

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Application for limited proceeding for
recovery of incremental storm restoration
costs related to Hurricanes Irma and Nate by
Duke Energy Florida, LLC

Docket No. 20170272-EI

Dated: August 17, 2018

**DUKE ENERGY FLORIDA, LLC'S RESPONSE TO STAFF'S
SECOND REQUEST FOR PRODUCTION OF DOCUMENTS (NO. 2)**

Duke Energy Florida, LLC ("DEF"), responds to the Staff of the Florida Public Service Commission's ("Staff") Second Request for Production of Documents (No. 2) as follows:

PRODUCTION OF DOCUMENTS

2. Please refer to Exhibit JC-1, Forensic Analysis of Storm Damage to DEF's Distribution System as a Result of Hurricane Irma ("Accenture Report"). Did Accenture Consulting perform a forensic analysis of storm damage to DEF's transmission system as a result of Hurricane Irma?
- a. If so, please provide a copy of that report.
 - b. If not, did DEF or another company perform a forensic analysis of DEF's transmission system following Hurricane Irma? If so, please provide a copy of that report.

Response:

- a. No, Accenture did not perform a forensic analysis of the damage to DEF Transmission System.
- b. Yes, see the attached reports bearing Bates numbers 20170272-DEF-STAFF-POD 2-2-0001 through 20170272-DEF-STAFF-POD 2-2-000170.

SUBMITTED this 17th day of August, 2018.

/s/ Matthew R. Bernier

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CERTIFICATE OF SERVICE

I HEREBY CERTIFY that a true and correct copy of the foregoing has been furnished via electronic mail to the following this 17th day of August, 2018.

/s/ Matthew R. Bernier

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Forensic Analysis of Avon Park – Desoto City 69kV Transmission Line Structures
AD-12 to AD-22

Hurricane Irma

November 30, 2017



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1.0 **Executive Summary**

Structures: Avon Park to Desoto City 69kV Transmission Line Structures AD-12 to AD-22

Location – Northwest Highlands County, FL (27°34'19.84"N; 81°29'38.08"W to

27°33'54.39"N; 81°29'38.17"W)

Date of Failure – 09-10-17

Time of Failure – 21:10 EST

Site Visit Date – 09-16-17

Structures AD-11 to AD-22 are tangent and running angle wood poles ranging from 70' – 80' in length and from class 1 to H1. The poles also contain a distribution underbuilt circuit with a neutral wire. A power outage on the Avon Park to Desoto City line occurred at 9:10 pm EST, on Sunday, September 10th, 2017. The power outage most likely coincides with the failure of poles AD-12 to AD-22. At the time of the collapse, 69 mph wind velocities were reported in the vicinity by the National Oceanic and Atmospheric Administration (NOAA). The collapse occurred approximately 1.5 hours in advance of the hurricane being at a location nearest to the poles. Hurricane Irma's eye passed approximately 25 miles west of poles AD-12 to AD-22 on Sunday, September 11th, 2017 at 10:30 pm EST. 99 mph maximum wind velocities were reported at that time.

Damage to the failed AD-12 to AD-22 structures was caused by Hurricane Irma's high wind velocities, 69 mph at the time of the outage. The hurricane also affected structures AD-8 and AD-24 and structures AFC-6 to AFC-7 where the 69kV Avon Park – Desoto City underbuilds on the 230kV Avon Park - Fisheating Creek transmission line.

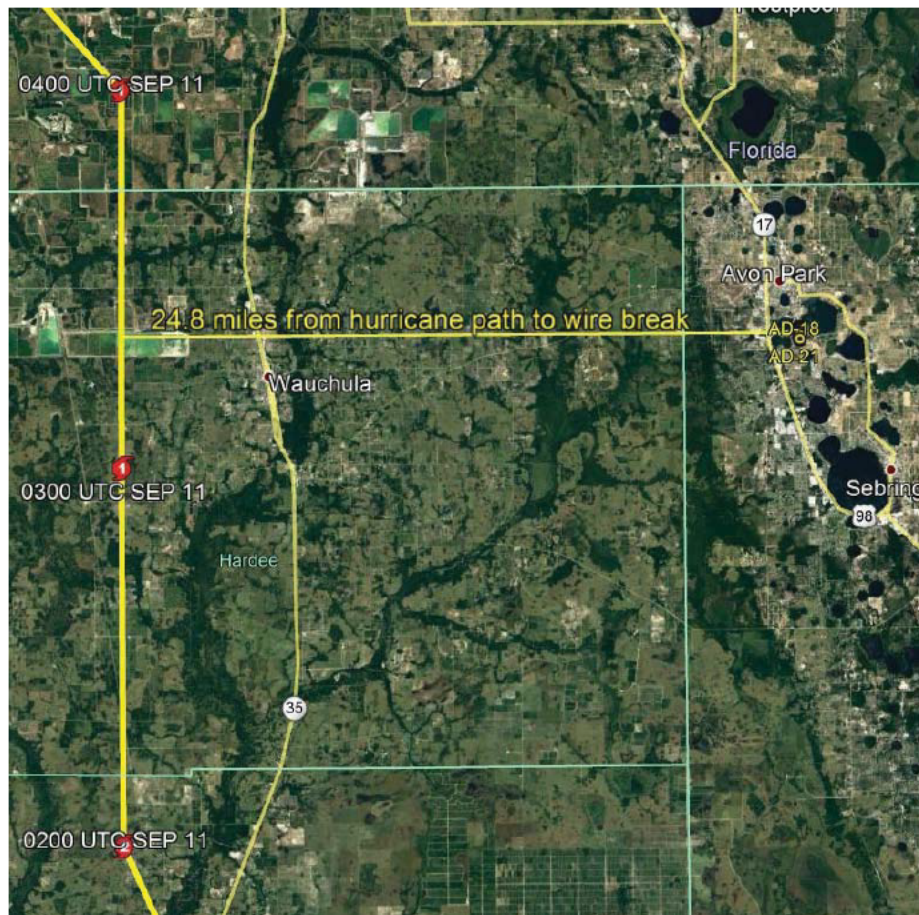
The cause of the outage appeared to be wood pole AD-18 collapse and conductor failure between wood poles AD-17 and AD-18. The conductor failure caused a dynamic longitudinal load resulting in a cascading failure of structures AD-16 to AD-12 to the north and AD-19 to AD-22 to the south. Pole AD-17 did not collapse; however, it was leaning significantly and needed a replacement.

In addition to the collapsed poles, structure and wire hardware damage extended up to steel poles AFC-6 to the north and AD-23 to the south. AD-23 dropped a distribution wire due to post insulator failure. Post insulator damage also occurred at structures AD-11 to AD-9, AFC-7 and AFC-6. Structures AD-11 and AD-10 dropped transmission wires. Wood pole AD-8 has a large split above the overhead ground wire hardware and is need of maintenance.

Steel pole AD-23 most likely prevented further cascading failures. AD-23's 69kV post insulator hardware was bent in a longitudinal direction because of adjacent structures collapsing. The steel pole was leaning slightly west, towards S. Memorial Drive.

Many of the downed poles fell to the west onto South Memorial Drive. The pole failure direction is consistent with the KFLSEBRI25, Sebring, FL weather stations reported west-northwest wind direction and hurricane's counter-clockwise rotation. Many of the downed poles and wires were relocated off the South Memorial Drive as part of the storm cleanup effort. The wires across the railroad were cut and moved from the railroad right of way prior to the site visit.

Wood rot was noticed in the following poles: AD-12, AD-13 in the bottom portion of the pole, AD-14, AD-18, AD-19 contained slight wood rot, AD-20 was significantly rotted & had a wood pecker hole near the OHGW attachment, AD-21 and AD-22 contained slight wood rot. Poles AD-15 and AD-16 did not contain wood rot. According to the maintenance records, poles AD-15 and AD-20 were last serviced on 11/09/2013. The maintenance records do not specify what service was performed but it does provide MX Order numbers.



