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# FORENSIC WEATHER INVESTIGATION OF THE WEATHER CONDITIONS, GROUND CONDITIONS, AND ASTRONOMICAL CONDITIONS FOR THE PERIOD MARCH 7-9, 2018 AT 5498 NORTHWEST MAIN STREET IN MELROSE, MASSACHUSETTS

January 5, 2021

CASE NAME: DATE AND TIME OF INCIDENT: PREPARED FOR: COMPANY:

"Estate of Veronica Remmington" March 9, 2018 at 7:15 a.m. EST Mr. Paul Peterson, Esq. Giancarlo, Feldstein, and Peterson, LLP

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### ASSIGNMENT:

This case was assigned to me by Giancarlo, Feldstein, and Peterson, LLP. I was asked to perform an in-depth weather analysis and forensic weather investigation at 5498 Northwest Main Street in Melrose, Massachusetts 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.

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 gust are reported if the greatest 25 knots (29 MPH).

Through the National Weather Service (NWS) Cooperative Observer Program (**COOP**), more than 10,000 volunteers take daily weather observations at National Parks, seashores, mountaintops, and farms as well as in urban and suburban areas. COOP data usually consists of daily maximum and minimum temperatures, snowfall, and 24-hour precipitation totals ending at a specific time, such as 7:00 a.m. in many locations.

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 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, Cooperative Observer Program (COOP) stations, and Community Collaborative Rain, Hail and Snow Network (CoCoRaHS) stations we used in this study and their proximity to the incident location.



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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. National Weather Service Hourly Surface Weather Observations/Local Climatological Data (LCD) from the General Edward Lawrence Logan International Airport in Boston, Massachusetts (approximately xxx miles xxxxx of the incident location).
- b. National Weather Service Hourly Surface Weather Observations/Local Climatological Data (LCD) from the Laurence G. Hanscom Field Airport in Bedford, Massachusetts (approximately xxx miles xxxxx of the incident location).
- c. National Weather Service Hourly Surface Weather Observations/Local
  Climatological Data (LCD) from the Beverly Regional Airport in Beverly,
  Massachusetts (approximately xxx miles xxxxx of the incident location).
- d. 5-Minute Surface Observations from the General Edward Lawrence Logan International Airport in Boston, Massachusetts.
- e. 5-Minute Surface Observations from the Laurence G. Hanscom Field Airport in Bedford, Massachusetts.
- f. 5-Minute Surface Observations from the Beverly Regional Airport in Beverly, Massachusetts.
- g. Cooperative Observer Program (COOP) weather station reports from Reading,
  Massachusetts (approximately xxx miles xxxxx of the incident location).

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- h. Cooperative Observer Program (COOP) weather station reports from Middleton, Massachusetts (approximately xxx miles xxxxx of the incident location).
- Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS) reports from Melrose 0.8 SW, Massachusetts (approximately xxx miles xxxx of the incident location).
- j. Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS) reports from Chelsea 0.8 N, Massachusetts (approximately xxx miles xxxxx of the incident location).
- k. Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS)
  reports from Winchester 0.7 SE, Massachusetts (approximately xxx miles
  xxxxx of the incident location).
- Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS) reports from Medford 1.2 W, Massachusetts (approximately xxx miles xxxxx of the incident location).
- m. Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS) reports from Somerville 0.7 SSE, Massachusetts (approximately xxx miles xxxxx of the incident location).
- n. Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS) reports from Cambridge 0.9 NNW, Massachusetts (approximately xxx miles xxxxx of the incident location).

