NOTE: THIS SAMPLE REPORT IS MEANT TO SHOW YOU WHAT OUR REPORTS GENERALLY LOOK LIKE. EACH REPORT WILL BE CATERED SPECIFICALLY TO YOUR CASE. NAMES AND LOCATIONS HAVE BEEN CHANGED TO PRESERVE CONFIDENTIALITY.

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FORENSIC WEATHER INVESTIGATION OF THE WEATHER AND GROUND CONDITIONS FOR THE PERIOD JANUARY 21-24, 2016 AT 301 COUNTRY CLUB LANE IN BRONX, NEW YORK

October 16, 2020

CASE NAME:	"Maurice Donnelly v. Bronx Hall, et al."
CLAIM NUMBER:	xxxxx
DATE AND TIME OF INCIDENT:	January 24, 2016 at 12:30 a.m. EST
PREPARED FOR:	Mr. Jacob Lightfoot, Esquire
COMPANY:	The Legal Group, LLP

This written report and all of the tables, graphs, findings, data, and opinions contained in it has been prepared for use with this specific case only. Use of any of this information for any other matter, claim or case other than what is indicated above, including for use in expert disclosures in other cases, is strictly prohibited.

ASSIGNMENT:

This case was assigned to me by the The Legal Group, LLP. I was asked to perform an in-depth weather analysis and forensic weather investigation at 301 Country Club Lane in Bronx, New York in order to determine what the weather conditions were leading up to and including the day of the incident.

Forensic Weather Consultants, LLC uses various reliable sources of weather information in order to conduct a reliable weather analysis. In order to accurately determine the weather conditions that existed leading up to and including the time of the incident, a detailed search was performed to find the closest, official weather stations to the incident location. Using the computer program "Google Earth", weather station locations provided by the National Centers for Environmental Information (NCEI) and MesoWest were plotted and are indicated by a yellow pushpin. MesoWest is a cooperative project that was started at the University of Utah in 1996 with a goal of providing access to current and archived weather observations from across the United States through internet-based resources.

The weather stations that are indicated by an orange pushpin represent Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS) stations that are available through the CoCoRaHS network, but not yet available through the NCEI. I have been advised by the NCEI that in order for CoCoRaHS station data to be obtainable through the NCEI, the station must have a minimum of 100 daily surface observation reports. Although these stations have not met this minimum qualification as of yet, and therefore cannot be certified, they are still part of the CoCoRaHS network in which the data is able to be certified once added to the NCEI archive. While not all of the weather data can be certified by the NCEI, it is mostly if not all housed and maintained on National Weather Service websites including ncei.noaa.gov and raws.wrh.noaa.gov and are the records that meteorologists rely upon during the normal course of business to conduct these investigations.

GENERAL REVIEW OF WEATHER DATA SOURCES

Many different types of weather data are gathered and analyzed as part of our investigations. While some, but not necessarily all, of these weather data sources were utilized for this case, we are providing a list of the different types of stations for informational purposes.

The Automated Surface Observing Systems (ASOS) program is a joint effort of the National Weather Service (NWS), the Federal Aviation Administration (FAA), and the Department of Defense (DOD). The ASOS systems serve as the nation's primary surface weather observing network. The ASOS systems compile various weather observations, often more than once per hour, called Local Climatological Data (**LCD**) that are reviewed, maintained, and stored by NOAA. ASOS computed wind speeds are the 2-minute average wind speed prior to the time of the observation. ASOS computed wind gusts are the greatest 5-second average wind speed that was measured in the 10 minutes prior to the time of the observation. Wind gusts are reported if the greatest gust exceeds 14 knots (16 MPH). ASOS also computes peak wind gusts which are the greatest 5-second average wind speed that occurred since the last generated Meteorological

Aerodrome Report (METAR). Peak wind gusts are reported if the greatest peak wind gust exceeds 25 knots (29 MPH).

The Remote Automatic Weather Stations (**RAWS**) system is a nationwide network of automated weather stations that are often located in remote areas, particularly in national forests. These stations are often run by the Bureau of Land Management and U.S. Forest Service, and they are also monitored by the National Interagency Fire Center (NIFC), primarily to observe potential wildfire conditions.

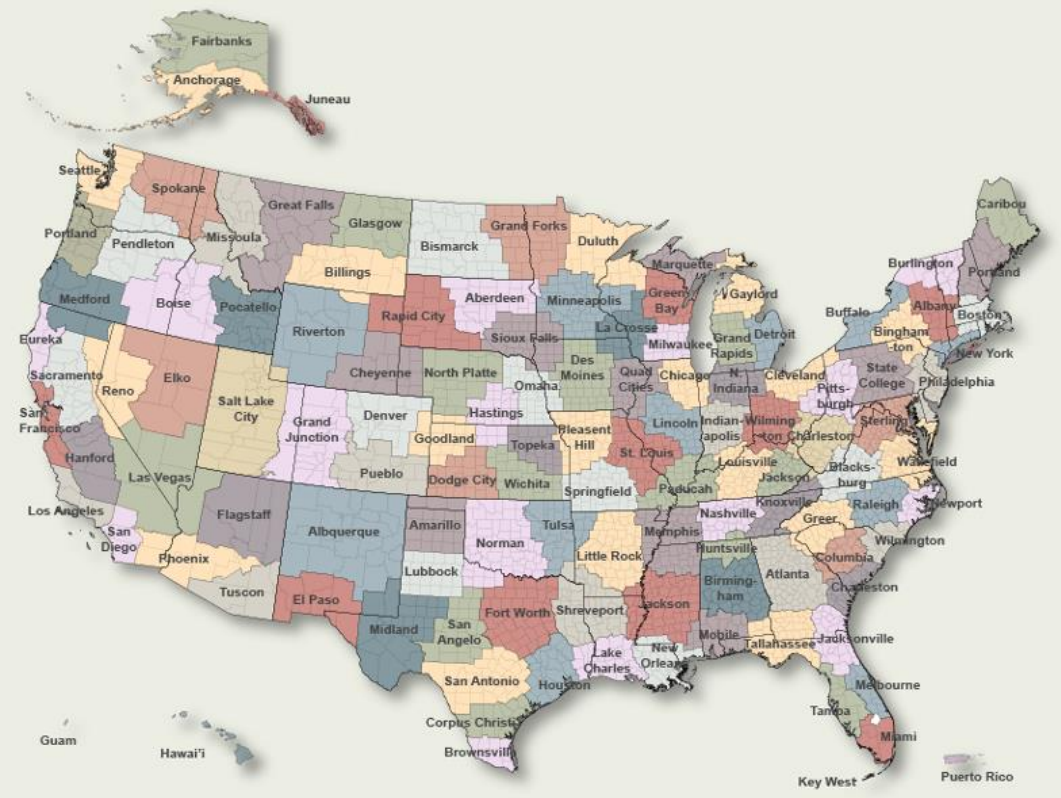
The Community Collaborative Rain, Hail and Snow Network (**CoCoRaHS**) is a network consisting of volunteer weather observers across the United States, Canada, and the Bahamas. These volunteers take daily precipitation measurements and report them to a centralized data store online, where this data is heavily utilized by the NWS, meteorologists, emergency managers and city utilities. CoCoRaHS data is particularly useful in situations where storm systems produce sharp precipitation gradients.

The National Ocean Service (**NOS**) provides data, tools, and services that support coastal economies and their contribution to the national economy. NOS maintains the nation's network of coastal tide and water level sensors to provide real-time data. Among many things, this data supports accurate weather forecasts, coastal storm and flood predictions, and tsunami warnings.

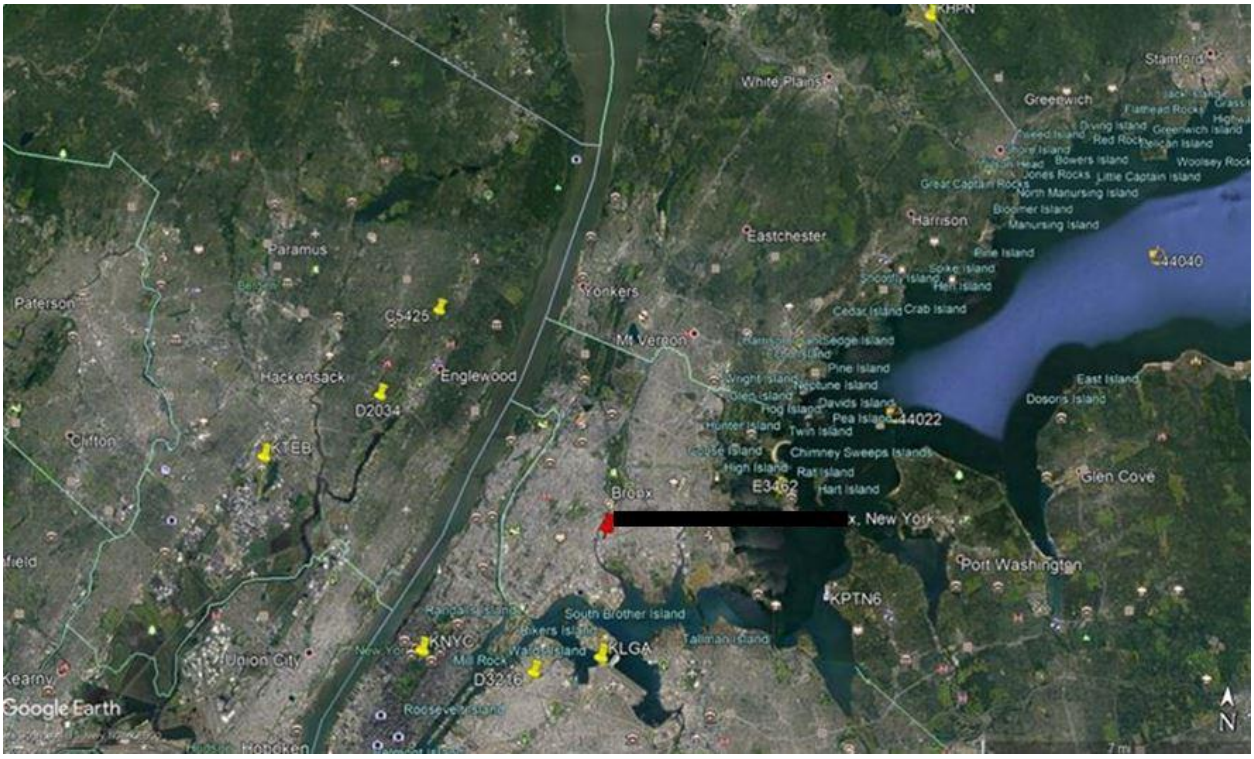
The Citizen Weather Observer Program (**CWOP**) is a network of privately-owned electronic weather stations in the United States and in over 150 countries. These stations are part of a network that allows volunteers with computerized weather stations to send automated surface weather observations to the National Weather Service by way of the Meteorological Data Ingest System (MADIS). The CWOP reported wind speed is the 2-minute average of the wind speed prior to the observation. The CWOP reported wind gust is the maximum instantaneous wind speed (at least a 5-second average) observed in the 10 minutes prior to the observation.