Distance from hurricane path to wire break between AD-16 and AD-17.



Broken wire, tensile failure. Between wood pole AD-17 and AD-18.



Failed wood pole AD-12. Looking northwest



Failed wood pole AD-13. Looking north.



Failed wood pole AD-14. Looking northwest.



Failed wood pole AD-15. Pole was cut and relocated during the storm cleanup. Looking north.



Failed wood pole AD-16. Looking south.



Damaged wood pole AD-17. Looking north.



Failed wood pole AD-18. Looking southwest.



Failed wood pole AD-19. Looking northeast.



Failed wood pole AD-20. Looking south.



Failed wood pole AD-21. Looking northwest.



Failed wood pole AD-22. Looking southeast.



Leaning steel pole AD-23. Looking north.



Steel pole AFC-6 post insulator hardware damage. Looking north.



Steel pole AFC-7 post insulator hardware damage. Looking north.

2.0 Maintenance Data

Maintenance report indicated that poles AD-15 and AD-20 were last serviced on 11/09/2013 per MX orders 2013-3004225978 and 2013-3004226001. Maintenance information is not available for the remainder of the AD-12 to AD-22 poles.

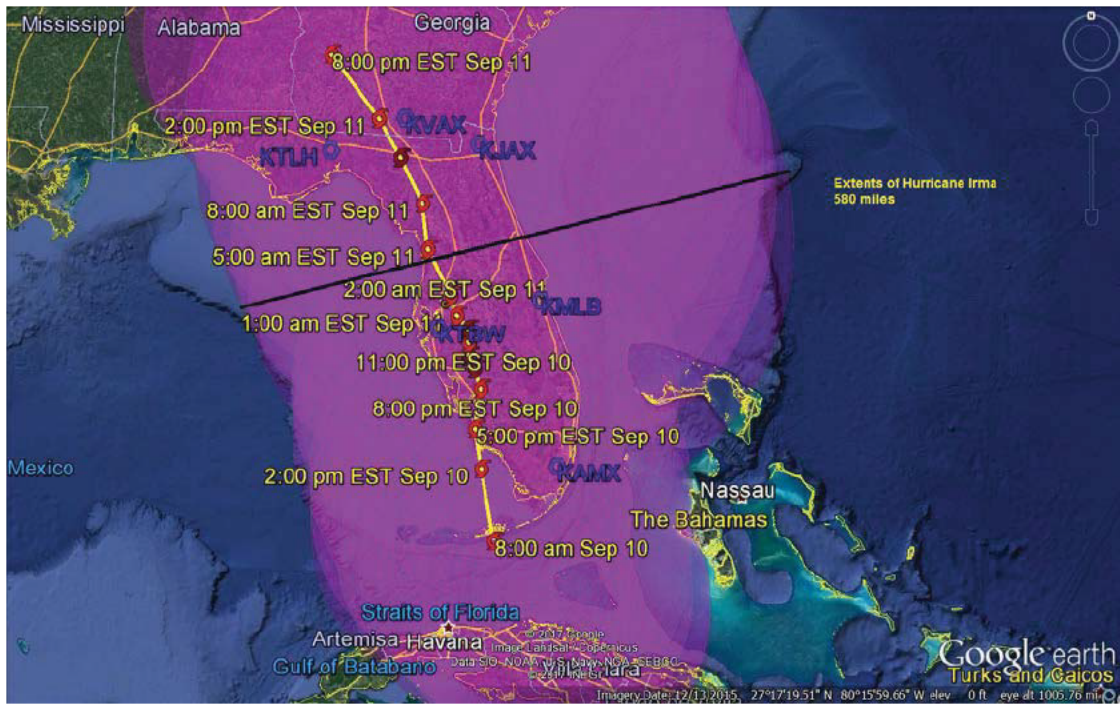
Wood pole AD-20 was significantly rotted & had a wood pecker hole near the OHGW attachment.

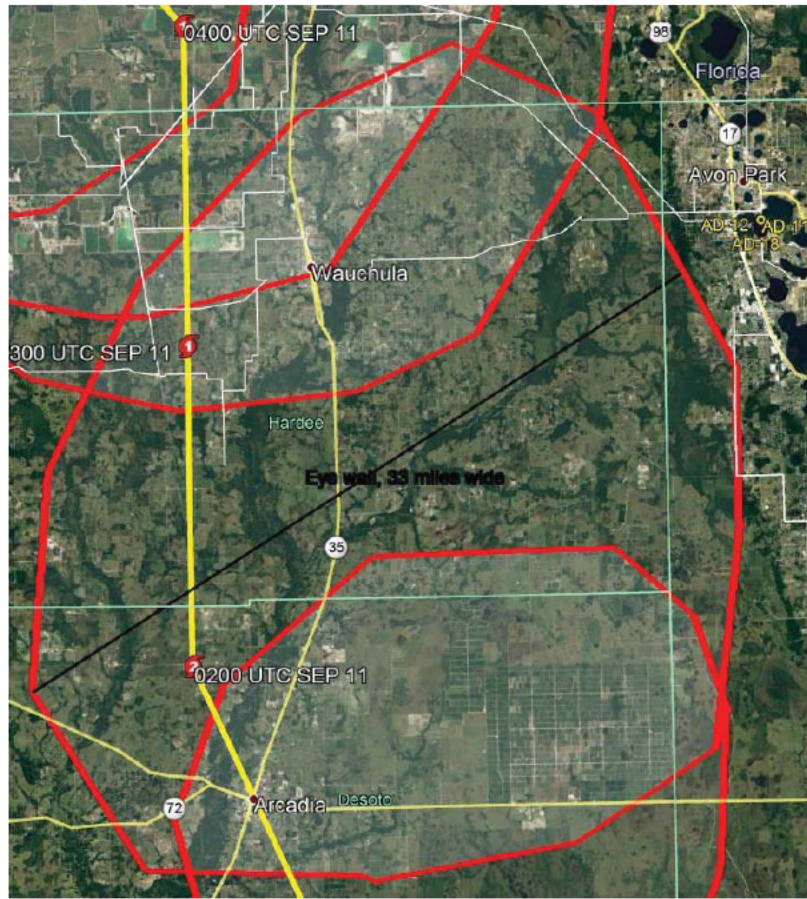
3.0 Weather Data

Hurricane Irma made continental landfall in Naples, Florida at 4:00 pm EST on Sunday, September 10, 2017 as a category 2 hurricane and weakened to a tropical depression over the Georgia - Alabama border 12 hours later. At the time of 69kV Avon Park – Desoto City transmission line's outage, approximately at 9:10 pm EST September 10, 2017, the hurricane was designated as a category 2 hurricane and the eye of the hurricane was located approximately 31 miles southwest of poles AD-16 and AD-17.

The hurricane was nearest to structures AD-12 to AD-21 at approximately 10:30 pm EST on Sunday, September 10, 2017 as a category 1 hurricane. The hurricane eye at that time was 33 miles wide and located approximately 25 miles west of the damage structures. The recorded wind velocity was 99 mph.



