

# **CERTIFIED COMPREHENSIVE PAST WEATHER REPORT**

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**Prepared For:**

**John Doe**  
**John Doe Law Firm**

**Reference:**

James v ABC Company - SAMPLE  
Greentown, NJ | December 10, 2014

**Submitted on:**

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## INTRODUCTION

The following report was requested by John Doe from the Law Firm of John Doe. At the request of Mr. Doe, I have examined the weather conditions for 1 Main Street in Greentown, NJ from December 4 - 10, 2014.

My inspection of the weather records will determine the type and extent of any precipitation that fell on the accident date and seven prior consecutive days. Furthermore, I have examined the condition of ground surfaces and temperatures at the time of accident and before. Lastly, I reviewed the following documents provided to me by John Doe of the Law Office of John Doe: Deposition of Plaintiff and Deposition of Defendant.

In order to determine the weather conditions for 1 Main Street in Greentown, NJ within a reasonable degree of meteorological and scientific certainty, I analyzed the following: official surface weather observations, records of climatological observations, Storm Data, public information statements, sunrise – sunset times, Doppler RADAR images, and other National Weather Service products. Weather data was accessed from the official online web page of the National Centers for Environmental Information (NCEI). The NCEI is a consolidation of the National Oceanic and Atmospheric Administration's (NOAA) three existing national data centers: the National Climatic Data Center (NCDC), the National Geophysical Data Center (NGDC), and the National Oceanographic Data Center (NODC). Data was also retrieved from the New Jersey Weather & Climate Network and the US Naval Observatory Astronomical Applications Department.

My report of the actual weather conditions as well as expert opinions and appropriate conclusions within a reasonable degree of Meteorological and scientific certainty follows. They are based on the aforementioned weather data, materials provided by the Attorney's office, and 19 years of professional experience in forecasting and preparing weather reconstruction reports for law firms and the insurance industry.

## **REVIEW OF PROVIDED WRITTEN DOCUMENTS**

### **Summary of the Deposition of Plaintiff**

Plaintiff testified that back in December 10, 2014, she arrived at the subject property around 1 PM. The weather featured drizzle with a little bit of ice on the ground. Plaintiff came into the facility parking lot from Broadway Street. At approximately 4 PM, she exited the building. No precipitation was falling. Instead of making a left to go to Broadway Street, Plaintiff made a right and started walking up the driveway towards Second Avenue. She said the driveway was slippery with wet ice. Eventually, she slipped and fell on the driveway near the gates.

### **Summary of the Deposition of Defendant**

Defendant testified that he is the head of Maintenance for the subject property. Defendant works from 7 AM to 3 PM Sunday through Friday with two other Maintenance people. After they leave at 3 PM, there is only one Maintenance person who is in charge from 3 PM – 11 PM and then one from 11 PM – 7 AM. If there is any snow or ice, Maintenance takes care of it. The main entrance to the facility is on Broadway, and there is a long driveway that goes all the way from Broadway to Second Avenue. They have one truck and one plow with a salt bucket attached to the back of the truck. The plow truck salts the parking lot and driveway with rock salt. Normally, if there was going to be any type of snow or ice event, Maintenance would go out and pre-salt an hour before the event starts. If the snow builds up, they go back out and salt or shovel. None of the snow or ice removal activities are logged. Mr. Mohammed specifically recalls working on December 10, 2014, but he does not remember what the weather was like or what snow removal activities he did. Mr. Mohammed testified that the main driveway that goes from Broadway to Second Avenue is on an incline and it gets slippery. It's the first area they salt.

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## **WEATHER OVERVIEW**

### **TEMPERATURE TRENDS**

Daily maximum temperatures from December 4-8, 2014 were unseasonably cold and never made it out of the 20s. The temperature finally rose above freezing on December 9<sup>th</sup> and 10<sup>th</sup>, but only climbed into the mid-30s. Meanwhile, daily nighttime minimum temperatures throughout the seven day period were very cold and all well below freezing. Lows ranged from the low teens to mid-20s. Please refer to Table 1 on the following page for daily details.