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- o. Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS) reports from Winthrop 0.2 N, Massachusetts (approximately xxx miles xxxxx of the incident location).
- p. Online Community Collaborative Rain, Hail and Snow Network (CoCoRaHS) reports for Middlesex County in Massachusetts, Essex County in Massachusetts, Suffolk County in Massachusetts, and Norfolk County in Massachusetts.
- q. The publication entitled "Storm Data" for Massachusetts in March 2018.
- r. Super-resolution Reflectivity Doppler Radar images from the Boston, Massachusetts radar site that were zoomed in over the incident location.
- s. Various weather bulletins, advisories and statements that were issued by the National Weather Service in Taunton, Massachusetts.
- t. Astronomical data from Melrose, Massachusetts from March 7, 2018, March 8, 2018, and March 9, 2018.
- u. Zenith & Azimuth of the Sun data from Melrose, Massachusetts on March 9, 2018.
- v. United States Surface Analysis Images from the Weather Prediction Center (WPC).
- w. Storm Events Database from the National Centers for Environmental Information (NCEI) for Middlesex County in Massachusetts.

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.

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

• Investigative Report dated July 2<sup>nd</sup>, 2018 with attached documents

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:

- Reading, Massachusetts (approximately xxx miles xxxxx of the incident location).
- General Edward Lawrence Logan International Airport in Boston, Massachusetts (approximately xxx miles xxxxx of the incident location).
- Laurence G. Hanscom Field Airport in Bedford, Massachusetts (approximately xxx miles xxxxx of the incident location).
- Beverly Regional Airport in Beverly, Massachusetts (approximately xxx miles xxxxx 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.

- Melrose 0.8 SW, Massachusetts (approximately xxx miles xxxxx of the incident location).
- Chelsea 0.8 N, Massachusetts (approximately xxx miles xxxxx of the incident location).
- Winchester 0.7 SE, Massachusetts (approximately xxx miles xxxxx of the incident location).
- Reading, Massachusetts (approximately xxx miles xxxxx of the incident location).
- General Edward Lawrence Logan International Airport in Boston, Massachusetts (approximately xxx miles xxxxx of the incident location).
- Laurence G. Hanscom Field Airport in Bedford, Massachusetts (approximately xxx miles xxxxx of the incident location).
- Beverly Regional Airport in Beverly, Massachusetts (approximately xxx miles xxxxx of the incident location).

On March 9<sup>th</sup>, 2018 (the day of the incident), 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 the General Edward Lawrence Logan International Airport in Boston, Massachusetts (approximately xxx miles xxxxx of the incident location).
- National Weather Service Hourly Surface Weather Observations/Local Climatological Data (LCD) from the Laurence G. Hanscom Field Airport in Bedford, Massachusetts (approximately xxx miles xxxxx of the incident location).
- National Weather Service Hourly Surface Weather Observations/Local Climatological Data (LCD) from the Beverly Regional Airport in Beverly, Massachusetts (approximately xxx miles xxxxx 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 the General Edward Lawrence Logan International Airport in Boston, Massachusetts, the Laurence G. Hanscom Field Airport in Bedford, Massachusetts, and the Beverly Regional Airport in Beverly, Massachusetts, 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. A "Trace" in the Snow/Ice On Ground column indicates a snow and ice depth of less than 0.5".

### **MARCH 2018**

Date	Maximum Air	Minimum Air	Liquid Equivalent	<b>Snow/Sleet</b>	Snow/Ice
	<b>Temperature</b>	<b>Temperature</b>	<b>Precipitation/Rain</b>		On Ground
3/7	38	33	0.91"	3.1"	Trace
3/8	37	30	1.11"	4.9"	7.5"
3/9	37	28	Trace	Trace	5.5"

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**



# MARCH 9, 2018 (DAY OF THE INCIDENT)

The following is a surface analysis map of the contiguous United States at 7:00 a.m. EST on March 9<sup>th</sup>, 2018 that was prepared by the Weather Prediction Center (WPC), a division of the National Weather Service. This surface map indicated that an area of low pressure was located near the border of Maine and Canada. An occluded front was located from this area of low pressure toward the Canadian Maritimes. A surface trough was located from this area of low pressure into the Great Lakes region. Another surface trough was located from Maryland through northern Georgia.