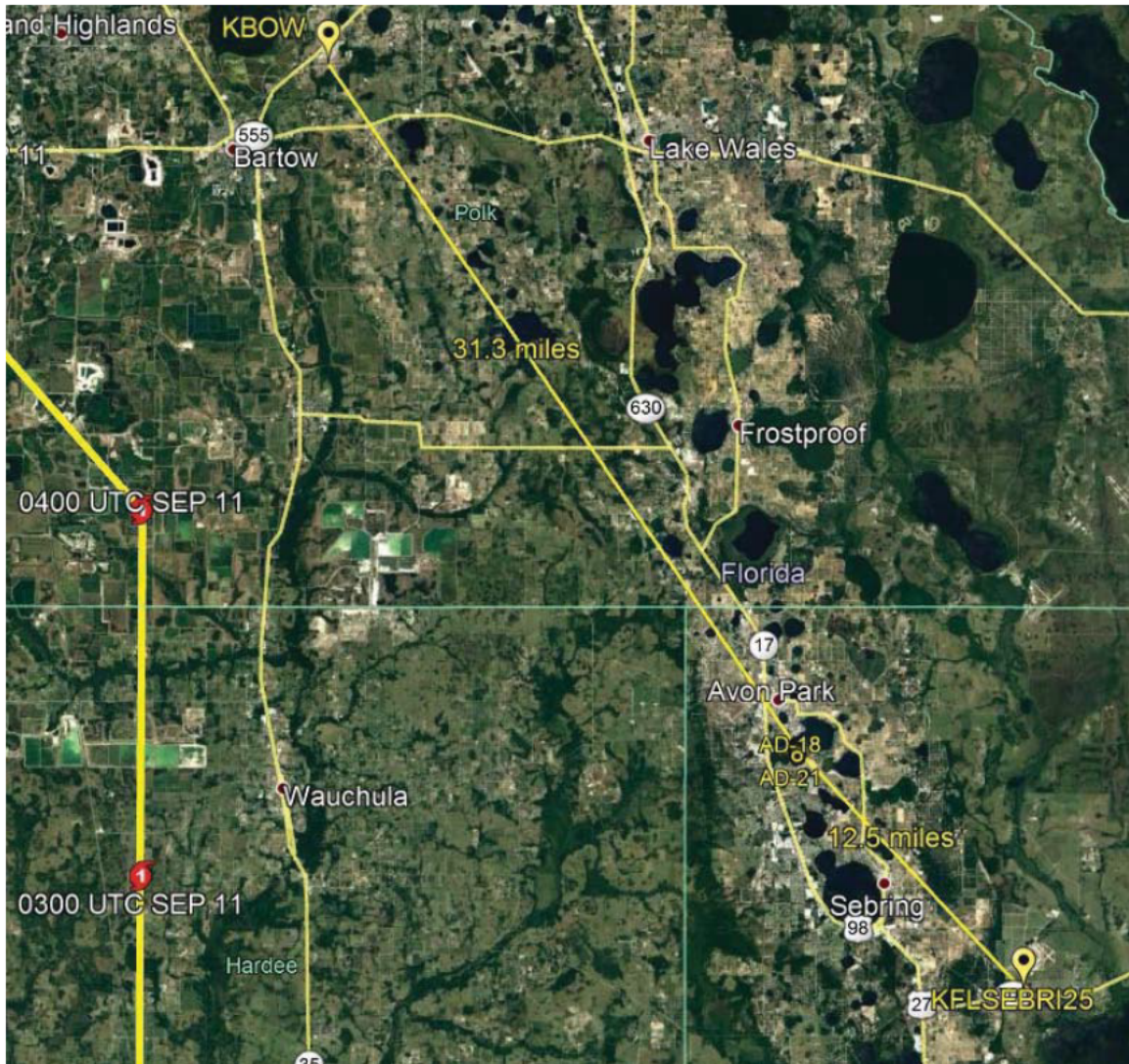




Hurricane Irma eye wall when in vicinity of AD-12 to AD-21

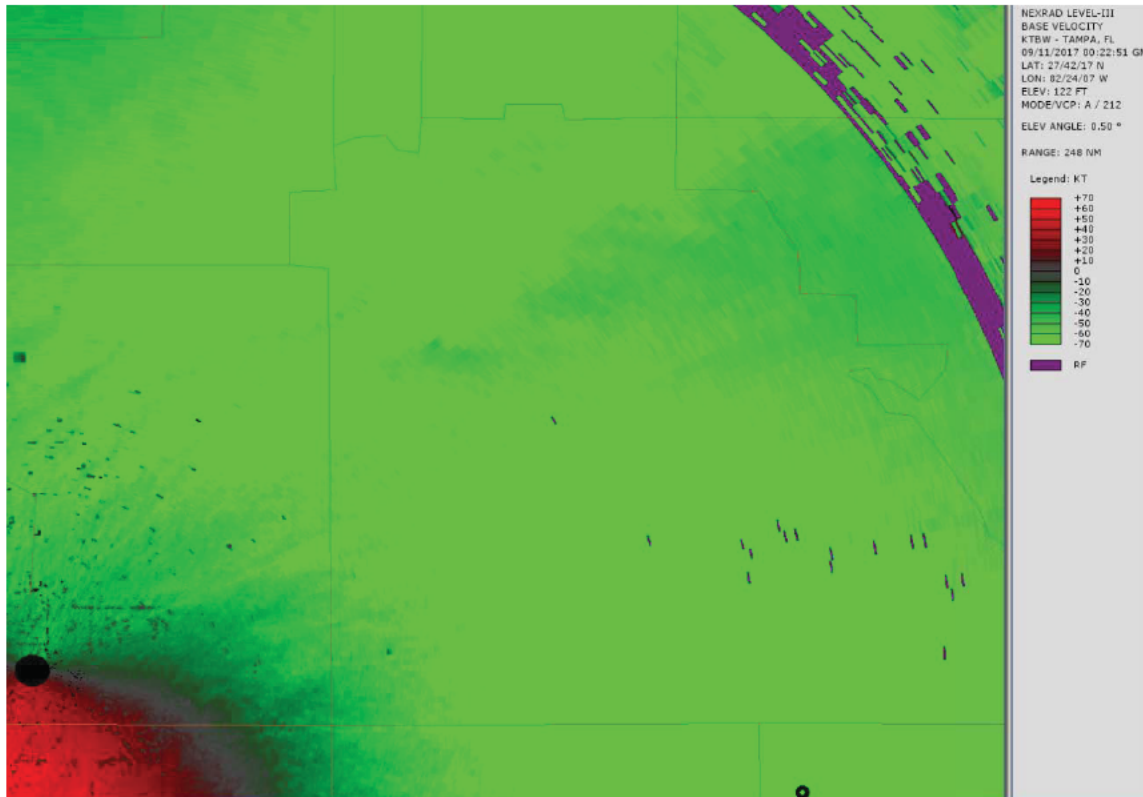
Two local weather stations: KBOW and KFLSEBRI25 show wind velocities in range of 38 to 49 mph and wind gusts in range of 49 to 57 mph. According to the NOAA site specific maps, the wind speeds have reached 74 mph at time of failure.

Station Name & Location	Time	Temp	Wind Dir.	Wind Vel.	Wind Gust.	Distance from AD-16
KBOW, Bartow Municipal Airport	9:15:00 PM	75.2 °F	NE	38.0 mph	49.5 mph	31.3 mi
KFLSEBRI25, Sebring, FL	9:05:00 PM	77.2 °F	WSW	49.4 mph	57.5 mph	12.5 mi



Weather stations and distances from structure AD-16.

The following map shows NOAA wind velocities at the time of collapse. The light green shading indicates 60 knot wind speed which equates to 69 mph.



NOAA cyclone activity at the time of collapse was also reviewed and found no evidence of any cyclones near poles AD-12 to AD-22.

4.0 Conclusion

Damage to the 69kV Avon Park – Desoto City transmission line was caused by Hurricane Irma's high wind velocities, 69 mph at the time of the outage. The hurricane affected structures AD-8 to AD-24 and structures AFC-6 to AFC-7 where the 69kV Avon Park – Desoto City underbuilds on the 230kV Avon Park - Fisheating Creek transmission line.

The cause of the outage appeared to be wood pole AD-18 collapse and conductor failure between wood poles AD-17 and AD-18. The conductor failure caused a dynamic longitudinal load resulting in a cascading failure of structures AD-16 to AD-12 to the north and AD-19 to AD-22 to the south. Pole AD-17 did not collapse; however, it was leaning significantly and needed replacement.

In addition to the collapsed poles, structure and wire hardware damage extended up to steel poles AFC-6 and AD-23. AD-23 dropped a distribution wire due to post insulator failure. Post insulator damage also occurred at structures AD-11 to AD-9, AFC-7 and AFC-6. Structures AD-11 and AD-10 lost transmission wires; top and middle phases on AD-11 and middle and bottom phase on AD-10. Wood pole AD-8 has a large split above the overhead ground wire hardware and is need of maintenance.