### **PRECIPITATION / WEATHER**

The weather pattern from December 4-7, 2014 was tranquil with a mix of sunshine and clouds. Except for a snow shower on December 6<sup>th</sup>, no other precipitation occurred. A weak storm system brought 0.5 to less than an inch of light snow to area late in the day on December 8<sup>th</sup>. Partly sunny and dry weather returned for the 9<sup>th</sup>. On the day of the incident, December 10, 2014, a wintry mix of light snow, sleet, freezing rain, and plain rain fell.

### **RESIDUAL SNOW & ICE PRESENT ON GROUND SURFACES**

From December 4-7, 2014, exposed, undisturbed and untreated ground surfaces were clear of any naturally precipitated snow and/or ice accumulation. The snow cover briefly increased to less than an inch by the end of the calendar day of December 8<sup>th</sup>, but then dissipated to zero on December 9<sup>th</sup>. A wintry mix of light snow, sleet and freezing rain fell on December 10<sup>th</sup> and resulted in 0.2 – 0.3 inches of snow and sleet, and a trace, less than 0.10 inches, of ice accretion from the freezing rain.

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## DETAILED WEATHER ANALYSIS

### WEATHER SUMMARY

**December 8, 2014** featured early morning light rain. Periods of light rain ended between 5:30 and 6 AM. Since 12 AM, 0.01 inches of rain fell. A 12 AM temperature in the mid-40s rose into the mid-50s by the time the rain tapered off. For the remainder of the morning, clouds gave way to a partly sunny sky. The temperature was steady into the early afternoon and held in the lower to mid-50s. At night, clouds returned and the sky became mostly cloudy. The temperature gradually cooled into the mid-30s towards Midnight. Ground surfaces were clear of any naturally precipitated snow and/or ice accumulation from all prior storms.

The National Weather Service did not issue any watches, warnings and/or advisories.

**December 9, 2014** was mostly sunny and colder. Clouds from the previous night quickly gave way to a clear pre-dawn sky. The temperature cooled into the upper 20s. At 7 AM, exposed, undisturbed and untreated ground surfaces continued to be clear of any residual snow and/or ice accumulation from all prior storms. During the daylight hours, the weather was mostly sunny and chilly with an afternoon high in the low 40s. After sunset, 4:28 PM, the sky became partly cloudy and the temperature cooled to a late evening low in the mid-20s.

The National Weather Service did not issue any watches, warnings and/or advisories.

**December 10, 2014 (Day of Incident)** became cloudy with freezing rain followed by plain rain. A partly cloudy pre-dawn sky became overcast shortly after sunrise, 7:08 AM. The temperature was cold and bottomed out in the mid-20s. Ground surfaces continued to remain free of any naturally precipitated snow and/or ice accumulation from past storms. Clouds gave way to light freezing rain between 8:45 and 9 AM with a temperature near 30 degrees. The National Weather Service issued a Freezing Rain advisory at 8:22 AM, and the advisory was initially valid until 11 AM. At 10:59 AM, the advisory was extended until 1 PM. For the remainder of the morning and into the mid-day hours, the temperature slowly climbed into the mid-30s. The freezing rain gradually transitioned over to plain rain.

Around the time of the slip-and-fall incident, 11:15 AM, intermittent light rain with pockets of freezing rain was falling. The temperature ranged from 34 – 35 degrees. Winds were light and variable. A Freezing Rain Advisory was in effect until 1 PM. Since the freezing rain began earlier in the morning, a trace, less than 0.10 inches, of ice accretion accumulated.

After the slip-and-fall, the National Weather Service cancelled the ongoing Freezing Rain Advisory at 12:10 PM. Periods of light rain fell as the temperature slowly climbed to a late evening high of 40.

## WEATHER TABLES

Table 1 below contains the daily weather conditions for 1 Main Street in Greentown, NJ and the surrounding environs from December 4 - 10, 2014. **Temperatures** are in degrees Fahrenheit. **Weather** is a general description of the predominant weather conditions during the day. **Precipitation** (Precip) is the amount of rain, melted snow, and/or ice that occurred during the day and is reported in inches. A trace of precipitation is an amount less than 0.01 inches. **Ice Accretion (Ice Acc)** is the amount of freezing rain accumulation, in inches, on exposed, undisturbed, and untreated ground surfaces during the calendar day. A trace of freezing rain is less than 0.10 inches. **Snow/Sleet** is the 24-hour snow/sleet accumulation reported in inches. A trace of snow/sleet is less than 0.1 inches. **Ground Conditions** refer to the average amount of snow and/or ice cover, in inches, on exposed, undisturbed, and untreated ground surfaces. The measurement is normally taken at 7 AM, and any amount less than 0.5 inches is considered a Trace.