One of the most effective tools to detect precipitation is radar. Radar, which stands for RAdio Detection And Ranging, has been utilized to detect precipitation, and especially thunderstorms, since the 1940's. The radar used by the National Weather Service is called the WSR-88D, which stands for Weather Surveillance Radar - 1988 Doppler (the prototype radar was built in 1988). As its name suggests, the WSR-88D is a **Doppler radar**, meaning it can detect motions toward or away from the radar as well as the location of precipitation areas. There are approximately 155 WSR-88D Doppler radar in the nation, including the U.S. Territory of Guam and the Commonwealth of Puerto Rico, operated by the National Weather Service and the Department of Defense. Doppler radar images and several other types of weather records were used in this study. Doppler radar images are useful for locating precipitation. As the radar unit sends a pulse of energy into the atmosphere and if any precipitation is intercepted by the energy, part of the energy is scattered back to the radar. These return signals, called "radar echoes", are assembled to produce radar images. The location of these radar echoes helps indicate where precipitation may be falling, and the various colors on the color code key on the right side of the radar image indicates intensity. Doppler radar images are processed approximately every 1 to 5 minutes and can determine if precipitation was falling at the incident location and if so, when it started and stopped.

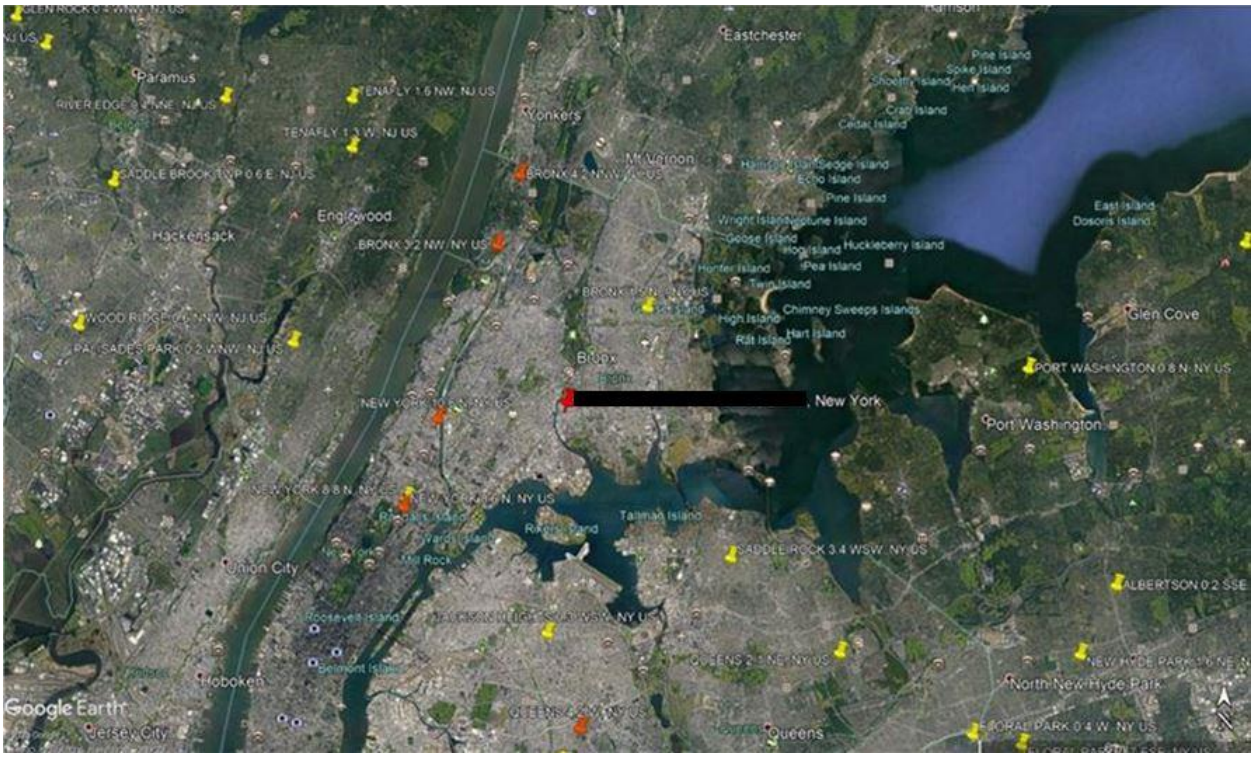
The National Weather Service (NWS) offices around the country issue numerous weather alerts, advisories, warnings, statements, bulletins, and storm reports and these are also utilized in our investigations. A map depicting the locations of these NWS offices can be found below.



The incident location was plotted by our office and is indicated by a red pushpin. The following map will help give you an approximate location of the National Weather Service Hourly Surface Weather Observations stations, Citizen Weather Observer Program (CWOP) stations, and National Ocean Service (NOS) station we used in this study and their proximity to the incident location.



The following map will help give you an approximate location of the Community Collaborative Rain, Hail and Snow Network (CoCoRaHS) stations we used in this study and their proximity to the incident location.



In order to perform my analysis of the weather conditions that existed, I obtained and reviewed official copies of the following weather records (the distance from the incident location and each weather station is also provided):

a. Surface Weather Observations from NOAA's National Ocean Service Station KPTN6 – 8516945 – Kings Point, New York (approximately xxxx miles east-southeast of the incident location).

b. National Weather Service Hourly Surface Weather Observations/Local Climatological Data (LCD) from LaGuardia Airport in Queens, New York (approximately xxxx miles south of the incident location).

c. National Weather Service Hourly Surface Weather Observations/Local Climatological Data (LCD) from the Central Park Observatory in New York, New York (approximately xxxx miles southwest of the incident location).

d. 5-Minute Surface Observations from LaGuardia Airport in Queens, New York.

e. 5-Minute Surface Observations from the Central Park Observatory in New York, New York.

f. Citizen Weather Observer Program (CWOP) station reports from DW3216 in Astoria, New York (approximately xxxx miles south-southwest of the incident location).

g. Citizen Weather Observer Program (CWOP) station reports from EW3462 in City Island, New York (approximately xxxx miles east-northeast of the incident location).

h. Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS) reports from Palisades Park 0.2 WNW, New Jersey (approximately xxxx miles west-northwest of the incident location).

i. Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS) reports from Tenafly 1.3 W, New Jersey (approximately xxxx miles northwest of the incident location).

j. Online Community Collaborative Rain, Hail and Snow Network (CoCoRaHS) reports from New York 10.6 N, New York (approximately xxxx miles west-southwest of the incident location).

k. Online Community Collaborative Rain, Hail and Snow Network (CoCoRaHS) reports from Bronx 3.2 NW, New York (approximately xxxx miles north-northwest of the incident location).

l. The publication entitled "Storm Data" for New York in January 2016.

m. Super-resolution Reflectivity Doppler Radar images from the Upton, New York radar site that were zoomed in over the incident location.

n. Various weather bulletins, advisories and statements that were issued by the National Weather Service in Upton, New York.

o. Astronomical data from Bronx, New York on January 22, 2016, January 23, 2016, and January 24, 2016.

p. United States Surface Analysis Images from the Weather Prediction Center (WPC).

q. Storm Events Database from the National Centers for Environmental Information (NCEI) for Bronx County in New York.

The weather data and Climatological records used for this analysis are the official records that Meteorologists rely upon every day during the normal course of business and are either kept in our office or at the National Centers for Environmental Information. The findings in this report utilize the weather records that were available at the time of data retrieval for this case. Any additional weather records and data that become available at a later date may be incorporated into this report in the future.

In addition to the weather records and climatological data listed above, I also reviewed the following information that was provided to me:

- Amended Verified Complaint
- Plaintiff's Verified Bill of Particulars
- Response to Defendants' Combined Demands
- Two (2) Color Photographs
- Examination Before Trial (EBT) transcript of Maurice Donnelly
- Two (2) Color Photographs listed as Defendant's Exhibit "A"
- Four (4) Color Photographs listed as Plaintiff's Exhibits "2-4"

It should be noted that the radar image date and time stamps that are given on the Doppler radar images are given in "GMT", which is Greenwich Mean Time. In order to convert "GMT" to Eastern Standard Time (EST), a subtraction of 5 hours is necessary.

METHODOLOGY:

After plotting the incident location on Google Earth, we were able to determine what weather stations were near and/or surrounding the incident location. The distances and directions between the incident location and various weather stations were then calculated. After obtaining numerous weather records from sources customarily relied upon in these types of investigations, the data was analyzed, including extrapolation of the data from many weather stations, in order to determine the weather and ground conditions that existed at the incident location leading up to and including the day of the incident.

In order to formulate an opinion about the daily maximum and minimum temperatures that occurred at the incident location leading up to including the day of the incident, we reviewed the meteorological data and extrapolated between the following weather stations:

- LaGuardia Airport in Queens, New York (approximately xxxx miles south of the incident location).
- EW3462 in City Island, New York (approximately xxxx miles east-northeast of the incident location).
- Central Park Observatory in New York, New York (approximately xxxx miles southwest of the incident location).
- DW2034 in Teaneck, New Jersey (approximately xxxx miles northwest of the incident location).

- CW5425 in Tenafly, New Jersey (approximately xxxx miles northwest of the incident location).
- Teterboro Airport in Teterboro, New Jersey (approximately xxxx miles west-northwest of the incident location).
- Westchester County Airport in White Plains, New York (approximately xxxx miles north-northeast of the incident location).

It is important to note that while extrapolating between the weather stations utilized in this study, we considered the distances and directions of each weather station from the incident location.

Data analysis was also conducted in order to determine if and when melting and refreezing processes occurred at the incident location during the period reviewed for this investigation. It should be noted that direct sunshine and the resultant incoming solar radiation sometimes causes melting to occur even when the air temperature is below freezing. Therefore, if the air temperature was below freezing, we reviewed the surface observations to determine if the reported sky cover was conducive for any melting and refreezing process(es) to occur.

In addition, we reviewed the weather records and if the data was available, extrapolated between the following weather stations to determine the Liquid-Equivalent precipitation total that accumulated for the 24-hour period (in inches), the amount of snow/sleet that fell during the 24-hour period (in inches) and the snow and ice depth that was present on the ground at 7:00 a.m. EST (in inches) at the incident location.

- LaGuardia Airport in Queens, New York (approximately xxxx miles south of the incident location).
- Central Park Observatory in New York, New York (approximately xxxx miles southwest of the incident location).
- Palisades Park 0.2 WNW, New Jersey (approximately xxxx miles west-northwest of the incident location).
- Tenafly 1.3 W, New Jersey (approximately 7.9 miles northwest of the incident location).
- Teterboro Airport in Teterboro, New Jersey (approximately xxxx miles west-northwest of the incident location).
- Westchester County Airport in White Plains, New York (approximately xxxx miles north-northeast of the incident location).