Steel pole AD-23 most likely prevented further cascading failures. AD-23's 69kV post insulator hardware was bent in a longitudinal direction because of adjacent structures collapsing and the hardware is in a need of a replacement. The top distribution underbuilt post insulator was also damaged and subsequently the wire dropped. The steel pole was leaning slightly west, towards the S. Memorial Drive.

Many of the downed poles fell to the west onto South Memorial Drive. The pole failure direction is consistent with the KFLSEBRI25, Sebring, FL weather stations reported west-northwest wind direction and hurricane's counter-clockwise rotation. Many of the downed poles and wires were relocated off the South Memorial Drive as part of the storm clean up effort. The wires across the rail road were cut and moved from the rail road right of way prior to the site visit.

Wood pole AD-15 OHGW bayonet remained intact after the pole collapse. The bayonet was leaning to the east suggesting that the OHGW was unbroken while pole AD-15 was collapsing to the west.

Wood rot has been recorded in the following poles: AD-12, AD-13 in the bottom portion of the pole, AD-14, AD-18, AD-19 contained slight wood rot, AD-20 was significantly rotted & had a wood pecker hole near the OHGW attachment, AD-21 and AD-22 contained slight wood rot. AD-20 was last serviced on 11/09/2013 according to the maintenance records.

Poles AD-15 and AD-16 did not contain wood rot. AD-15 was last serviced on 11/09/2013 according to the maintenance records.

5.0 Restoration

Restoration of the Avon Park – Desoto City transmission line was not started during the inspection; however, the broken conductor laying across the railroad tracks was cut and coiled adjacent to the railroad between poles AD-15 and AD-16.

Appendix A: Additional Photos



Wood pole AD-8 pole top damage. Looking east.



Wood pole AD-9 post insulator hardware damage. Looking east.



Wood pole AD-10 post insulator damage. Looking east.



Wood pole AD-11 post insulator damage. Looking east.



Failed wood pole AD-12. Looking north.



Wood pole AD-12 pole crack. Looking southwest.



Wood pole AD-13 base. Looking south.



Wood pole AD-13 insulators and wood pole crack. Looking west.



Failed distribution mid span pole. Looking north.



Wood pole AD-14 base. Looking south.



Wood pole AD-15 static mast. Looking west.



Wood pole AD-15 static mast. Looking south.



Cut and coiled wire near railroad ROW.



AD-16 post insulator damage. Looking southwest.



Wood pole AD-16 pole base. Looking southeast.



Wood pole AD-17 insulator damage. Looking north.



Wood pole AD-17 pole base. Looking north.



Tensile wire failure.



Wood pole AD-18 failure. Pole broke into two. Looking southeast.



Wood pole AD-18 base. Looking west.



Wood pole AD-19 base. Looking northeast.



Wood pole AD-19 insulator damage and pole crack. Looking south.



Wood pole AD-20 base. Looking south.



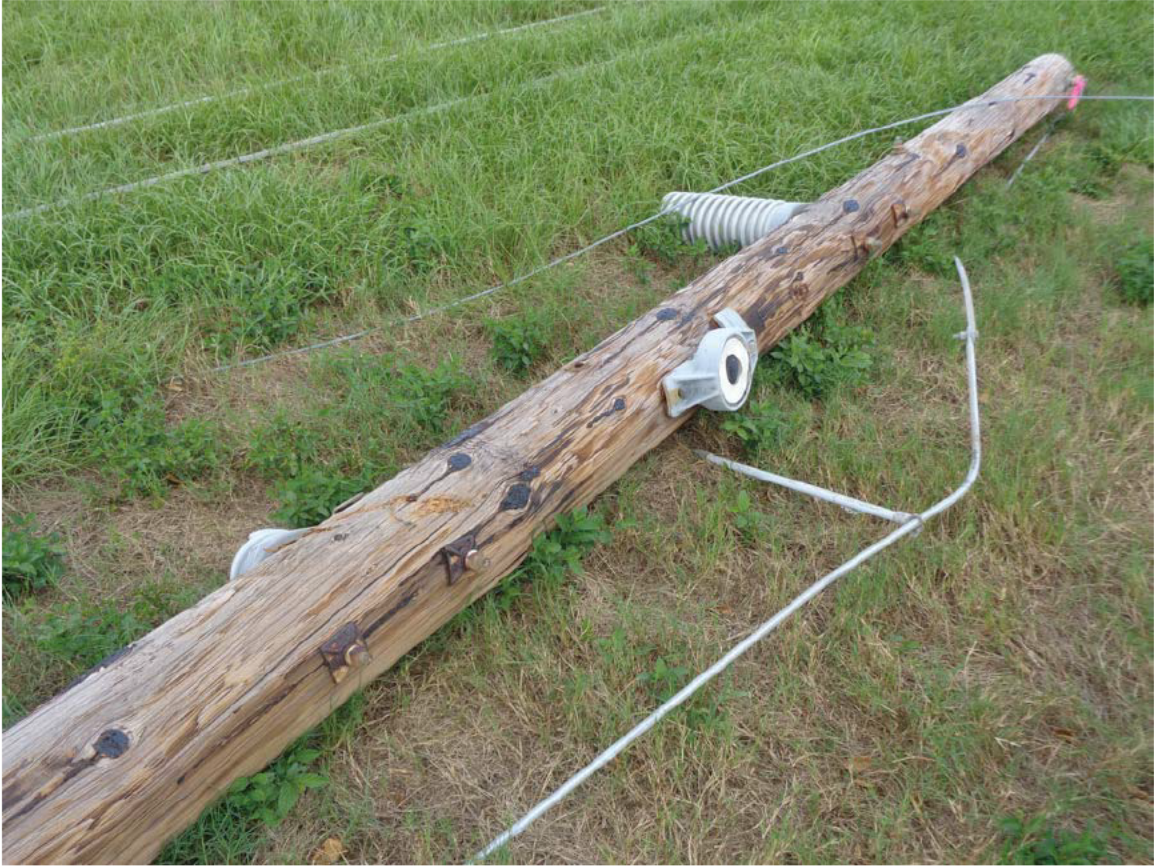
Wood pole AD-20 woodpecker damage. Looking west.



Wood pole AD-20 insulator damage. Looking southwest.



Wood pole AD-21 pole base. Looking southwest.



Wood pole AD-22 insulator damage. Looking northwest.



Wood pole AD-22 pole base. Looking west.