**Table 1. Daily Weather Table**

Day	Temperature		Weather	Precip	Ice Acc	Snow   Sleet	Ground Condt
	High	Low					
12/4	34	28	Mainly snow fell, some sleet, freezing drizzle and rain mixed in at times	1.00 – 1.25	Trace	11.0	4.0
12/5	37	27	AM snow, then mostly cloudy	0.50 – 0.60	0.0	5.0 – 6.0	20.0 – 21.0
12/6	35	26	Mostly cloudy with a few periods of light snow	Trace	0.0	Trace	19.0 – 20.0
12/7	37	25	Mostly cloudy with light snow	0.01	0.0	0.1	18.0 – 19.0
12/8	40	26	Partly sunny	0.00	0.0	0.0	16.0 – 17.0
12/9	32	21	Increasing clouds with light snow late at night	Trace	0.0	Trace	14.0 – 15.0
12/10	30	25	Light snow, sleet and freezing rain	0.10 – 0.15	Trace	0.5 - 1.0	15.0

Table 2 below provides an estimate of the hourly weather conditions for 1 Main Street in Greentown, NJ on December 10, 2014. **Temperatures** (Temp) are in degrees Fahrenheit. **Weather** is the present weather observed at the time shown, unless otherwise indicated. **Hourly Precip** is the amount of precipitation (rain, melted snow and/or ice), in inches, that fell during the previous hour. A trace of precipitation is less than 0.01 inches. **Hourly Ice Accretion** is the amount of freezing rain accumulation, in inches, on exposed, undisturbed and untreated ground surfaces during the prior hour. A trace of freezing rain is less than 0.10 inches. **Ground Conditions** refer to the average amount of snow and/or sleet cover, in inches, on exposed, undisturbed, and untreated ground surfaces at the time shown. **Please note: ice accretion from freezing rain is not accounted for in Ground Conditions. Ice Accretion is measured separately from snow and sleet accumulation.**

**Table 2. Hourly Weather Table**

<b>Time</b>	<b>Temp</b>	<b>Weather</b>	<b>Hourly Precip</b>	<b>Ground Conditions</b>
<b>1 AM</b>	27 - 28	Very light snow	Trace	14.0 inches
<b>2 AM</b>	27	Light snow	Trace – 0.01	14.0 – 15.0 inches
<b>3 AM</b>	25 – 26	Light snow	0.02 - 0.03	15.0 inches
<b>4 AM</b>	Mid-20s	Light snow	Trace	15.0 inches
<b>5 AM</b>	25 - 26	Spotty light freezing drizzle	Trace	15.0 inches
<b>6 AM</b>	26	Light freezing drizzle	Trace	15.0 inches
<b>7 AM</b>	27	Light snow, sleet and freezing rain	0.01 – 0.02	15.0 inches
<b>8 AM</b>	27	Light freezing drizzle	0.01	15.0 inches
<b>9 AM</b>	28	Light freezing drizzle	Trace	15.0 inches
<b>10 AM</b>	29	Light freezing drizzle	Trace	15.0 inches
<b>11 AM</b>	29	Light freezing drizzle	Trace	15.0 inches
<b>12 PM</b>	30	Light freezing rain	0.01	15.0 inches
<b>1 PM</b>	30	Light freezing rain and sleet	0.02 – 0.04	15.0 inches

## REVIEW OF PHOTOGRAPHS

Figure 1 below and on the following page shows the subject property. The image is facing generally South. Notice how the driveway area in late January will be exposed to sunlight first thing in the morning as the Sun rises in the east-southeast portion of the sky, but will become shaded for a period from late morning into the late afternoon hours. A shaded area will be colder than an area exposed to direct sunlight and will see residual snow or ice accumulation melt at a slower rate.



**Figure 1.** A Google Earth Street view image of the subject property. The photo was taken during September 2013 (Source: Google Earth).