On January 22nd, 23rd, and 24th, 2016, the following surface weather observations were analyzed to help determine what types of precipitation were reported and when they occurred:

- National Weather Service Hourly Surface Weather Observations/Local Climatological Data (LCD) from LaGuardia Airport in Queens, New York (approximately xxxx miles south of the incident location).
- National Weather Service Hourly Surface Weather Observations/Local Climatological Data (LCD) from the Central Park Observatory in New York, New York (approximately xxxx miles southwest of the incident location).

- National Weather Service Hourly Surface Weather Observations/Local Climatological Data (LCD) from the Teterboro Airport in Teterboro, New Jersey (approximately xxxx miles west-northwest of the incident location).
- National Weather Service Hourly Surface Weather Observations/Local Climatological Data (LCD) from the Westchester County Airport in White Plains, New York (approximately xxxx miles north-northeast of the incident location).

We also downloaded super-resolution base reflectivity Doppler radar images obtained from the National Oceanic and Atmospheric Administration (NOAA), and these images were zoomed in over the incident location. Using the Doppler radar images in conjunction with the surface observations from these weather stations, we were able to determine when any precipitation that occurred at the incident location started and stopped over the course of each day within a reasonable degree of meteorological certainty.

Using Local Climatological Data surface observations and 5-Minute Data from LaGuardia Airport in Queens, New York, the Central Park Observatory in New York, New York, the Teterboro Airport in Teterboro, New Jersey, and the Westchester County Airport in White Plains, New York, as well as surface observations from EW3462 in City Island, New York, DW2034 in Teaneck, New Jersey, and CW5425 in Tenafly, New Jersey, we were able to determine when the air temperature rose above or dropped below freezing at the incident location.

Additionally, we reviewed various National Weather Service bulletins, public information statements, advisories and warnings that were issued for the incident location and surrounding areas for the period of this investigation.

ANALYSIS:

The following table is a summary of the daily weather and ground conditions day by day at the location of the incident. This summary includes the date, the Maximum temperature for the 24-hour period (in Fahrenheit), the Minimum temperature for the 24-hour period (in Fahrenheit), the Liquid-Equivalent precipitation total for the 24-hour period (in inches), the amount of snow and sleet that fell during the 24-hour period (in inches) and the snow and ice depth that was present on the ground at 7:00 a.m. EST (in inches). It should be noted that any snow and/or ice measurements, including the snow and/or ice depth on the ground, are taken in exposed, untreated, and undisturbed areas away from any objects that may act to distort the true measurement.

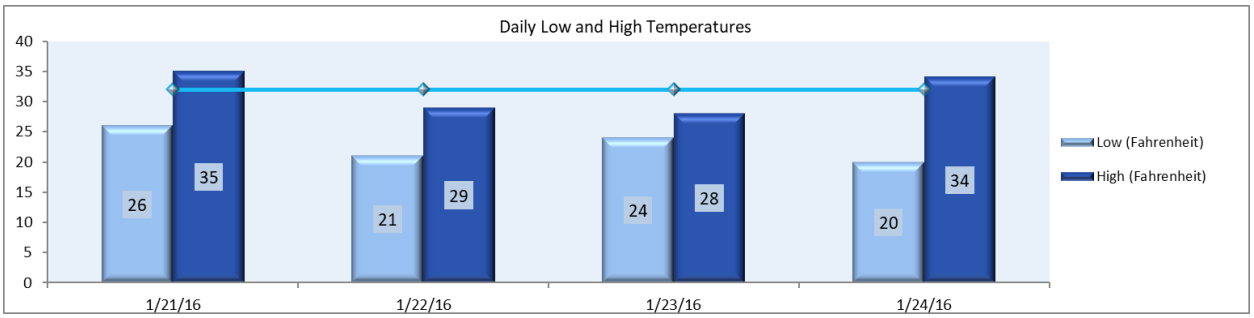
Please note that a "Trace" in the liquid equivalent precipitation column indicates an amount less than 0.01", or not measurable. The Liquid Equivalent Precipitation/Rain column indicates the total liquid amount of melted snow and ice and/or the amount of rain that accumulated. A "Trace" in the Snow and Sleet column indicates that less than 0.1" fell, which is also defined as not measurable.

JANUARY 2016

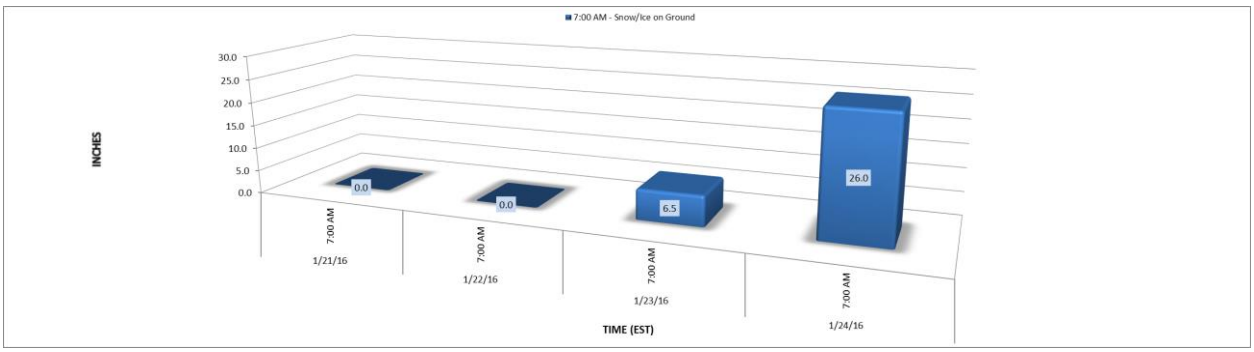
Date	Maximum Air Temperature	Minimum Air Temperature	Liquid Equivalent Precipitation/Rain	Snow/Sleet	Snow/Ice On Ground
1/21	35	26	0.00”	0.0”	0.0”
1/22	29	21	Trace	Trace	0.0”
1/23	28	24	2.30”	26.8”	6.5”
1/24	34	20	0.02”	0.2”	26.0”

It should be noted that the table above reflects the snowfall amounts as well as the snow and ice depth on exposed, untreated, and undisturbed surfaces.

DAILY TEMPERATURE



SNOW AND ICE ON GROUND



JANUARY 22, 2016 (TWO DAYS BEFORE THE INCIDENT)

No snow or ice was present on exposed, untreated, and undisturbed surfaces at the start of the day on January 22nd, 2016.

At 4:18 a.m. on January 22nd, 2016, the National Weather Service in Upton, New York issued a “Blizzard Warning” for Bronx County, New York (including the incident location and surrounding areas), that was in effect from 4:00 a.m. on January 23rd, 2016 through 12:00 p.m. on January 24th, 2016.

At 3:50 p.m. on January 22nd, 2016, the National Weather Service in Upton, New York issued an

official update, which stated that the "Blizzard Warning" was now in effect from 12:00 a.m. on January 23rd, 2016 through 7:00 a.m. on January 24th, 2016.

Sunset at the incident location occurred at approximately 5:00 p.m. on January 22nd, 2016.

On January 22nd, 2016 (two days before the incident), Doppler radar images that were zoomed in over the incident location and nearby surface observations indicated that mostly continuous light snow fell from approximately 10:02 p.m. through and beyond 11:59 p.m.

A "Trace" of new snow accumulated on January 22nd, 2016 (two days before the incident).

At 11:03 p.m. on January 22nd, 2016, the National Weather Service in Upton, New York issued an official update, which stated that the "Blizzard Warning" was now in effect and would remain in effect through 7:00 a.m. on January 24th, 2016.

TEMPERATURE ANALYSIS FOR JANUARY 22, 2016

On January 22nd, 2016, the maximum air temperature was 29 degrees Fahrenheit and the minimum air temperature was 21 degrees Fahrenheit. The air temperature remained below freezing all day.

JANUARY 23, 2016 (DAY BEFORE THE INCIDENT)

On January 23rd, 2016 (day before the incident), the same winter storm that caused snow to fall on January 22nd, 2016 was still causing snow to fall at 12:00 a.m. Doppler radar images that were zoomed in over the incident location and nearby surface observations indicated that mostly continuous light to occasionally moderate and heavy snow fell from 12:00 a.m. through and beyond 11:59 p.m.

Approximately 26.8" of new snow accumulated on January 23rd, 2016 (day before the incident).

Frequent gusty winds in excess of 25 Miles Per Hour (MPH) occurred from the early morning through and beyond 11:59 p.m. on January 23rd, 2016. This caused blowing and drifting snow to occur.

At 2:45 a.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued a "Special Weather Statement" for Bronx County, New York (including the incident location and surrounding areas), which stated, ***"A band of heavy snow stretching west to east from central New Jersey to south of Long Island will may its way into the area over the next 2 hours. Snowfall rates of 1 to 2 inches per hour and visibilities of 1/4 mile or less are possible within this band."***

At 4:43 a.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued a "Special Weather Statement" for Bronx County, New York (including the incident location and surrounding areas), which stated, ***"A band of heavy snow stretching west to east from Northern New Jersey to Southwestern Suffolk County in NY will move through the area over the next 2***

hours. Snowfall rates of 1 to 2 inches per hour and visibilities of 1/4 mile or less are possible within this band."

At 8:36 a.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued a "Special Weather Statement" for Bronx County, New York (including the incident location and surrounding areas), which stated, ***"At 818 AM EST, an intense snow band has developed over the region, with snowfall rates of 1 to 3 inches per hour being observed. This snow band will move very little through this morning. Travel is not recommended this morning due to whiteout conditions as the snow is blown around by northeast winds of 25 to 35 MPH with gusts 40 to 50 MPH. Many roads will likely becoming impassable due to the rapidly accumulating and drifting snow. Scattered downed tree limbs and power lines will add an additional hazard for travelers."***

Some freezing fog occurred from the mid-morning through the late evening and night on January 23rd, 2016. This caused some new ice to form and additional slippery conditions to develop.

According to the American Meteorological Society's Glossary of Meteorology, "freezing fog" is defined as, "A fog the droplets of which freeze upon contact with exposed objects and form a coating of rime and/or glaze."[1]

At 12:00 p.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued a "Special Weather Statement" for Bronx County, New York (including the incident location and surrounding areas), which stated, ***"Heavy snow bands, with snowfall rates of 2 to 3 inches per hour will impact Western Long Island, New York City, and Northeast New Jersey early this afternoon. Wind gusts up to 50 mph are possible with this area of heavy snow, causing considerable blowing and drifting of snow and blizzard conditions."***

Sunset at the incident location occurred at approximately 5:01 p.m. on January 23rd, 2016.