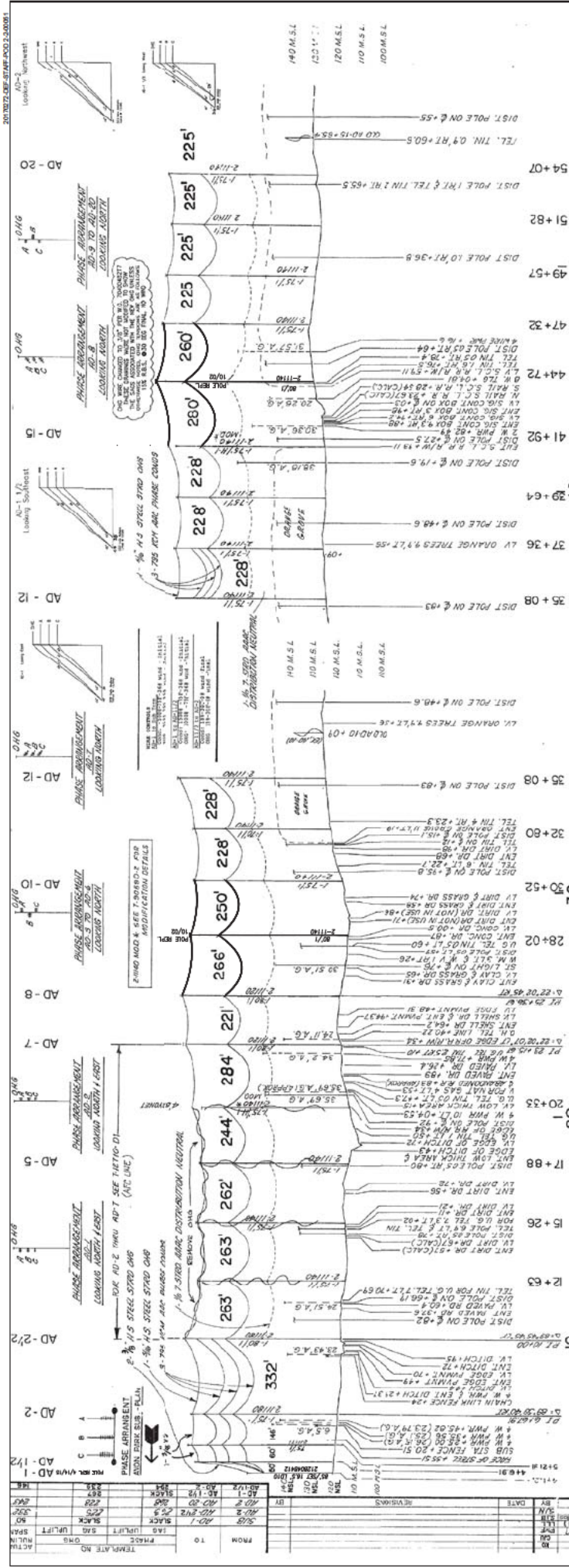
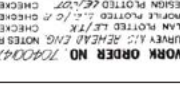
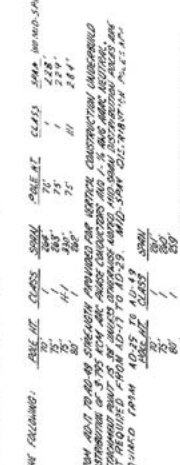


Steel pole AD-23. Looking northeast.



Wood pole AD-24. Looking northeast.

Appendix B: 69kV Avon Park – Desoto City Plan and Profile Drawings



Appendix C: Weather Data

KBOW Weather data for September 10 2017												
Time (EDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:15 AM	80.6 °F	85.4 °F	73.4 °F	79%	29.82 in	10.0 mi	ENE	17.3 mph	31.1 mph	N/A		Overcast
12:35 AM	80.6 °F	85.4 °F	73.4 °F	79%	29.81 in	10.0 mi	ENE	16.1 mph	24.2 mph	N/A		Overcast
12:55 AM	78.8 °F	-	73.4 °F	83%	29.80 in	10.0 mi	East	13.8 mph	24.2 mph	N/A		Overcast
1:15 AM	78.8 °F	-	75.2 °F	89%	29.80 in	10.0 mi	ENE	15.0 mph	21.9 mph	N/A		Overcast
1:35 AM	78.8 °F	-	75.2 °F	89%	29.80 in	10.0 mi	East	13.8 mph	23.0 mph	N/A		Overcast
1:55 AM	78.8 °F	-	77.0 °F	94%	29.80 in	10.0 mi	East	13.8 mph	26.5 mph	N/A		Overcast
2:15 AM	77.0 °F	-	77.0 °F	100%	29.80 in	4.0 mi	East	20.7 mph	26.5 mph	N/A	Rain	Light Rain
2:35 AM	75.2 °F	-	-	N/A%	29.79 in	4.0 mi	ENE	17.3 mph	24.2 mph	N/A	Rain	Light Rain
2:55 AM	75.2 °F	-	-	N/A%	29.78 in	5.0 mi	ENE	15.0 mph	-	N/A	Rain	Light Rain
3:15 AM	75.2 °F	-	-	N/A%	29.77 in	7.0 mi	NE	13.8 mph	-	N/A	Rain	Light Rain
3:35 AM	75.2 °F	-	-	N/A%	29.75 in	8.0 mi	ENE	12.7 mph	20.7 mph	N/A	Rain	Light Rain
3:55 AM	75.2 °F	-	-	N/A%	29.75 in	10.0 mi	ENE	12.7 mph	-	N/A		Mostly Cloudy
4:15 AM	75.2 °F	-	-	N/A%	29.76 in	10.0 mi	ENE	12.7 mph	-	N/A		Mostly Cloudy
4:35 AM	75.2 °F	-	-	N/A%	29.75 in	10.0 mi	ENE	13.8 mph	-	N/A	Rain	Light Rain
4:55 AM	75.2 °F	-	75.2 °F	100%	29.75 in	10.0 mi	ENE	12.7 mph	18.4 mph	N/A		Overcast
5:15 AM	75.2 °F	-	-	N/A%	29.75 in	10.0 mi	NE	9.2 mph	15.0 mph	N/A		Light Drizzle
5:35 AM	75.2 °F	-	-	N/A%	29.76 in	9.0 mi	ENE	10.4 mph	21.9 mph	N/A	Rain	Light Rain
5:55 AM	75.2 °F	-	-	N/A%	29.76 in	5.0 mi	ENE	13.8 mph	25.3 mph	N/A	Rain	Light Rain
6:15 AM	73.4 °F	-	-	N/A%	29.75 in	7.0 mi	ENE	15.0 mph	21.9 mph	N/A	Rain	Light Rain
6:35 AM	73.4 °F	-	-	N/A%	29.74 in	10.0 mi	NE	11.5 mph	18.4 mph	N/A		Light Drizzle
6:55 AM	75.2 °F	-	-	N/A%	29.73 in	10.0 mi	NE	12.7 mph	18.4 mph	N/A		Mostly Cloudy
7:15 AM	73.4 °F	-	-	N/A%	29.74 in	4.0 mi	NNE	10.4 mph	18.4 mph	N/A	Rain	Rain
5:35 PM	73.4 °F	-	-	N/A%	29.42 in	0.8 mi	NNE	25.3 mph	41.4 mph	N/A	Rain	Heavy Rain
5:55 PM	73.4 °F	-	-	N/A%	29.39 in	0.8 mi	NE	31.1 mph	49.5 mph	N/A	Rain	Heavy Rain
6:15 PM	73.4 °F	-	-	N/A%	29.36 in	-	NNE	27.6 mph	46.0 mph	N/A	Rain	Heavy Rain
6:35 PM	71.6 °F	-	-	N/A%	29.32 in	0.2 mi	NE	38.0 mph	49.5 mph	N/A	Rain	Heavy Rain
6:55 PM	71.6 °F	-	-	N/A%	29.32 in	0.2 mi	NNE	26.5 mph	47.2 mph	N/A	Rain	Heavy Rain
7:15 PM	73.4 °F	-	-	N/A%	29.27 in	0.2 mi	NE	27.6 mph	47.2 mph	N/A	Rain	Heavy Rain
7:35 PM	73.4 °F	-	-	N/A%	29.23 in	0.2 mi	NE	35.7 mph	46.0 mph	N/A	Rain	Heavy Rain
7:55 PM	73.4 °F	-	-	N/A%	29.18 in	0.5 mi	NE	32.2 mph	48.3 mph	N/A	Rain	Heavy Rain
8:15 PM	75.2 °F	-	-	N/A%	29.15 in	0.2 mi	NE	35.7 mph	55.2 mph	N/A	Rain	Heavy Rain
8:35 PM	75.2 °F	-	-	N/A%	29.11 in	1.2 mi	ENE	38.0 mph	44.9 mph	N/A	Rain	Heavy Rain
8:55 PM	75.2 °F	-	-	N/A%	29.07 in	2.0 mi	NE	33.4 mph	50.6 mph	N/A	Rain	Rain
9:15 PM	75.2 °F	-	-	N/A%	29.03 in	0.8 mi	NE	38.0 mph	49.5 mph	N/A	Rain	Heavy Rain
9:35 PM	75.2 °F	-	-	N/A%	28.97 in	0.8 mi	NE	42.6 mph	62.1 mph	N/A	Rain	Heavy Rain
9:55 PM	75.2 °F	-	-	N/A%	28.94 in	1.0 mi	ENE	36.8 mph	56.4 mph	N/A	Rain	Heavy Rain
10:15 PM	75.2 °F	-	-	N/A%	28.89 in	-	ENE	41.4 mph	57.5 mph	N/A	Rain	Heavy Rain
10:35 PM	75.2 °F	-	-	N/A%	28.84 in	0.5 mi	ENE	38.0 mph	61.0 mph	N/A	Rain	Heavy Rain
10:55 PM	75.2 °F	-	-	N/A%	28.79 in	0.5 mi	ENE	38.0 mph	64.4 mph	N/A	Rain	Heavy Rain
11:15 PM	-	-	-	N/A%	-	-	North	-	-	N/A		Unknown
11:35 PM	-	-	-	N/A%	-	-	North	-	-	N/A		Unknown
11:55 PM	-	-	-	N/A%	-	-	North	-	-	N/A		Unknown