Civil twilight at the accident location began at approximately 5:40 a.m. on March 9<sup>th</sup>, 2018 (day of the accident). According to the National Weather Service, Civil Twilight "begins in the morning, or ends in the evening, when the geometric center of the sun is 6 degrees below the horizon. Therefore, morning civil twilight begins when the geometric center of the sun is 6 degrees below the horizon and ends at sunrise. Evening civil twilight begins at sunset and ends when the geometric center of the sun is 6 degrees below the horizon. Under these conditions absent fog or other restrictions, the brightest stars and planets can be seen, the horizon and terrestrial objects can be discerned, and in many cases, artificial lighting is not needed.<sup>1</sup>

Sunrise at the accident location occurred at approximately 6:07 a.m. on March 9th, 2018.

The following table is a summary of the altitude and azimuth of the sun between 7:10-7:20 a.m. on March 9<sup>th</sup>, 2018 at the accident location. Please note that the altitude is given in Degrees Above the Horizon, and the Azimuth is given in Degrees East of Due North. The time is given in Eastern Standard Time (EST).

In order to calculate the altitude of the sun, we utilized the equation: zenith angle =  $90^{\circ}$  - elevation. (Where elevation=altitude, the terms are synonymous). The zenith angle is the angle between the sun and the vertical.<sup>2</sup>



The following diagram is a visual aid which also depicts that the azimuth of the sun is given in Degrees East of Due North, and the altitude of the sun is given in Degrees Above the Horizon.<sup>3</sup>

<sup>&</sup>lt;sup>1</sup> <u>https://www.weather.gov/fsd/twilight</u>

<sup>&</sup>lt;sup>2</sup> <u>https://www.pveducation.org/pvcdrom/properties-of-sunlight/elevation-</u>

angle#:~:text=The%20zenith%20angle%20is%20the,angle%20%3D%2090%C2%B0%20%2D%20elevation <sup>3</sup> http://homework.uoregon.edu/pub/emj/121/lectures/skycoords.html



### MARCH 9, 2018

Time	Altitude	Azimuth
(EST)	(° Above the Horizon)	(° East of Due North)
7:10 a.m.	9.5	105.4
7:11 a.m.	9.7	105.6
7:12 a.m.	9.8	105.7
7:13 a.m.	10.0	105.9
7:14 a.m.	10.1	106.1
7:15 a.m.	10.3	106.3
7:16 a.m.	10.4	106.5
7:17 a.m.	10.6	106.6
7:18 a.m.	10.7	106.8
7:19 a.m.	10.9	107.0
7:20 a.m.	11.0	107.2

At 7:15 a.m. on March 9<sup>th</sup>, 2018 (time and date of the incident), the sky was partly to mostly sunny, and the air temperature was 29 degrees Fahrenheit. The sun was located at an elevation of approximately 10.3 degrees above the horizon, and in the direction of 106.3 degrees east of due north (which is in the east to east-southeast sky).

At 8:26 a.m. on March 9<sup>th</sup>, 2018, the National Weather Service in Taunton, Massachusetts issued a "Special Weather Statement," which stated, "At 825 AM EST, snow squalls were observed on radar passing Nantucket and crossing near Woonsocket Rhode Island. Additional snow squalls will be possible this afternoon and evening. Visibility may lower to two miles in any snow showers that form, and could suddenly drop to less than one mile in squalls. This would cause hazardous driving conditions as roads become slippery. Drivers need to remain alert. These conditions often lead to accidents, especially on highways, since road conditions can change rapidly. Be alert to changing visibility when driving. Avoid braking suddenly. Allow extra travel time."

On March 9<sup>th</sup>, 2018, Doppler radar images that were zoomed in over the incident location, and nearby surface observations indicated that periods of light snow or snow showers fell from

approximately 7:30 a.m. through 12:24 p.m. After a lull in the precipitation, periods of light snow or snow showers fell again from approximately 1:08 p.m. through 2:23 p.m. After another lull in the precipitation, periods of light snow or snow showers fell from approximately 3:49 p.m. through 4:19 p.m. Periods of light snow or snow showers fell again from approximately 6:32 p.m. through 8:18 p.m.