At 5:47 p.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued a "Special Weather Statement" for Bronx County, New York (including the incident location and surrounding areas), which stated, ***"At 537 PM the heaviest bands extended from southwest to northeast, from New York City to the north shore of Western Long Island, then up into Southeast Connecticut east of New Haven. These bands are slowly weakening but remaining nearly stationary. Snowfall rates with these more intense bands may reach 2 to 3 inches per hour, with an additional 4 to 6 inches of accumulation through 8 PM. Outside of these bands, expect lesser snowfall rates of 1 to 2 inches per hour, and an additional 2 to 4 inches of accumulation through 8 PM. Blizzard warnings remain in effect for the New York City metropolitan area, Long Island, and coastal Connecticut. Travel is highly discouraged."***

At 11:28 p.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued an official update to cancel the "Blizzard Warning" that was in effect."

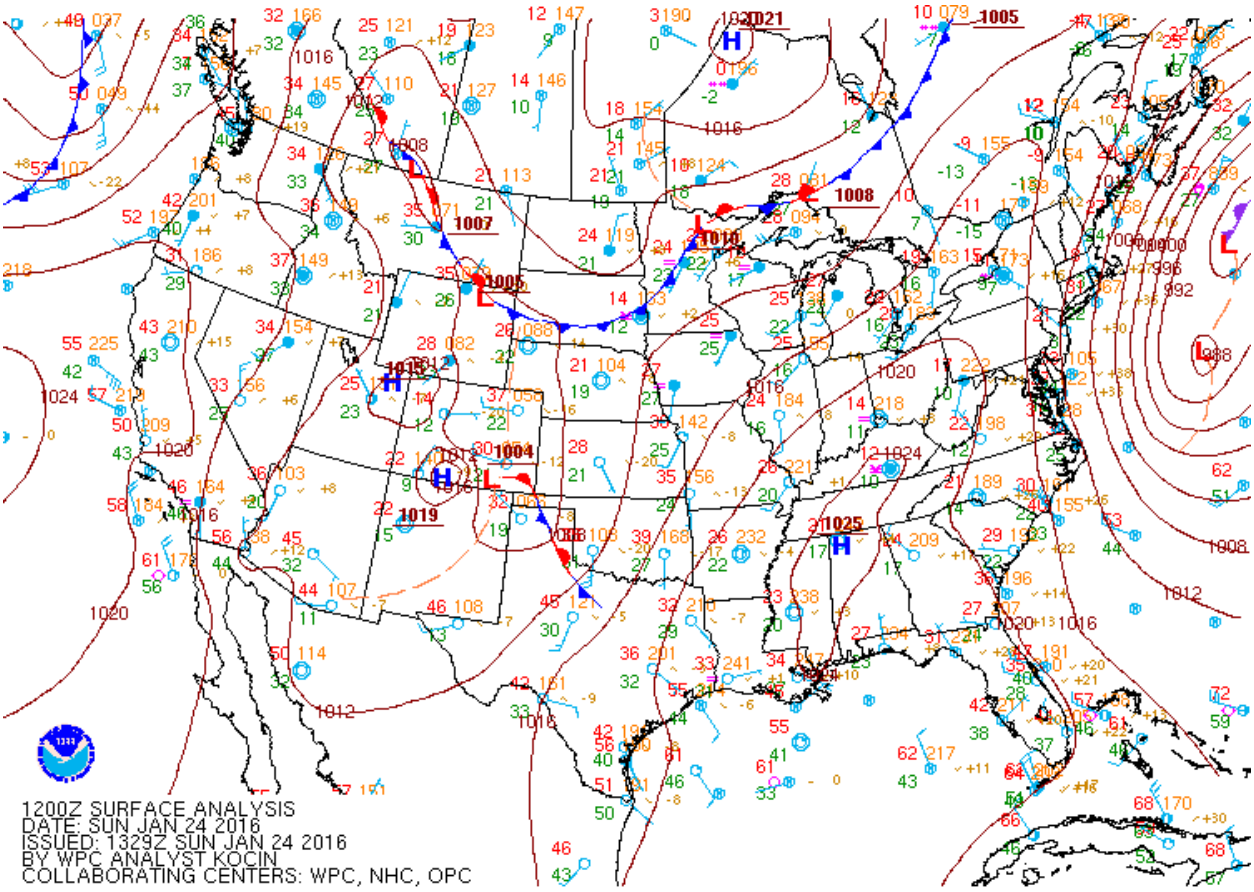
[1] http://glossary.ametsoc.org/wiki/Freezing_fog

TEMPERATURE ANALYSIS FOR JANUARY 23, 2016

On January 23rd, 2016, the maximum air temperature was 28 degrees Fahrenheit and the minimum air temperature was 24 degrees Fahrenheit. The air temperature remained below freezing all day.

JANUARY 24, 2016 (DAY OF THE INCIDENT)

The following is a surface analysis map of the contiguous United States at 7:00 a.m. EST on January 24th, 2016 that was prepared by the Weather Prediction Center (WPC), a division of the National Weather Service. This surface map indicated that storm systems were located well off the coast of the Northeast United States.



According to the National Weather Service in Upton, New York the following report of snow accumulation was received on January 24th, 2016:

- Parkchester, New York – 26.8" at 12:00 a.m. on January 24th, 2016

On January 24th, 2016 (day of the incident), the same major winter storm that caused snow to fall on January 23rd, 2016 was still causing snow to fall at 12:00 a.m. Doppler radar images that

were zoomed in over the incident location and nearby surface observations indicated that mostly continuous light snow fell from 12:00 a.m. through approximately 2:45 a.m.

Approximately 0.2" of new snow accumulated on January 24th, 2016 (day of the incident).

Occasional gusty winds in excess of 25 MPH occurred from 12:00 a.m. through the mid-morning on January 24th, 2016. This caused some blowing and drifting snow to occur.

At 12:30 a.m. on January 24th, 2016 (time and date of the incident), light snow was falling, snow was actively accumulating as a result of the major winter storm that was still in progress, and the air temperature was 27 degrees Fahrenheit. Approximately 26.8" of new snow, and very slippery conditions, were present on exposed, untreated, and undisturbed surfaces as a result of this major winter storm. In addition, winds were blowing up to 35-40 MPH with blowing and drifting snow occurring.

Sunset at the incident location occurred at approximately 5:03 p.m. on January 24th, 2016.

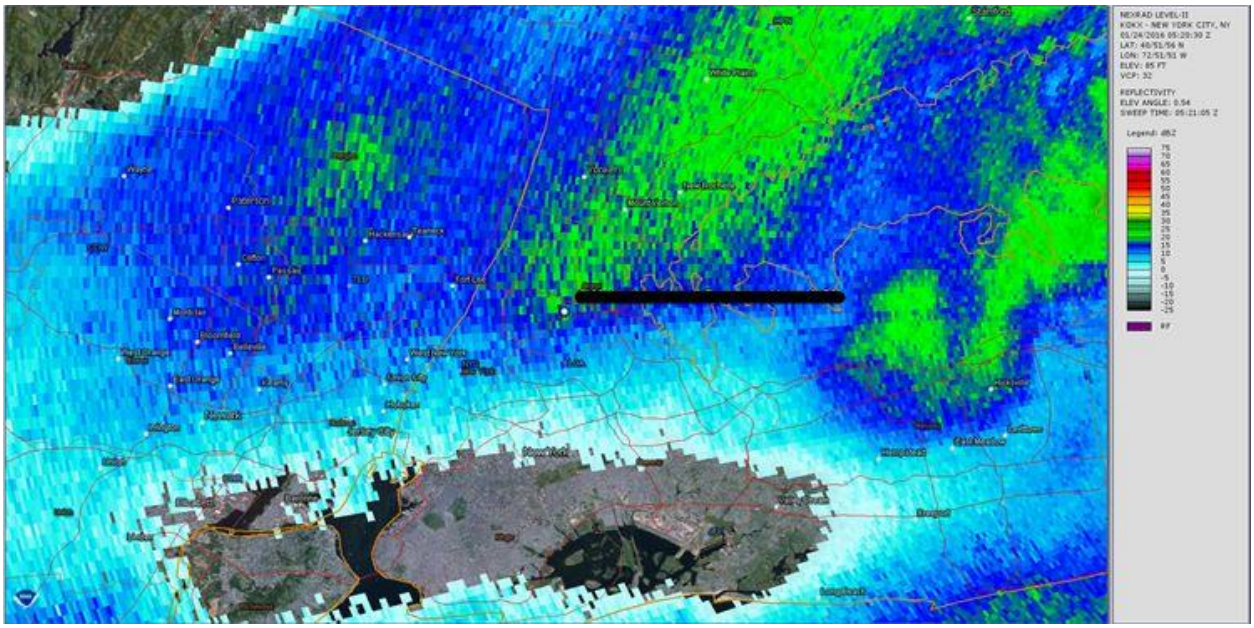
A melting and refreezing process occurred on January 24th, 2016 (day of the incident). New ice formed between 6:40 p.m. and 8:40 p.m. on January 24th, 2016.

DOPPLER RADAR ANALYSIS

The following images are Base Reflectivity Doppler radar images that were processed at 05:20:30 GMT and 05:30:15 GMT (12:20 a.m. EST and 12:30 a.m. EST) on January 24th, 2016. The incident location is indicated by a white pushpin on the base map. The color code on the right side indicates the intensity of the precipitation.

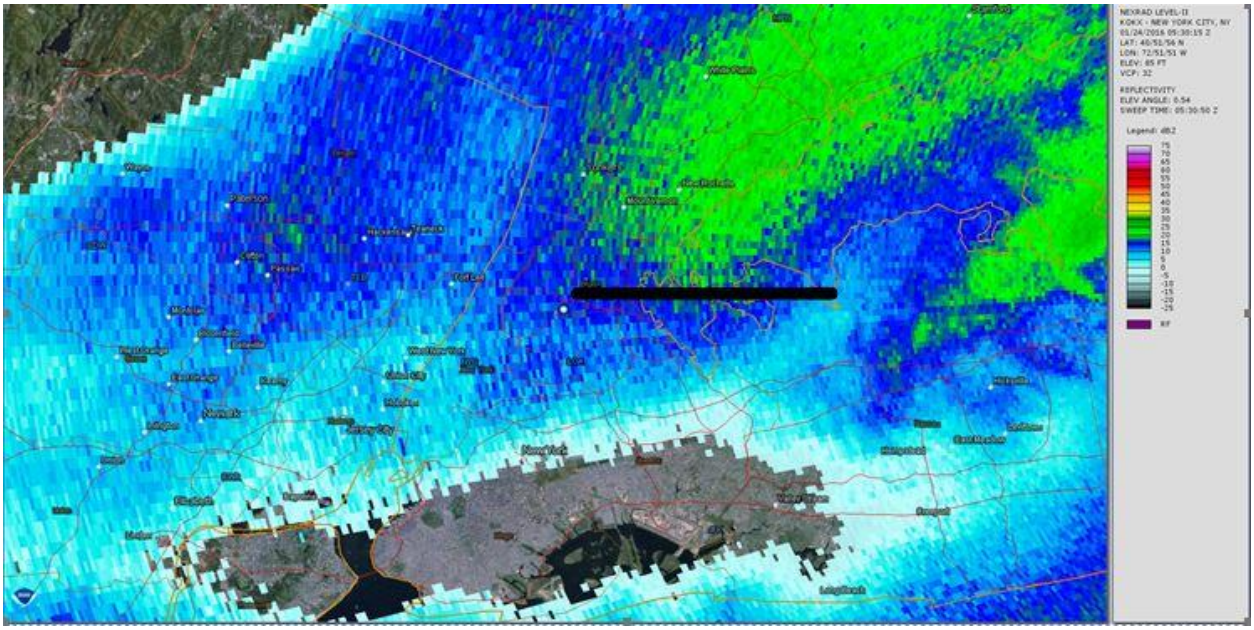
Doppler Radar Image from 12:20 a.m. EST on January 24th, 2016

The following Doppler radar image was processed approximately ten (10) minutes prior to the time of the incident. This image and nearby surface observations indicate that light snow was falling at the incident location.



