danbury. Figure 1 shows the ozone AQI across the region for May 8.

Figure 1. Ozone Air Quality Index for May 8, 2015

For ozone terminology definitions see NJDEP Air Quality Planning’s Glossary and Acronyms webpage: http://nj.gov/dep/baqp/glossary.html

Source: www.airnow.gov
Weather
Meteorological data from across the region showed temperatures reached into the mid 80s°F. Winds were light and shifted to the south/southwest with a blocking high pressure system to the north of the area and a subtropical system off the southeast Atlantic coast. Light recirculating winds allowed polluted air from the previous day to mix with local emissions from the Philadelphia and New York metropolitan areas. Skies were mostly sunny across the region. Sufficient sunlight, combined with warmer temperatures are features commonly seen with ozone exceedances.

Where Did the Air Pollution that Caused Ozone Come From?
Figure 2 shows the back trajectories for 3 of the monitored exceedances (Danbury, CT; Rockland City, NY; and Washington Crossing, NJ) for May 8. Figure 2 shows that low level winds (red lines) originated off the coast and came up through the New York metropolitan area, where there are significant amounts of air contaminant emissions from cars, trucks, and industry. Mid and higher level winds (blue and green lines) came up the Baltimore – Washington DC metropolitan area and through central Pennsylvania, where there are large industrial sources and coal fired power plants. The combination of these winds caused air pollution from both mobile sources and large industrial sources to be transported into central New Jersey and the Hudson River Valley, both areas that experienced high ozone on May 8.

A brush fire spread across hundreds of acres in Wharton State Forest, located in south-central NJ, on Thursday, May 7. The plume of smoke associated with this fire, as it was carried up the state of New Jersey the following day, may also have enhanced the formation of ground level ozone across the region.
Figure 2. 48-hour Back Trajectories for May 8, 2015

NOAA HYSPLIT MODEL
Backward trajectories ending at 1800 UTC 08 May 15
NAM Meteorological Data

Wind trajectories look backwards 48 hours to show what direction the wind was blowing during that time frame. The surface layer winds (red – 10 meters) came in over New York City, picking up pollution from vehicles and smaller emission sources. The mid and higher level winds (blue – 500 meters, green – 1500 meters) traveled through the Baltimore – Washington DC metro area and shifted west over central PA, bringing emissions from power plants and large industrial sources with higher stacks to the region.