KFLSEBRI25 Weather data for September 10 2017

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
12:02 AM	76.1 °F	73.4 °F	91%	NE	19.7 mph	22.4 mph	-- in	0 in	0 in	0	0 w/m ²
12:08 AM	75.9 °F	73.4 °F	92%	NNE	17.7 mph	22.4 mph	-- in	0 in	0 in	0	0 w/m ²
12:14 AM	75.7 °F	73 °F	91%	NE	13.9 mph	17.5 mph	-- in	0 in	0 in	0	0 w/m ²
12:19 AM	75.6 °F	72.9 °F	91%	ENE	12.3 mph	15 mph	-- in	0 in	0 in	0	0 w/m ²
12:25 AM	75.4 °F	72.9 °F	92%	NE	7.2 mph	7.4 mph	-- in	0.07 in	0.01 in	0	0 w/m ²
12:30 AM	75.4 °F	72.9 °F	92%	NE	8.3 mph	9.8 mph	-- in	0.07 in	0.01 in	0	0 w/m ²
12:35 AM	75.4 °F	72.9 °F	92%	NE	15 mph	17.5 mph	-- in	0.07 in	0.02 in	0	0 w/m ²
12:41 AM	75.2 °F	72.7 °F	92%	NE	15.2 mph	17.5 mph	-- in	0.07 in	0.02 in	0	0 w/m ²
12:46 AM	75.4 °F	73.2 °F	93%	NNE	18.1 mph	19.9 mph	-- in	0.21 in	0.06 in	0	0 w/m ²
12:51 AM	75.2 °F	73 °F	93%	NE	13.6 mph	17.5 mph	-- in	0.21 in	0.06 in	0	0 w/m ²
12:56 AM	75 °F	72.9 °F	93%	NNE	10.5 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:01 AM	75 °F	73.2 °F	94%	NE	10.5 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:06 AM	74.8 °F	73 °F	94%	East	4.5 mph	7.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:12 AM	74.7 °F	72.9 °F	94%	ENE	5.8 mph	7.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:17 AM	74.5 °F	71.8 °F	91%	ENE	11.9 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:22 AM	74.3 °F	71.6 °F	91%	NNE	8.3 mph	9.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:27 AM	73.9 °F	71.6 °F	92%	ENE	6 mph	7.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:32 AM	73.4 °F	71.1 °F	92%	NE	6.5 mph	9.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:37 AM	73.2 °F	70.9 °F	92%	ENE	5.8 mph	7.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:42 AM	73.2 °F	71.4 °F	94%	NE	15.9 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:47 AM	73 °F	71.2 °F	94%	ENE	9.2 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:52 AM	73.2 °F	71.4 °F	94%	NE	7.6 mph	9.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:58 AM	73.8 °F	72 °F	94%	NE	8.3 mph	9.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:04 AM	74.1 °F	72 °F	93%	NNE	19.7 mph	24.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:09 AM	74.5 °F	72.3 °F	93%	NE	17.7 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:14 AM	74.8 °F	72.3 °F	92%	ENE	16.5 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:19 AM	75 °F	72.5 °F	92%	ENE	12.1 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:25 AM	75.2 °F	73 °F	93%	ENE	11.4 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:30 AM	75.2 °F	73.4 °F	94%	NNE	11.4 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:35 AM	75.2 °F	73.4 °F	94%	NNE	14.3 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:40 AM	75.2 °F	73 °F	93%	NE	10.3 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:45 AM	75 °F	72.9 °F	93%	NE	15.4 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:50 AM	75 °F	72.9 °F	93%	NE	11.9 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:55 AM	75 °F	72.9 °F	93%	NE	22.4 mph	24.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:01 AM	75 °F	72.9 °F	93%	ENE	15.4 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:06 AM	75 °F	73.2 °F	94%	NNE	11.4 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:11 AM	75 °F	73.2 °F	94%	NE	16.8 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:16 AM	75 °F	73.2 °F	94%	NE	11.9 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:22 AM	74.8 °F	73 °F	94%	NE	18.6 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:27 AM	74.8 °F	73 °F	94%	NE	12.1 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:32 AM	74.7 °F	72.9 °F	94%	NE	12.3 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:38 AM	74.7 °F	72.9 °F	94%	NE	11.9 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:43 AM	74.7 °F	72.5 °F	93%	NNE	17 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:48 AM	74.7 °F	72.5 °F	93%	NNE	14.5 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
3:53 AM	74.8 °F	72.7 °F	93%	NE	11.4 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:58 AM	74.8 °F	72.7 °F	93%	NNE	8.9 mph	9.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:04 AM	74.8 °F	73 °F	94%	NE	10.7 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:10 AM	74.8 °F	73 °F	94%	NNE	11.4 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:15 AM	74.8 °F	73 °F	94%	NE	6.7 mph	7.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:21 AM	74.8 °F	73 °F	94%	NE	7.6 mph	9.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:26 AM	74.8 °F	73.4 °F	95%	NE	5.6 mph	7.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:32 AM	74.7 °F	73.2 °F	95%	ENE	6 mph	7.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:37 AM	74.7 °F	73.2 °F	95%	NE	2.5 mph	2.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:43 AM	74.5 °F	73 °F	95%	NE	10.3 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:48 AM	74.5 °F	73 °F	95%	NE	18.3 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:53 AM	74.5 °F	73 °F	95%	NE	15.4 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:58 AM	74.5 °F	72.7 °F	94%	NE	14.3 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:03 AM	74.5 °F	72.7 °F	94%	NE	13.6 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:08 AM	74.5 °F	72.7 °F	94%	NE	14.5 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:13 AM	74.5 °F	72.3 °F	93%	NE	12.3 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:19 AM	74.5 °F	72.7 °F	94%	NE	13.4 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:24 AM	74.5 °F	72.7 °F	94%	NNE	8.7 mph	9.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:29 AM	74.5 °F	72.7 °F	94%	NNE	9.6 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:36 AM	74.7 °F	72.9 °F	94%	North	11.9 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:41 AM	74.7 °F	72.1 °F	92%	NNE	10.5 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:46 AM	74.7 °F	72.1 °F	92%	NNE	9.2 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:49 AM	74.7 °F	72.1 °F	92%	NNE	19.2 mph	22.