Doppler Radar Image from 12:30 a.m. EST on January 24th, 2016

The following Doppler radar image was processed at the time of the incident. This image and nearby surface observations indicate that light snow was falling at the incident location.



TEMPERATURE ANALYSIS FOR JANUARY 24, 2016

On January 24th, 2016, the maximum air temperature was 34 degrees Fahrenheit and the minimum air temperature was 20 degrees Fahrenheit.

The air temperature was below freezing from Midnight through approximately 2:15 p.m. The air temperature rose above freezing from approximately 2:15 p.m. through 6:40 p.m. The air temperature dropped back below freezing from approximately 6:40 p.m. through Midnight

NATIONAL WEATHER SERVICE BULLETINS, WARNINGS AND ADVISORIES

The following are publicly issued warnings and special weather statements from the National Weather Service in Upton, New York, which included the incident location and surrounding areas.

At 4:18 a.m. on January 22nd, 2016, the National Weather Service in Upton, New York issued a "Blizzard Warning" for Bronx County, New York, that was in effect from 4:00 a.m. on January 23rd, 2016 through 12:00 p.m. on January 24th, 2016:

HUDSON-WESTERN ESSEX-EASTERN ESSEX-WESTERN UNION-EASTERN UNION-
NEW YORK (MANHATTAN)-**BRONX**-RICHMOND (STATEN ISLAND)-
KINGS (BROOKLYN)-NORTHWESTERN SUFFOLK-NORTHEASTERN SUFFOLK-
SOUTHWESTERN SUFFOLK-SOUTHEASTERN SUFFOLK-NORTHERN QUEENS-
NORTHERN NASSAU-SOUTHERN QUEENS-SOUTHERN NASSAU-
418 AM EST FRI JAN 22 2016
...BLIZZARD WARNING IN EFFECT FROM 4 AM SATURDAY TO NOON EST SUNDAY...
THE NATIONAL WEATHER SERVICE IN UPTON HAS ISSUED A BLIZZARD WARNING...WHICH IS IN EFFECT FROM 4 AM SATURDAY TO NOON EST SUNDAY. THE BLIZZARD WATCH IS NO LONGER IN EFFECT.
* LOCATIONS...THE FIVE BOROUGHS OF NEW YORK CITY...COASTAL PORTIONS OF NORTHEAST NEW JERSEY...AND LONG ISLAND.
*** HAZARD TYPES...HEAVY SNOW ALONG WITH STRONG AND POTENTIALLY DAMAGING WINDS. BLOWING AND DRIFTING SNOW WITH NEAR ZERO VISIBILITIES IS EXPECTED SATURDAY AFTERNOON AND EVENING.**
*** ACCUMULATIONS...SNOW ACCUMULATION OF 6 TO 10 INCHES.**
*** WINDS...NORTH 25 TO 35 MPH WITH GUSTS UP TO 50 MPH.**
*** TEMPERATURES...IN THE UPPER 20S TO LOW 30S.**
*** VISIBILITIES...ONE QUARTER MILE OR LESS AT TIMES.**
*** TIMING...SATURDAY MORNING THROUGH SUNDAY AFTERNOON.**
*** IMPACTS...EXTREMELY DANGEROUS TRAVEL DUE TO HEAVY SNOWFALL AND STRONG WINDS WITH WHITEOUT CONDITIONS LIKELY. SECONDARY AND TERTIARY ROADS MAY BECOME IMPASSABLE. STRONG WINDS MAY DOWN POWER LINES AND TREE LIMBS.**
A BLIZZARD WARNING MEANS SEVERE WINTER WEATHER CONDITIONS ARE EXPECTED OR OCCURRING. FALLING AND BLOWING SNOW WITH STRONG WINDS AND POOR VISIBILITIES ARE LIKELY. THIS WILL LEAD TO WHITEOUT CONDITIONS...MAKING TRAVEL EXTREMELY DANGEROUS. DO NOT TRAVEL. IF YOU MUST TRAVEL...HAVE A WINTER SURVIVAL KIT WITH YOU. IF YOU GET STRANDED...STAY WITH YOUR VEHICLE.

At 6:54 a.m. on January 22nd, 2016, the National Weather Service in Upton, New York issued an official update for the "Blizzard Warning" that was in effect from 4:00 a.m. on January 23rd, 2016 through 12:00 p.m. on January 24th, 2016:

HUDSON-WESTERN ESSEX-EASTERN ESSEX-WESTERN UNION-EASTERN UNION-
NEW YORK (MANHATTAN)-**BRONX**-RICHMOND (STATEN ISLAND)-
KINGS (BROOKLYN)-NORTHWESTERN SUFFOLK-NORTHEASTERN SUFFOLK-
SOUTHWESTERN SUFFOLK-SOUTHEASTERN SUFFOLK-NORTHERN QUEENS-
NORTHERN NASSAU-SOUTHERN QUEENS-SOUTHERN NASSAU-
654 AM EST FRI JAN 22 2016
...BLIZZARD WARNING REMAINS IN EFFECT FROM 4 AM SATURDAY TO NOON EST SUNDAY...
* LOCATIONS...THE FIVE BOROUGHS OF NEW YORK CITY...COASTAL

PORTIONS OF NORTHEAST NEW JERSEY...AND LONG ISLAND.
*** HAZARD TYPES...HEAVY SNOW ALONG WITH STRONG AND POTENTIALLY DAMAGING WINDS. BLOWING AND DRIFTING SNOW WITH NEAR ZERO VISIBILITIES IS EXPECTED SATURDAY AFTERNOON AND EVENING.**
*** ACCUMULATIONS...SNOW ACCUMULATION OF 7 TO 12 INCHES.**
*** WINDS...NORTH 25 TO 35 MPH WITH GUSTS UP TO 50 MPH.**
*** TEMPERATURES...IN THE UPPER 20S TO LOW 30S.**
*** VISIBILITIES...ONE QUARTER MILE OR LESS AT TIMES.**
*** TIMING...SATURDAY MORNING THROUGH SUNDAY MORNING.**
*** IMPACTS...EXTREMELY DANGEROUS TRAVEL DUE TO HEAVY SNOWFALL AND STRONG WINDS WITH WHITEOUT CONDITIONS LIKELY. SECONDARY AND TERTIARY ROADS MAY BECOME IMPASSABLE. STRONG WINDS MAY DOWN POWER LINES AND TREE LIMBS.**

At 3:50 p.m. on January 22nd, 2016, the National Weather Service in Upton, New York issued an official update for the "Blizzard Warning," which stated that the warning was now in effect from 12:00 a.m. on January 23rd, 2016 through 7:00 a.m. on January 24th, 2016:

HUDSON-WESTERN ESSEX-EASTERN ESSEX-WESTERN UNION-EASTERN UNION-
NEW YORK (MANHATTAN)-**BRONX**-RICHMOND (STATEN ISLAND)-
KINGS (BROOKLYN)-NORTHWESTERN SUFFOLK-NORTHEASTERN SUFFOLK-
SOUTHWESTERN SUFFOLK-SOUTHEASTERN SUFFOLK-NORTHERN QUEENS-
NORTHERN NASSAU-SOUTHERN QUEENS-SOUTHERN NASSAU-
350 PM EST FRI JAN 22 2016
...BLIZZARD WARNING NOW IN EFFECT FROM MIDNIGHT TONIGHT TO 7 AM EST SUNDAY...
* LOCATIONS...THE FIVE BOROUGHS OF NEW YORK CITY...COASTAL PORTIONS OF NORTHEAST NEW JERSEY...AND LONG ISLAND.
*** HAZARD TYPES...HEAVY SNOW ALONG WITH STRONG AND POTENTIALLY DAMAGING WINDS. BLOWING AND DRIFTING SNOW WITH NEAR ZERO VISIBILITIES IS EXPECTED SATURDAY MORNING THROUGH THE AFTERNOON AND INTO THE EVENING.**
*** ACCUMULATIONS...SNOW ACCUMULATION OF 10 TO 18 INCHES.**
*** WINDS...NORTHEAST 30 TO 40 MPH WITH GUSTS UP TO 55 MPH.**
*** TEMPERATURES...IN THE 20S.**
*** VISIBILITIES...ONE QUARTER MILE OR LESS AT TIMES.**
*** TIMING...LATE TONIGHT THROUGH SATURDAY NIGHT.**
*** IMPACTS...EXTREMELY DANGEROUS TRAVEL DUE TO HEAVY SNOWFALL AND STRONG WINDS WITH WHITEOUT CONDITIONS LIKELY. SECONDARY AND TERTIARY ROADS MAY BECOME IMPASSABLE. STRONG WINDS MAY DOWN POWER LINES AND TREE LIMBS.**

At 11:03 p.m. on January 22nd, 2016, the National Weather Service in Upton, New York issued an official update for the "Blizzard Warning," which stated that the warning was now in effect and would remain in effect through 7:00 a.m. on January 24th, 2016:

HUDSON-WESTERN ESSEX-EASTERN ESSEX-WESTERN UNION-EASTERN UNION-
NEW YORK (MANHATTAN)-**BRONX**-RICHMOND (STATEN ISLAND)-
KINGS (BROOKLYN)-NORTHWESTERN SUFFOLK-NORTHEASTERN SUFFOLK-
SOUTHWESTERN SUFFOLK-SOUTHEASTERN SUFFOLK-NORTHERN QUEENS-
NORTHERN NASSAU-SOUTHERN QUEENS-SOUTHERN NASSAU-
1103 PM EST FRI JAN 22 2016
...BLIZZARD WARNING REMAINS IN EFFECT UNTIL 7 AM EST SUNDAY...
* LOCATIONS...NEW YORK CITY AND LONG ISLAND IN NEW YORK.
HUDSON...ESSEX AND UNION COUNTIES IN NEW JERSEY.
*** HAZARD TYPES...HEAVY SNOW ALONG WITH STRONG AND POTENTIALLY DAMAGING WINDS. BLOWING AND DRIFTING SNOW WITH NEAR ZERO VISIBILITIES EXPECTED SATURDAY MORNING THROUGH THE AFTERNOON AND INTO THE EVENING.**
*** ACCUMULATIONS...SNOW ACCUMULATION OF 16 TO 22 INCHES. LESSER AMOUNTS POSSIBLE ON THE TWIN FORKS OF LONG ISLAND IF RAIN AND SLEET MIX WITH THE SNOW.**
*** WINDS...NORTHEAST 30 TO 40 MPH WITH GUSTS UP TO 55 MPH. ISOLATED HIGHER GUSTS POSSIBLE.**
*** TEMPERATURES...20S AND LOWER 30S.**
*** VISIBILITIES...NEAR ZERO AT TIMES.**

*** TIMING...THROUGH SATURDAY NIGHT.**
*** IMPACTS...EXTREMELY DANGEROUS TRAVEL DUE TO HEAVY SNOWFALL AND STRONG WINDS WITH WHITEOUT CONDITIONS LIKELY. SECONDARY AND TERTIARY ROADS MAY BECOME IMPASSABLE. STRONG WINDS MAY DOWN POWER LINES AND TREE LIMBS.**

At 2:45 a.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued a "Special Weather Statement" for Bronx County, New York:

SPECIAL WEATHER STATEMENT
NATIONAL WEATHER SERVICE NEW YORK NY
245 AM EST SAT JAN 23 2016
NJZ004-006-104>108-NYZ072>075-078>081-176>179-230945-
EASTERN PASSAIC-HUDSON-EASTERN BERGEN-WESTERN ESSEX-EASTERN ESSEX-
WESTERN UNION-EASTERN UNION-NEW YORK (MANHATTAN)-**BRONX-**
RICHMOND (STATEN ISLAND)-KINGS (BROOKLYN)-NORTHWESTERN SUFFOLK-
NORTHEASTERN SUFFOLK-SOUTHWESTERN SUFFOLK-SOUTHEASTERN SUFFOLK-
NORTHERN QUEENS-NORTHERN NASSAU-SOUTHERN QUEENS-SOUTHERN NASSAU-
245 AM EST SAT JAN 23 2016
A BAND OF HEAVY SNOW STRETCHING WEST TO EAST FROM CENTRAL NEW JERSEY TO SOUTH OF LONG ISLAND WILL MAY ITS WAY INTO THE AREA OVER THE NEXT 2 HOURS. SNOWFALL RATES OF 1 TO 2 INCHES PER HOUR AND VISIBILITIES OF 1/4 MILE OR LESS ARE POSSIBLE WITHIN THIS BAND.

At 4:00 a.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued an official update for the "Blizzard Warning" that was in effect:

HUDSON-WESTERN ESSEX-EASTERN ESSEX-WESTERN UNION-EASTERN UNION-
SOUTHERN WESTCHESTER-NEW YORK (MANHATTAN)-**BRONX-**
RICHMOND (STATEN ISLAND)-KINGS (BROOKLYN)-NORTHWESTERN SUFFOLK-
NORTHEASTERN SUFFOLK-SOUTHWESTERN SUFFOLK-SOUTHEASTERN SUFFOLK-
NORTHERN QUEENS-NORTHERN NASSAU-SOUTHERN QUEENS-SOUTHERN NASSAU-
400 AM EST SAT JAN 23 2016
...BLIZZARD WARNING REMAINS IN EFFECT UNTIL 7 AM EST SUNDAY...
* LOCATIONS...NEW YORK CITY AND LONG ISLAND IN NEW YORK.
HUDSON...ESSEX AND UNION COUNTIES IN NEW JERSEY.
*** HAZARD TYPES...HEAVY SNOW ALONG WITH STRONG AND POTENTIALLY DAMAGING WINDS. BLOWING AND DRIFTING SNOW WITH NEAR ZERO VISIBILITIES EXPECTED SATURDAY MORNING THROUGH THE AFTERNOON AND INTO THE EVENING.**
*** ACCUMULATIONS...SNOW ACCUMULATION OF 15 TO 20 INCHES. LOCALLY HIGHER AMOUNTS POSSIBLE. LESSER AMOUNTS OVER THE FORKS REGION OF LONG ISLAND.**
*** WINDS...NORTHEAST 30 TO 40 MPH WITH GUSTS UP TO 55 MPH. ISOLATED HIGHER GUSTS POSSIBLE.**
*** TEMPERATURES...IN THE UPPER 20S TO LOWER 30S.**
*** VISIBILITIES...NEAR ZERO AT TIMES.**
*** TIMING...THROUGH TONIGHT.**
*** IMPACTS...EXTREMELY DANGEROUS TRAVEL DUE TO HEAVY SNOWFALL AND STRONG WINDS WITH WHITEOUT CONDITIONS LIKELY. SECONDARY AND TERTIARY ROADS MAY BECOME IMPASSABLE. STRONG WINDS MAY DOWN POWER LINES AND TREE LIMBS.**

At 4:43 a.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued a "Special Weather Statement" for Bronx County, New York:

SPECIAL WEATHER STATEMENT
NATIONAL WEATHER SERVICE NEW YORK NY
443 AM EST SAT JAN 23 2016
CTZ005-009-NJZ002-004-103-104-NYZ069>071-073-078>081-177-231145-
NORTHERN FAIRFIELD-SOUTHERN FAIRFIELD-WESTERN PASSAIC-
EASTERN PASSAIC-WESTERN BERGEN-EASTERN BERGEN-ROCKLAND-
NORTHERN WESTCHESTER-SOUTHERN WESTCHESTER-**BRONX-**
NORTHWESTERN SUFFOLK-NORTHEASTERN SUFFOLK-SOUTHWESTERN SUFFOLK-
SOUTHEASTERN SUFFOLK-NORTHERN NASSAU-

443 AM EST SAT JAN 23 2016
A BAND OF HEAVY SNOW STRETCHING WEST TO EAST FROM NORTHERN NEW JERSEY TO SOUTHWESTERN SUFFOLK COUNTY IN NY WILL MOVE THROUGH THE AREA OVER THE NEXT 2 HOURS. SNOWFALL RATES OF 1 TO 2 INCHES PER HOUR AND VISIBILITIES OF 1/4 MILE OR LESS ARE POSSIBLE WITHIN THIS BAND.

At 8:36 a.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued a "Special Weather Statement" for Bronx County, New York:

SPECIAL WEATHER STATEMENT
NATIONAL WEATHER SERVICE NEW YORK NY
836 AM EST SAT JAN 23 2016
CTZ009-NJZ006-105>108-NYZ071>075-078>081-176>179-231615-
SOUTHERN FAIRFIELD-EASTERN UNION-WESTERN ESSEX-HUDSON-EASTERN ESSEX-WESTERN UNION-SOUTHERN QUEENS-NORTHERN QUEENS-KINGS (BROOKLYN)-NEW YORK (MANHATTAN)-SOUTHERN NASSAU-SOUTHWEST SUFFOLK-**BRONX**-SOUTHERN WESTCHESTER-SOUTHEAST SUFFOLK-NORTHEAST SUFFOLK-RICHMOND (STATEN IS.)-NORTHWEST SUFFOLK-NORTHERN NASSAU-
836 AM EST SAT JAN 23 2016
...BLIZZARD CONDITIONS TO AFFECT SOUTHERN FAIRFIELD...ESSEX... UNION...HUDSON...NASSAU...NEW YORK...SUFFOLK...KINGS...QUEENS...SOUTH CENTRAL WESTCHESTER AND BRONX COUNTIES THROUGH 11 AM...
AT 818 AM EST...AN INTENSE SNOW BAND HAS DEVELOPED OVER THE REGION...WITH SNOWFALL RATES OF 1 TO 3 INCHES PER HOUR BEING OBSERVED. THIS SNOW BAND WILL MOVE VERY LITTLE THROUGH THIS MORNING. TRAVEL IS NOT RECOMMENDED THIS MORNING DUE TO WHITEOUT CONDITIONS AS THE SNOW IS BLOWN AROUND BY NORTHEAST WINDS OF 25 TO 35 MPH WITH GUSTS 40 TO 50 MPH. MANY ROADS WILL LIKELY BECOMING IMPASSABLE DUE TO THE RAPIDLY ACCUMULATING AND DRIFTING SNOW. SCATTERED DOWNED TREE LIMBS AND POWER LINES WILL ADD AN ADDITIONAL HAZARD FOR TRAVELERS.

At 10:51 a.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued an official update for the "Blizzard Warning" that was in effect:

HUDSON-WESTERN ESSEX-EASTERN ESSEX-WESTERN UNION-EASTERN UNION-
SOUTHERN WESTCHESTER-NEW YORK (MANHATTAN)**-BRONX-**
RICHMOND (STATEN ISLAND)-KINGS (BROOKLYN)-NORTHERN QUEENS-
SOUTHERN QUEENS-
1051 AM EST SAT JAN 23 2016
...BLIZZARD WARNING REMAINS IN EFFECT UNTIL 7 AM EST SUNDAY...
* LOCATIONS...NEW YORK CITY AND SOUTHERN WESTCHESTER COUNTY IN SOUTHEAST NEW YORK...AND HUDSON...ESSEX AND UNION COUNTIES IN NORTHEAST NEW JERSEY.
*** HAZARD TYPES...WIDESPREAD BLIZZARD CONDITIONS...WITH HEAVY SNOW AND POTENTIALLY DAMAGING WINDS CAUSING CONSIDERABLE BLOWING AND DRIFTING SNOW AND NEAR ZERO VISIBILITIES.**
*** ACCUMULATIONS...SNOW ACCUMULATION OF 20 TO 25 INCHES.**
*** WINDS...NORTH 20 TO 30 MPH WITH GUSTS UP TO 50 MPH.**
*** TEMPERATURES...IN THE MID 20S.**
*** VISIBILITIES...ONE QUARTER MILE OR LESS AT TIMES.**
*** TIMING...THROUGH TONIGHT.**
*** IMPACTS...EXTREMELY DANGEROUS TRAVEL DUE TO HEAVY SNOWFALL AND STRONG WINDS WITH WHITEOUT CONDITIONS LIKELY. SECONDARY AND TERTIARY ROADS MAY BECOME IMPASSABLE. STRONG WINDS MAY DOWN POWER LINES AND TREE LIMBS.**

At 12:00 p.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued a "Special Weather Statement" for Bronx County, New York:

SPECIAL WEATHER STATEMENT
NATIONAL WEATHER SERVICE NEW YORK NY
1200 PM EST SAT JAN 23 2016

NJZ004-006-103>108-NYZ071>075-078-080-176>179-231800-
EASTERN UNION-WESTERN ESSEX-EASTERN BERGEN-WESTERN
BERGEN-HUDSON-EASTERN ESSEX-EASTERN PASSAIC-WESTERN UNION-SOUTHERN
QUEENS-NORTHERN QUEENS-KINGS (BROOKLYN)-NEW YORK (MANHATTAN)-SOUTHERN
NASSAU-SOUTHWEST SUFFOLK-**BRONX**-SOUTHERN WESTCHESTER-RICHMOND (STATEN
IS.)-NORTHWEST SUFFOLK-NORTHERN NASSAU-
1200 PM EST SAT JAN 23 2016
**...HEAVY SNOW BANDS MOVING ACROSS WESTERN LONG ISLAND...NEW YORK
CITY...AND NORTHEAST NEW JERSEY...**
**HEAVY SNOW BANDS...WITH SNOWFALL RATES OF 2 TO 3 INCHES PER HOUR
WILL IMPACT WESTERN LONG ISLAND...NEW YORK CITY...AND NORTHEAST NEW
JERSEY EARLY THIS AFTERNOON. WIND GUSTS UP TO 50 MPH ARE POSSIBLE
WITH THIS AREA OF HEAVY SNOW...CAUSING CONSIDERABLE BLOWING AND
DRIFTING OF SNOW AND BLIZZARD CONDITIONS.**
**SOME LOCATIONS IMPACTED INCLUDE...
NEW YORK CITY...NEWARK...JERSEY CITY...HUNTINGTON...YONKERS...
PATERSON... ELIZABETH...NEW ROCHELLE...PASSAIC...BAYONNE...
WHITE PLAINS...HOBOKEN...PLAINFIELD...BLOOMFIELD...HACKENSACK...
LINDEN...VALLEY STREAM...PORT CHESTER...BERGENFIELD AND PARAMUS.
TRAVEL IS HIGHLY DISCOURAGED. HEED THE ADVICE OF LOCAL EMERGENCY
MANAGERS AND LAW ENFORCEMENT.**

At 4:41 p.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued an official update for the "Blizzard Warning" that was in effect:

HUDSON-WESTERN ESSEX-EASTERN ESSEX-WESTERN UNION-EASTERN UNION-
SOUTHERN WESTCHESTER-NEW YORK (MANHATTAN)-**BRONX-**
RICHMOND (STATEN ISLAND)-KINGS (BROOKLYN)-NORTHERN QUEENS-
SOUTHERN QUEENS-
441 PM EST SAT JAN 23 2016
...BLIZZARD WARNING REMAINS IN EFFECT UNTIL 7 AM EST SUNDAY...
* LOCATIONS...NEW YORK CITY AND SOUTHERN WESTCHESTER COUNTY IN
  SOUTHEAST NEW YORK...AND HUDSON...ESSEX AND UNION COUNTIES IN
  NORTHEAST NEW JERSEY.
*** HAZARD TYPES...WIDESPREAD BLIZZARD CONDITIONS...WITH HEAVY
  SNOW AND POTENTIALLY DAMAGING WINDS CAUSING CONSIDERABLE
  BLOWING AND DRIFTING SNOW AND NEAR ZERO VISIBILITIES.**
*** ACCUMULATIONS...SNOW ACCUMULATION OF 24 TO 28 INCHES.**
*** WINDS...NORTH 25 TO 35 MPH WITH GUSTS UP TO 45 MPH.**
*** TEMPERATURES...IN THE MID 20S.**
*** VISIBILITIES...ONE QUARTER MILE OR LESS AT TIMES.**
*** TIMING...THROUGH TONIGHT.**
*** IMPACTS...EXTREMELY DANGEROUS TRAVEL DUE TO HEAVY SNOWFALL AND
  STRONG WINDS WITH WHITEOUT CONDITIONS LIKELY. SECONDARY AND
  TERTIARY ROADS MAY BECOME IMPASSABLE. STRONG WINDS MAY DOWN
  POWER LINES AND TREE LIMBS.**

At 5:47 p.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued a "Special Weather Statement" for Bronx County, New York:

**SPECIAL WEATHER STATEMENT
NATIONAL WEATHER SERVICE NEW YORK NY
547 PM EST SAT JAN 23 2016**
CTZ005>012-NJZ002-004-006-103>108-NYZ068>075-078>081-176>179-
240100-
NORTHERN FAIRFIELD-NORTHERN NEW HAVEN-NORTHERN MIDDLESEX-
NORTHERN NEW LONDON-SOUTHERN FAIRFIELD-SOUTHERN NEW HAVEN-
SOUTHERN MIDDLESEX-SOUTHERN NEW LONDON-WESTERN PASSAIC-
EASTERN PASSAIC-HUDSON-WESTERN BERGEN-EASTERN BERGEN-
WESTERN ESSEX-EASTERN ESSEX-WESTERN UNION-EASTERN UNION-PUTNAM-
ROCKLAND-NORTHERN WESTCHESTER-SOUTHERN WESTCHESTER-
NEW YORK (MANHATTAN)-**BRONX**-RICHMOND (STATEN ISLAND)-
KINGS (BROOKLYN)-NORTHWESTERN SUFFOLK-NORTHEASTERN SUFFOLK-
SOUTHWESTERN SUFFOLK-SOUTHEASTERN SUFFOLK-NORTHERN QUEENS-
NORTHERN NASSAU-SOUTHERN QUEENS-SOUTHERN NASSAU-
547 PM EST SAT JAN 23 2016
EXTENSIVE BANDS OF MODERATE TO HEAVY SNOW CONTINUE OVER MOST OF

SOUTHEAST NEW YORK...NORTHEAST NEW JERSEY AND SOUTHERN CONNECTICUT. AT 537 PM THE HEAVIEST BANDS EXTENDED FROM SOUTHWEST TO NORTHEAST...FROM NEW YORK CITY TO THE NORTH SHORE OF WESTERN LONG ISLAND...THEN UP INTO SOUTHEAST CONNECTICUT EAST OF NEW HAVEN. THESE BANDS ARE SLOWLY WEAKENING BUT REMAINING NEARLY STATIONARY. SNOWFALL RATES WITH THESE MORE INTENSE BANDS MAY REACH 2 TO 3 INCHES PER HOUR...WITH AN ADDITIONAL 4 TO 6 INCHES OF ACCUMULATION THROUGH 8 PM. OUTSIDE OF THESE BANDS...EXPECT LESSER SNOWFALL RATES OF 1 TO 2 INCHES PER HOUR...AND AN ADDITIONAL 2 TO 4 INCHES OF ACCUMULATION THROUGH 8 PM. BLIZZARD WARNINGS REMAIN IN EFFECT FOR THE NEW YORK CITY METROPOLITAN AREA...LONG ISLAND...AND COASTAL CONNECTICUT. TRAVEL IS HIGHLY DISCOURAGED.

At 8:52 p.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued an official update for the "Blizzard Warning" that was in effect:

HUDSON-WESTERN ESSEX-EASTERN ESSEX-WESTERN UNION-EASTERN UNION-
SOUTHERN WESTCHESTER-NEW YORK (MANHATTAN)-**BRONX-**
RICHMOND (STATEN ISLAND)-KINGS (BROOKLYN)-NORTHERN QUEENS-
SOUTHERN QUEENS-
852 PM EST SAT JAN 23 2016
...BLIZZARD WARNING REMAINS IN EFFECT UNTIL 7 AM EST SUNDAY...
* LOCATIONS...NEW YORK CITY AND SOUTHERN WESTCHESTER COUNTY IN SOUTHEAST NEW YORK...AND HUDSON...ESSEX AND UNION COUNTIES IN NORTHEAST NEW JERSEY.
*** HAZARD TYPES...BLIZZARD CONDITIONS...WITH HEAVY SNOW AND STRONG WINDS CAUSING CONSIDERABLE BLOWING AND DRIFTING SNOW AND NEAR ZERO VISIBILITIES.**
*** ACCUMULATIONS...SNOW ACCUMULATION OF MORE THAN 2 FEET.**
*** WINDS...NORTH 25 TO 35 MPH WITH GUSTS UP TO 45 MPH.**
*** TEMPERATURES...IN THE LOWER 20S.**
*** VISIBILITIES...ONE QUARTER MILE OR LESS AT TIMES.**
*** TIMING...THROUGH TONIGHT.**
*** IMPACTS...EXTREMELY DANGEROUS TRAVEL DUE TO HEAVY SNOWFALL AND STRONG WINDS WITH WHITEOUT CONDITIONS LIKELY. SECONDARY AND TERTIARY ROADS MAY BECOME IMPASSABLE. STRONG WINDS MAY DOWN POWER LINES AND TREE LIMBS.**

At 11:28 p.m. on January 23rd, 2016, the National Weather Service in Upton, New York issued an official update to cancel the "Blizzard Warning" that was in effect:

HUDSON-WESTERN ESSEX-EASTERN ESSEX-WESTERN UNION-EASTERN UNION-
SOUTHERN WESTCHESTER-NEW YORK (MANHATTAN)-**BRONX-**
RICHMOND (STATEN ISLAND)-KINGS (BROOKLYN)-NORTHERN QUEENS-
SOUTHERN QUEENS-
1128 PM EST SAT JAN 23 2016
...BLIZZARD WARNING IS CANCELLED...
THE NATIONAL WEATHER SERVICE IN UPTON HAS CANCELLED THE BLIZZARD WARNING.
SNOW HAS BECOME LIGHT AND SHOULD END SHORTLY AFTER MIDNIGHT.