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## SUMMARY AND CONCLUSION

I have prepared the following summary including important conclusions and opinions. These conclusions and opinions are provided with a reasonable degree of meteorological and scientific certainty, are supported by the data and documents examined, and are appropriate for 1 Main Street in Greentown, NJ from December 4 - 10, 2014.

1. National Weather Service zone forecasts issued for Any County, NJ on December 5 and 6, 2014 did not mention the threat of freezing rain and/or ice accumulation for the calendar day of Friday, December 4, 2014.
2. The first time the National Weather Service mentioned the possibility of freezing rain for Friday, December 10 was at 3:03 AM on December 10. The National Weather Service said there was a, "Slight chance of light rain and freezing rain this morning." In addition, there was no mention of any ice accretion from the freezing rain.
3. The first Freezing Rain Advisory by the National Weather Service was not issued until 8:22 AM on December 10.
4. Prior to the onset of the freezing rain on December 4, 2014, exposed, undisturbed and untreated ground surfaces were clear of any naturally precipitated snow and/or ice accumulation from all past storms.
5. Light freezing rain began in Greentown, NJ between 8:45 and 9 AM on December 10 with a temperature near 30 degrees. For the remainder of the morning and into the mid-day hours, the temperature slowly climbed into the mid-30s. The freezing rain gradually transitioned over to plain rain towards Noon.
6. Around the time of the slip-and-fall incident, 11:15 AM, intermittent light rain with pockets of freezing rain was falling. The temperature ranged from 34 – 35 degrees. Winds were light and variable. A Freezing Rain Advisory was in effect until 1 PM. Since the freezing rain began earlier in the morning, a trace, less than 0.10 inches, of ice accretion accumulated.
7. After the slip-and-fall, the National Weather Service cancelled the ongoing Freezing Rain Advisory at 12:10 PM.
8. **Based on the weather data examined and documents reviewed, it is my Meteorological expert opinion** that the ice on the stairs Plaintiff slipped and fell on, if any, was from the freezing rain. However, the National Weather Service did not give any advanced notice and/or warning of the freezing rain event. The first time freezing rain was mentioned in the forecast was on the day of the incident, and they only gave a slight chance of freezing rain. Also, the first Freezing Rain Advisory was not issued until 8:22 AM on December 10. The freezing rain began in Greentown, NJ between 8:45 and 9 AM, which only gave the Defendant less than an hour's worth of notice.

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## WEATHER RECORDS

### SURFACE WEATHER OBSERVATIONS

The National Oceanic and Atmospheric Administration (NOAA) Surface Weather Observations are usually taken at airports with a frequency of at least one observation per hour. The principal code used to collect meteorological data by various reporting stations worldwide is known as METAR. The METAR observations generally contain some or all of the following information: present weather, hourly temperature, cloud height and coverage, visibility, air pressure, wind direction and speed, precipitation amounts, and the depth of snow and ice on the ground.

In addition to the NOAA Surface Weather Observations, there is also a network of non-NOAA observations available from both publicly and privately owned instrumentation. While these observations are not controlled by NOAA, they are integrated by NOAA into their Meteorological Assimilation Data Ingest System (MADIS) (<http://madis.noaa.gov/>). These non-NOAA observations can often be utilized as a supplement to the more reliable and comprehensive METAR data to aid in meteorological analysis.

In order to estimate the weather conditions for 1 Main Street in Greentown, NJ and the surrounding environs (elevation approximately 999 feet) from December 4 - 10, 2014, the following stations were examined. The approximate distance from the incident site along with the elevation of each station is provided. See Figure 2 on page 21.

- Somerville Somerset Airport, KSMQ; Somerville, NJ (METAR)  
Elevation 274 feet – located 12.7 miles West-Northwest
- Newark International Airport, KEWR; Newark, NJ (METAR)  
Elevation 7 feet – located 18.7 miles Northeast
- Trenton Mercer County Airport, KTTN; Trenton, NJ (METAR)  
Elevation 190 feet – located 25.9 miles Southwest
- New Brunswick, NJ (NJ Weather & Climate Network)  
Elevation 85 feet – located 4.7 miles southwest

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## RECORDS OF CLIMATOLOGICAL OBSERVATIONS

The NOAA Cooperative Observer Program is a nationwide weather and climate monitoring network consisting of volunteer citizens and institutions observing and reporting weather information on a 24-hour basis. Daily observations include some or all of the following information: maximum and minimum temperature, temperature at observation time, precipitation amounts (rain, melted snow and/or ice), evaporation rates, soil temperature, river stage, snowfall, and snow depth.