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:54 AM	74.7 °F	72.1 °F	92%	NE	14.3 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:59 AM	74.8 °F	72.3 °F	92%	NNE	15 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:04 AM	74.8 °F	72.3 °F	92%	NNE	11.9 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:09 AM	75 °F	72.5 °F	92%	NNE	13.4 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:15 AM	75 °F	72.9 °F	93%	NNE	11.2 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:20 AM	75 °F	72.9 °F	93%	NNE	9.6 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:25 AM	74.8 °F	72.7 °F	93%	NNE	13.4 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:30 AM	74.8 °F	72.7 °F	93%	NE	16.8 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:36 AM	74.8 °F	72.7 °F	93%	NE	16.8 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:41 AM	74.8 °F	72.7 °F	93%	NNE	11.9 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:47 AM	74.7 °F	72.5 °F	93%	NE	11.4 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:52 AM	74.7 °F	72.1 °F	92%	NE	17 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:58 AM	74.7 °F	72.5 °F	93%	North	19 mph	27.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:03 AM	74.7 °F	72.1 °F	92%	NNE	17.5 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:08 AM	74.7 °F	72.1 °F	92%	NNE	15 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:14 AM	74.7 °F	72.1 °F	92%	NNE	19.7 mph	22.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:20 AM	74.7 °F	72.1 °F	92%	NNE	13.6 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:25 AM	74.5 °F	72.1 °F	92%	NNE	16.5 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:30 AM	74.5 °F	72.3 °F	93%	NNE	19.9 mph	22.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:35 AM	74.5 °F	71.8 °F	91%	NNE	16.8 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:40 AM	74.5 °F	72.1 °F	92%	NNE	17 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:45 AM	74.5 °F	72.3 °F	93%	NNE	13.9 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
7:50 AM	74.5 °F	72.3 °F	93%	NNE	13 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:55 AM	74.5 °F	72.3 °F	93%	NE	18.6 mph	22.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
8:01 AM	74.5 °F	72.3 °F	93%	NNE	15.9 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
8:06 AM	74.5 °F	72.3 °F	93%	ENE	11.2 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
8:11 AM	74.7 °F	72.5 °F	93%	NE	17.5 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
8:16 AM	74.8 °F	72.7 °F	93%	East	9.8 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
8:21 AM	74.8 °F	72.7 °F	93%	ENE	10.7 mph	12.3 mph	-- in	0 in	0.06 in	0	0.17 w/m ²
8:47 AM	74.5 °F	72.7 °F	94%	NE	18.1 mph	19.9 mph	-- in	0 in	0.07 in	0	21.95 w/m ²
8:52 AM	74.3 °F	72.5 °F	94%	NE	11.9 mph	12.3 mph	-- in	0 in	0.07 in	0	24.69 w/m ²
8:57 AM	74.3 °F	72.1 °F	93%	NE	13.6 mph	17.5 mph	-- in	0 in	0.07 in	0	24.51 w/m ²
9:02 AM	74.3 °F	72.1 °F	93%	NE	16.1 mph	19.9 mph	-- in	0 in	0.07 in	0	29.1 w/m ²
9:07 AM	74.1 °F	72 °F	93%	NE	16.1 mph	19.9 mph	-- in	0 in	0.07 in	0	33.96 w/m ²
9:12 AM	74.1 °F	71.8 °F	92%	ENE	15 mph	17.5 mph	-- in	0 in	0.07 in	0	38.01 w/m ²
9:17 AM	73.9 °F	71.6 °F	92%	NE	15 mph	17.5 mph	-- in	0 in	0.07 in	0	39.36 w/m ²
9:22 AM	73.9 °F	71.6 °F	92%	NE	19.9 mph	22.4 mph	-- in	0 in	0.07 in	1	51.96 w/m ²
9:27 AM	73.8 °F	71.4 °F	92%	NNE	18.6 mph	24.8 mph	-- in	0 in	0.07 in	1	72.61 w/m ²
9:32 AM	73.8 °F	71.4 °F	92%	NNE	19.2 mph	22.4 mph	-- in	0 in	0.07 in	1	60.64 w/m ²
9:37 AM	73.8 °F	71.4 °F	92%	NE	13.9 mph	27.5 mph	-- in	0 in	0.07 in	1	55.46 w/m ²
9:42 AM	73.8 °F	71.4 °F	92%	NNE	18.6 mph	19.9 mph	-- in	0 in	0.07 in	1	56.23 w/m ²
9:47 AM	73.8 °F	71.4 °F	92%	NNE	16.8 mph	19.9 mph	-- in	0 in	0.07 in	1	58.12 w/m ²
9:52 AM	73.8 °F	71.4 °F	92%	NE	12.1 mph	15 mph	-- in	0 in	0.07 in	1	65.54 w/m ²
9:58 AM	73.8 °F	71.4 °F	92%	NE	23.3 mph	27.5 mph	-- in	0 in	0.07 in	1	80.05 w/m ²
10:03 AM	73.8 °F	71.1 °F	91%	NE	13.4 mph	19.9 mph	-- in	0 in	0.07 in	1	65.68 w/m ²
10:08 AM	73.8 °F	71.1 °F	91%	NE	15 mph	17.5 mph	-- in	0 in	0.07 in	1	65.41 w/m ²
10:13 AM	73.8 °F	71.1 °F	91%	NE	23 mph	27.5 mph	-- in	0 in	0.07 in	1	48.94 w/m ²
10:18 AM	73.8 °F	71.1 °F	91%	NE	16.8 mph	19.9 mph	-- in	0 in	0.07 in	0	41.88 w/m ²
10:23 AM	73.8 °F	71.1 °F	91%	NNE	23.9 mph	27.5 mph	-- in	0 in	0.07 in	1	60.59 w/m ²
10:28 AM	73.8 °F	71.4 °F	92%	NE	13.6 mph	17.5 mph	-- in	0 in	0.07 in	1	56.77 w/m ²
10:33 AM	73.8 °F	71.4 °F	92%	NE	25.3 mph	30 mph	-- in	0 in	0.07 in	1	75.62 w/m ²
10:37 AM	73.6 °F	71.2 °F	92%	NE	20.1 mph	24.8 mph	-- in	0 in	0.07 in	1	97.84 w/m ²
10:42 AM	73.6 °F	71.2 °F	92%	NE	13 mph	17.5 mph	-- in	0 in	0.07 in	0	37.83 w/m ²
10:46 AM	73.6 °F	71.2 °F	92%	NE	17 mph	19.9 mph	-- in	0 in	0.07 in	1	89.71 w/m ²
10:51 AM	73.6 °F	71.2 °F	92%	NE	23 mph	27.5 mph	-- in	0 in	0.07 in	1	66.26 w/m ²
10:56 AM	73.4 °F	71.1 °F	92%	ENE	21.5 mph	27.5 mph	-- in	0 in	0.07 in	1	80.23 w/m ²
11:02 AM	73.4 °F	71.1 °F	92%	NE	21.2 mph	24.8 mph	-- in	0 in	0.07 in	1	98.1 w/m ²
11:07 AM	73.4 °F	71.1 °F	92%	NE	18.3 mph	19.9 mph	-- in	0 in	0.07 in	1	109.1 w/m ²
11:12 AM	73.4 °F	71.1 °F	92%	NNE	22.1 mph	27.5 mph	-- in	0 in	0.07 in	1	81.07 w/m ²
11:17 AM	73.4 °F	71.1 °F	92%	NNE	24.4 mph	32.4 mph	-- in	0 in	0.07 in	1	110.08 w/m ²
11:22 AM	73.4 °F	70 °F	89%	NE	24.6 mph	27.5 mph	-- in	0 in	0.07 in	1	99.33 w/m ²
11:27 AM	73.4 °F	70 °F	89%	NE	19 mph	22.4 mph	-- in	0 in	0.07 in	1	78.32 w/m ²
11:32 AM	73.6 °F	69.8 °F	88%	NE	20.8 mph	22.4 mph	-- in	0 in	0.07 in	1	144.28 w/m ²
11:37 AM	73.6 °F	69.3 °F	86%	NE	16.8 mph	17.5 mph	-- in	0 in	0.07 in	1	138.47 w/m ²
11:42 AM	73.8 °F	69.1 °F	85%	NE	23.9 mph	27.5 mph	-- in	0 in	0.07 in	1	91.16 w/m ²
11:47 AM	73.9 °F	69.8 °F	87%	NNE	17 mph	19.9 mph	-- in	0 in	0.07 in	1	122.2 w/m ²
11:52 AM	74.1 °F	70.3 °F	88%	NE	13.9 mph	15 mph	-- in	0 in	0.07 in	1	57.13 w/m ²