STORM DATA PUBLICATION

The publication "Storm Data" from January 2016 contained the following entry which included the incident location on January 23rd, 2016 :

Storm Data and Unusual Weather Phenomena

January 2016

Location	Date	Time Local/ Standard	Path Length (Miles)	Path Width (Yards)	Number of Persons Killed	Injured	Estimated Damage Property	Crops	Character of Storm
NEW YORK, Coastal									
NYZ070-073-078> 081-177-179	**Bronx - Northeast Suffolk - Northern Nassau - Northern Westchester - Northwest Suffolk - Southeast Suffolk - Southern Nassau - Southern Westchester - Southwest Suffolk**								
	23	0000EST							
		2130EST			1	0	0.00K	0.00K	Winter Storm

Low pressure moving across the deep South on Thursday January 21st and Friday January 22nd intensifed and moved off the Mid Atlantic coast on Saturday January 23rd, bringing heavy snow and strong winds to southeast New York, and blizzard conditions to Long Island, New York City, and nearby southern Westchester County.
NY Gov. Cuomo declared a state of emergency early Saturday January 23rd. Metro North and Long Island Railroad service halted at 4 PM Saturday.
In New York City, the blizzard contributed to more than 400 car crashes, and streets were closed to all but emergency vehicles from mid-afternoon Saturday January 23nd until 7 AM Sunday January 24th. Much of the city's mass transit was shut down, along with bridges and tunnels across the city and to/from New Jersey. The Port Authority Bus Terminal, the busy Midtown NYC transportation hub, closed its doors at 4 PM Saturday. Broadway shows announced all Saturday performances were canceled.
Travel in and out of New York City airports lagged through Monday January 25th as airlines pre-emptively cut hundreds of flights. All arrivals and departures were eventually canceled due to severe winter weather conditions at LaGuardia airport, with Kennedy at a virtual standstill as well. More than 1,000 flights out of New York City-area airports were cancelled, including 90% of flights from LaGuardia. M61OU

NYZ072>075-078> 081-176>179	**Bronx - Kings (Brooklyn) - New York (Manhattan) - Northeast Suffolk - Northern Nassau - Northern Queens - Northwest Suffolk - Richmond (Staten Island) - Southeast Suffolk - Southern Nassau - Southern Queens - Southwest Suffolk**								
	23	0600EST							
		1700EST			0	0	0.00K	0.00K	Blizzard

STORM EVENTS DATABASE ENTRIES

The following entries are from the storm events database from the National Centers for Environmental Information on January 23rd, 2016:

Storm Events Database

Event Details:

Event	Blizzard
State	NEW YORK
County/Area	BRONX
WFO	OKX
Report Source	ASOS
NCEI Data Source	CSV
Begin Date	2016-01-23 07:00 EST-5
End Date	2016-01-23 18:00 EST-5
Deaths Direct/Indirect	0/0 (fatality details below, when available...)
Injuries Direct/Indirect	0/0
Property Damage	0.00K
Crop Damage	0.00K
Episode Narrative	Low pressure moving across the deep South on Thursday January 21st and Friday January 22nd intensifed and moved off the Mid Atlantic coast on Saturday January 23rd, bringing heavy snow and strong winds to southeast New York, and blizzard conditions to Long Island, New York City, and nearby southern Westchester County. NY Gov. Cuomo declared a state of emergency early Saturday January 23rd. Metro North and Long Island Railroad service halted at 4 PM Saturday. In New York City, the blizzard contributed to more than 400 car crashes, and streets were closed to all but emergency vehicles from mid-afternoon Saturday January 23nd until 7 AM Sunday January 24th. Much of the city's mass transit was shut down, along with bridges and tunnels across the city and to/from New Jersey. The Port Authority Bus Terminal, the busy Midtown NYC transportation hub, closed its doors at 4 PM Saturday. Broadway shows announced all Saturday performances were canceled. Travel in and out of New York City airports lagged through Monday January 25th as airlines pre-emptively cut hundreds of flights. All arrivals and departures were eventually canceled due to severe winter weather conditions at LaGuardia airport, with Kennedy at a virtual standstill as well. More than 1,000 flights out of New York City-area airports were cancelled, including 90% of flights from LaGuardia.
Event Narrative	Nearby LaGuardia and Central Park ASOS observations showed blizzard conditions, with visibility less than one quarter mile in heavy snow and frequent wind gusts over 35 mph through the day and into the early evening on Saturday January 23rd.

Storm Events Database

Event Details:

Event	**Winter Storm**
State	**NEW YORK**
County/Area	**BRONX**
WFO	**OKX**
Report Source	**Trained Spotter**
NCEI Data Source	**CSV**
Begin Date	**2016-01-23 00:00 EST-5**
End Date	**2016-01-23 22:30 EST-5**
Deaths Direct/Indirect	**0/0** (fatality details below, when available...)
Injuries Direct/Indirect	**0/0**
Property Damage	**0.00K**
Crop Damage	**0.00K**
Episode Narrative	**Low pressure moving across the deep South on Thursday January 21st and Friday January 22nd intensifed and moved off the Mid Atlantic coast on Saturday January 23rd, bringing heavy snow and strong winds to southeast New York, and blizzard conditions to Long Island, New York City, and nearby southern Westchester County. NY Gov. Cuomo declared a state of emergency early Saturday January 23rd. Metro North and Long Island Railroad service halted at 4 PM Saturday. In New York City, the blizzard contributed to more than 400 car crashes, and streets were closed to all but emergency vehicles from mid-afternoon Saturday January 23nd until 7 AM Sunday January 24th. Much of the city's mass transit was shut down, along with bridges and tunnels across the city and to/from New Jersey. The Port Authority Bus Terminal, the busy Midtown NYC transportation hub, closed its doors at 4 PM Saturday. Broadway shows announced all Saturday performances were canceled. Travel in and out of New York City airports lagged through Monday January 25th as airlines pre-emptively cut hundreds of flights. All arrivals and departures were eventually canceled due to severe winter weather conditions at LaGuardia airport, with Kennedy at a virtual standstill as well. More than 1,000 flights out of New York City-area airports were cancelled, including 90% of flights from LaGuardia.**
Event Narrative	**A trained spotter at the Bronx Zoo measured 27.6 inches of snow. A cooperative observer in Parkchester also measured 26.8 inches of snow.**

REVIEW OF ICE TREATMENT CHEMICALS AND ABRASIVES

According to the publication "Snow and Ice Control" that was published by the "Cornell Local Roads Program", there are a wide variety of materials used for snow and ice control[2]. They are generally separated into two categories: Chemicals and Abrasives. Abrasives include natural sand, finely crushed rock or gravel, bottom ash, slag, ore tailings and cinders. In order to maximize their effect, abrasives must stick to the ice surface. The article further states, "All ice control chemicals work the same way. They depress the freezing point of water and melt ice. Up to limits unique for each chemical, as solution concentration increases, the freezing point decreases." Below is a list of ice control chemicals and the pavement surface temperature they are effective to:

NaCl (Road Salt) - Solid:	15° F
NaCl (Road Salt) - Liquid:	23° F
MgCl2 (Magnesium Chloride) - Solid:	0° F
MgCl2 (Magnesium Chloride) - Liquid:	10° F
CaCl2 (Calcium Chloride) - Solid:	-20° F
CaCl2 (Calcium Chloride) - Liquid:	0° F

[2] https://cornell.app.box.com/v/clrp-ws-sic

CONCLUSIONS

In conclusion, it is my opinion with a reasonable degree of meteorological certainty based on sound, scientific principles, practices, and accepted methodologies that:

- No snow or ice was present on exposed, untreated, and undisturbed surfaces prior to the onset of a major winter storm that affected the incident location from January 22nd, 2016 through January 24th, 2016.
- A major winter storm caused mostly continuous light to occasionally moderate and heavy snow to fall from approximately 10:02 p.m. on January 22nd, 2016 through 2:45 a.m. on January 24th, 2016 (including at the time of the incident). Approximately 27.0" of new snow accumulated as a result of this major winter storm.
- The National Weather Service issued a "Blizzard Warning" for Bronx County, New York (including the incident location and surrounding areas), that was in effect from 11:03 p.m. on January 22nd, 2016 through 11:28 p.m. on January 23rd, 2016 (up until only one hour and two minutes prior to the time of the incident).
- Some freezing fog occurred from the mid-morning through the late evening and night on January 23rd, 2016. This caused some new ice to form and additional slippery conditions to develop.
- Gusty winds in excess of 25 MPH occurred from the early morning on January 23rd, 2016 through mid-morning on January 24th, 2016 (including at the time of the incident). This caused some blowing and drifting snow to occur.
- At 12:30 a.m. on January 24th, 2016 (time and date of the incident), light snow was falling, snow was actively accumulating as a result of the major winter storm that was still in progress, and the air temperature was 27 degrees Fahrenheit. Approximately 26.8" of new snow, and very slippery conditions, were present on exposed, untreated, and undisturbed surfaces as a result of this major winter storm. In addition, winds were blowing up to 35-40 MPH with blowing and drifting snow occurring.
- New York Governor Cuomo declared a state of emergency early Saturday January 23rd, 2016 as a result of the major winter storm that was affecting the region.
- Additionally, in New York City, the blizzard contributed to more than 400 car crashes, and streets were closed to all but emergency vehicles from mid-afternoon Saturday January 23rd, 2016 until 7:00 a.m. Sunday January 24th, 2016.
- Much of the city's mass transit was shut down, along with bridges and tunnels across the city and to/from New Jersey.
- Snow was actively falling and accumulating before, during, and after the time of the incident as a result of the major winter storm that was still ongoing.
- The snow that was falling and the blowing and drifting snow that was occurring caused very slippery conditions to develop before, during, and beyond the time of the accident.
- According to the EBT transcript of Maurice Donnelly. Mr. Donnelly was asked and answered the following, *"Q: What time had you gone to your aunt's house, approximately?* ***A: I was there from 2:00 p.m.*** *Q: So that would be 2:00 p.m. on Sunday, correct?* ***A: Yes.*** *Q: All right. What were the weather conditions when you arrived at your aunt's house at around 2:00 p.m****? A: When I arrived, there was snow falling.*** *Q: By the time that you arrived there before dinner, can you estimate about how*

much accumulation there had been of snow? In other words, was it a half- inch, an inch, three inches, something else? ***A: I don't recall.*** *Q: Do you remember about what the temperature was approximately around 6:00?* ***A: I don't remember.*** *Q: Do you remember what you were wearing?* ***A: Yes.*** *Q: What were you wearing?* ***A: I was wearing my jeans, my coat, snow boots, hat and a scarf.*** *Q: And can you describe the snow boots that you were wearing?* ***A: I was wearing Uggs.*** *Q: I notice that you're wearing glasses today. Is that to help you see objects that are far away or close or both?* ***A: For far.*** *Q: All right. Now, what time did you leave your aunt's house before the accident happened?* ***A: It was around 12:20 a.m.*** *Q: What were the weather conditions when you left at around that time from your aunt's house?* ***A: When I left, it was cold and the snow had stopped. There was no snow falling at the time I left."*** (page 32, line 9 through page 34, line 5).

- Mr. Donnelly's testimony that it was snowing at 2:00 p.m. on January 23rd, 2016 when she arrived at her aunt's house is very consistent with the weather records and our findings, which indicated that a major winter storm was affecting the incident location.
- However, the weather records indicated that this snow and winter storm continued through and beyond the time that she left her aunt's house at 12:20 a.m. on January 24th, 2016. Therefore, Mr. Donnelly's testimony that it had stopped snowing at the time that she left her aunt's house is not consistent with the weather records or our findings.

CERTIFICATION

I certify that the above information contained in this report is true and accurate to the best of my ability and that all of my opinions, findings, estimations and interpolations expressed in this report were made with accuracy as a professional meteorologist within a reasonable degree of meteorological certainty.

By: _____

Certified Consulting Meteorologist

Certified Consulting Meteorologist
Awarded by the American Meteorological Society.