In addition to these NOAA climatological observations, there is also a network of non-NOAA daily weather observations available nationwide from COCORAHS.org and other non-NOAA organizations. Most of these observations are also integrated by NOAA into their Meteorological Assimilation Data Ingest System MADIS and can be utilized as a supplement to the more reliable records of climatological observations.

In order to estimate the weather conditions for 1 Main Street in Greentown, NJ and the surrounding environs (elevation approximately 999 feet) from December 4 - 10, 2014, the following stations were examined. The approximate distance from the incident site along with the elevation of each station is provided. See Figure 2 on page 21.

- Bound Brook 2 miles west, NJ  
Elevation 30 feet – located 6.8 miles west West-Northwest
- Plainfield, NJ  
Elevation 90 feet – located 5.4 miles Northeast
- New Brunswick 3 miles Southeast  
Elevation 86 feet – located 4.8 miles South-Southeast
- Franklin Twp 3.8 ENE, NJ, NJ-SM-12 (COCORAHs)  
Elevation 84 feet – located 2.8 miles South-Southwest
- Franklin Twp 2.1 ENE, NJ, NJ-SM-3 (COCORAHs)  
Elevation 105 feet – located 4.2 miles South-Southwest
- Hillsborough Twp 4.7 ESE, NJ, NJ-SM-1 (COCORAHs)  
Elevation 98 feet – located 8.2 miles South-Southwest

## **PUBLIC INFORMATION STATEMENTS**

The National Weather Service Forecast Office in Upton, NY may issue Public Information Statements during and after a weather event that has been affecting their region. Public information statements come from highway departments, hourly weather observation stations, cooperative observers, law enforcement officials, the general public, skywarn spotters, and the media. Some types of weather phenomenon reported are: snow and ice accumulations, peak wind speeds and rainfall amounts. In addition, each individual forecast office may use Public Information Statements for storm damage surveys, climate records or other miscellaneous weather information.

## **DOPPLER RADAR IMAGES**

Doppler RADAR is used to detect where precipitation (rain, snow, sleet, hail, etc.) is falling in the atmosphere. There are approximately 155 operational Doppler RADAR sites across the United States. Each RADAR site offers numerous products. For this report, I examined Short Range Base Reflectivity images. Base Reflectivity images depict the intensity and location of precipitation from approximately 143 miles outward from the RADAR site. The resolution of Short Range Base Reflectivity images is approximately 0.62 miles by 1 degree azimuth. Depending on the mode of operation used, images are available every 4 to 10 minutes. All images were derived from the RADAR site KOKX, which is located in Upton, NY and were accessed from the National Centers for Environmental Information (NCEI).

## **NATIONAL WEATHER SERVICE PRODUCTS**

The National Weather Service Forecast Office in Upton, NY responsible for issuing daily zone forecasts, most watches, warnings, advisories, and special statements for the Greentown, NJ area. Daily zone forecasts are issued several times a day, sometimes more if updates are needed. These forecasts are immediately made available to the Public on the Internet, local radio and/or television stations. The watches, warnings, advisories, and special statements are issued for the Greentown, NJ area when impending weather meets certain criteria set by the National Weather Service.

## **STORM DATA**

The Publication Storm Data and Unusual Weather Phenomena is a monthly issue containing a chronological listing, by states, of storm occurrences and unusual weather phenomena. Reports contain information on storm paths, deaths, injuries, and property damage. December 2014, Volume 54, Number 12, pages 138 - 147 were referenced for this report.

## STATION MAP



**Figure 2** - A general map of the accident location (red exclamation point) and the weather observation stations (in blue, gold, and pink) used to reconstruct the weather for 1 Main Street in Greentown, NJ (elevation approximately 999 feet) from December 4 - 10, 2014 (Source: Google Earth).

## CERTIFICATION

I certify that the information in this report is true and accurate and that any estimations, interpolations or assumptions that have been made were done so with expert accuracy by a professional meteorologist. Additionally, I reserve the right to amend these conclusions made herein upon further discovery of additional meteorological data.

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