A "Trace" of snow (defined as less than 0.1" and too light to measure) fell on March 9<sup>th</sup>, 2018 (day of the incident).

At 12:38 p.m. on March 9<sup>th</sup>, 2018, the National Weather Service in Taunton, Massachusetts issued a "Special Weather Statement," which stated, "At 1230 PM EST, rain and snow showers were observed on radar crossing Cape Cod as well as the Berkshires. The snow showers in the Berkshires will spread east across Southern New England during the afternoon. The Connecticut Valley will be most at risk 3 PM to 5 PM. Worcester would be most at risk 4 PM to 6 PM. Boston and Providence would be most at risk 5 PM to 7 PM. Visibility may lower to two miles in any snow showers that move through, and could suddenly drop to less than one mile in any heavier squalls. Any snow squalls could also produce wind gusts to 25 mph. These weather factors would cause hazardous driving conditions as roads become slippery. Drivers need to remain alert. These conditions often lead to accidents, especially on highways, since road conditions can change rapidly. Be alert to changing visibility when driving. Avoid braking suddenly. Allow extra travel time."

At 4:54 p.m. on March 9<sup>th</sup>, 2018, the National Weather Service in Taunton, Massachusetts issued a "Special Weather Statement," which stated, "Scattered snow showers and snow squalls will continue to move across Massachusetts, Rhode Island and northern Connecticut through sunset, then diminishing later this evening. Most of the snow showers will be light however a few heavier snow squalls are possible. These squalls will be very localized and not impact every city or town. However a few of these snow squalls will briefly lower visibility to less than a mile along with a quick snow accumulation of half inch or so, sufficient to result in slippery travel especially in the higher terrain. Across southern Rhode Island and southeast Massachusetts temperatures may initially be warm enough for a mix of rain and snow showers. However the heavier showers will likely transition from rain to snow. Nevertheless drive with caution this evening."

### **TEMPERATURE ANALYSIS FOR MARCH 9, 2018**

On March 9<sup>th</sup>, 2018, the maximum air temperature was 37 degrees Fahrenheit and the minimum air temperature was 28 degrees Fahrenheit.

The air temperature was below freezing from Midnight through approximately 9:06 a.m. The air temperature rose above freezing from approximately 9:06 a.m. through Midnight.

### **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<sup>4</sup>. 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

# CONCLUSIONS

In conclusion, it is my opinion that:

- No precipitation fell prior to the time of the accident on March 9<sup>th</sup>, 2018 (day of the accident).
- Civil twilight at the accident location began at approximately 5:40 a.m. on March 9<sup>th</sup>, 2018.
- Sunrise at the accident location occurred at approximately 6:07 a.m. on March 9<sup>th</sup>, 2018.
- At 7:15 a.m. on March 9<sup>th</sup>, 2018 (approximate time and date of the incident), the sky was partly to mostly sunny, and the air temperature was 29 degrees Fahrenheit. The sun was located at an elevation of approximately 10.3 degrees above the horizon, and in the direction of 106.3 degrees east of due north (which is in the east to east-southeast sky).
- Following my review of the accident report, I found that Ms. Remmington was driving her vehicle westbound on Northwest Main Street when the accident occurred. Since the sun was located in the east-southeastern sky when the accident occurred, the sun was behind her and not in her eyes. In my opinion, sun glare was not a contributor to this accident.
- Since the snow showers did not begin until 7:30 a.m. on the day of the accident (15 minutes after the accident occurred), snowy or slippery road conditions were not a factor in this accident.
- While the State Police report indicated that it was snowing at the time of the accident, the weather records, Doppler radar images and other witness testimony indicates that that was not an accurate depiction of the weather conditions when the accident occurred. However, the snow was falling when the trooper arrived on scene after the accident occurred.

<sup>&</sup>lt;sup>4</sup> <u>https://cornell.app.box.com/v/clrp-ws-sic</u>

### **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.