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
11:57 AM	74.1 °F	70.3 °F	88%	NE	17 mph	19.9 mph	-- in	0 in	0.07 in	1	117.05 w/m ²
12:02 PM	74.1 °F	70.7 °F	89%	NE	14.5 mph	17.5 mph	-- in	0 in	0.07 in	1	126.92 w/m ²
12:07 PM	74.1 °F	70.7 °F	89%	North	19.9 mph	24.8 mph	-- in	0 in	0.07 in	1	142.9 w/m ²
12:12 PM	73.9 °F	70.9 °F	90%	NNE	15.2 mph	17.5 mph	-- in	0 in	0.07 in	1	98.02 w/m ²
12:18 PM	73.9 °F	70.9 °F	90%	NE	17 mph	19.9 mph	-- in	0 in	0.07 in	1	119.59 w/m ²
12:23 PM	73.9 °F	70.9 °F	90%	NE	24.4 mph	32.4 mph	-- in	0 in	0.07 in	2	156.62 w/m ²
12:28 PM	73.9 °F	71.2 °F	91%	NE	20.8 mph	24.8 mph	-- in	0 in	0.07 in	2	170.31 w/m ²
12:33 PM	74.1 °F	71.4 °F	91%	NNE	22.8 mph	30 mph	-- in	0 in	0.07 in	2	166.39 w/m ²
12:38 PM	74.1 °F	71.1 °F	90%	NNE	18.3 mph	19.9 mph	-- in	0 in	0.07 in	2	163.27 w/m ²
12:43 PM	74.1 °F	71.1 °F	90%	NNE	15.9 mph	17.5 mph	-- in	0 in	0.07 in	1	144.39 w/m ²
12:48 PM	74.3 °F	70.9 °F	89%	NNE	25.5 mph	30 mph	-- in	0 in	0.07 in	2	168.09 w/m ²
12:53 PM	74.3 °F	70.9 °F	89%	North	18.1 mph	19.9 mph	-- in	0 in	0.07 in	2	182.94 w/m ²
12:58 PM	74.3 °F	70.5 °F	88%	North	22.1 mph	24.8 mph	-- in	0 in	0.07 in	1	122.89 w/m ²
1:03 PM	74.3 °F	70.9 °F	89%	NNE	15.9 mph	17.5 mph	-- in	0 in	0.07 in	1	82.01 w/m ²
1:08 PM	74.3 °F	71.2 °F	90%	NNE	19 mph	22.4 mph	-- in	0 in	0.07 in	1	129.72 w/m ²
1:13 PM	74.3 °F	71.2 °F	90%	NNE	26.2 mph	30 mph	-- in	0 in	0.07 in	1	121.33 w/m ²
1:18 PM	74.5 °F	71.4 °F	90%	NNE	19 mph	22.4 mph	-- in	0 in	0.07 in	1	101.84 w/m ²
1:23 PM	74.5 °F	72.1 °F	92%	NE	24.4 mph	32.4 mph	-- in	0 in	0.07 in	1	68.51 w/m ²
1:28 PM	74.5 °F	72.1 °F	92%	NNE	18.1 mph	22.4 mph	-- in	0 in	0.07 in	1	65.77 w/m ²
1:34 PM	74.5 °F	72.1 °F	92%	North	24.4 mph	27.5 mph	-- in	0 in	0.07 in	1	123.07 w/m ²
1:39 PM	74.5 °F	72.3 °F	93%	NNE	17 mph	17.5 mph	-- in	0 in	0.07 in	1	89.16 w/m ²
1:44 PM	74.5 °F	72.3 °F	93%	NNE	20.1 mph	24.8 mph	-- in	0 in	0.07 in	1	72.61 w/m ²
1:49 PM	74.5 °F	72.3 °F	93%	North	18.6 mph	19.9 mph	-- in	0 in	0.07 in	1	93.34 w/m ²
1:54 PM	74.5 °F	72.3 °F	93%	NE	15 mph	17.5 mph	-- in	0 in	0.07 in	1	86.37 w/m ²
1:59 PM	74.3 °F	72 °F	92%	NNE	17.5 mph	19.9 mph	-- in	0 in	0.07 in	1	61.81 w/m ²
2:04 PM	74.3 °F	72 °F	92%	North	30.9 mph	37.4 mph	-- in	0 in	0.07 in	1	62.66 w/m ²
2:09 PM	74.3 °F	72 °F	92%	North	29.5 mph	34.9 mph	-- in	0 in	0.07 in	1	103.98 w/m ²
2:14 PM	74.1 °F	71.4 °F	91%	NNE	21.2 mph	27.5 mph	-- in	0 in	0.07 in	1	91.49 w/m ²
2:19 PM	74.1 °F	71.4 °F	91%	NNE	27.7 mph	34.9 mph	-- in	0 in	0.07 in	1	55.6 w/m ²
2:24 PM	74.1 °F	71.8 °F	92%	North	19 mph	22.4 mph	-- in	0 in	0.07 in	0	41.11 w/m ²
2:29 PM	74.1 °F	71.8 °F	92%	North	27.1 mph	30 mph	-- in	0 in	0.07 in	1	87.1 w/m ²
2:34 PM	74.1 °F	71.8 °F	92%	North	21.7 mph	27.5 mph	-- in	0 in	0.07 in	1	52 w/m ²
2:39 PM	74.1 °F	71.8 °F	92%	NNE	30 mph	32.4 mph	-- in	0 in	0.07 in	0	16.24 w/m ²
2:44 PM	74.1 °F	71.8 °F	92%	NE	21.5 mph	24.8 mph	-- in	0 in	0.07 in	0	19.07 w/m ²
2:50 PM	74.1 °F	72 °F	93%	NNE	15.2 mph	17.5 mph	-- in	0 in	0.07 in	0	25.77 w/m ²
2:55 PM	74.3 °F	72.1 °F	93%	North	23 mph	30 mph	-- in	0 in	0.07 in	0	38.73 w/m ²
3:00 PM	74.5 °F	72.3 °F	93%	NNE	19.7 mph	22.4 mph	-- in	0 in	0.07 in	0	23.93 w/m ²
3:05 PM	74.7 °F	72.5 °F	93%	NNE	28 mph	30 mph	-- in	0 in	0.07 in	0	33.74 w/m ²
3:10 PM	74.7 °F	72.5 °F	93%	NNE	23.3 mph	24.8 mph	-- in	0 in	0.07 in	0	32.34 w/m ²
3:15 PM	74.8 °F	72.7 °F	93%	North	24.6 mph	27.5 mph	-- in	0 in	0.07 in	0	27.08 w/m ²
3:20 PM	75 °F	72.9 °F	93%	NNW	18.3 mph	19.9 mph	-- in	0 in	0.07 in	1	46.78 w/m ²
3:25 PM	75.2 °F	73 °F	93%	NNE	22.8 mph	24.8 mph	-- in	0 in	0.07 in	1	70.04 w/m ²
3:30 PM	75.2 °F	73 °F	93%	North	14.5 mph	15 mph	-- in	0 in	0.07 in	0	16.28 w/m ²
3:35 PM	75.2 °F	73 °F	93%	NNE	29.1 mph	34.9 mph	-- in	0 in	0.07 in	0	23.34 w/m ²
3:40 PM	75.2 °F	73 °F	93%	NNE	31.5 mph	40 mph	-- in	0 in	0.07 in	1	50.7 w/m ²

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
3:45 PM	75.4 °F	73.2 °F	93%	NNE	24.6 mph	30 mph	-- in	0 in	0.07 in	1	56.41 w/m ²
3:50 PM	75.4 °F	73.2 °F	93%	NNE	16.8 mph	22.4 mph	-- in	0 in	0.07 in	0	9.21 w/m ²
3:55 PM	75.4 °F	73.2 °F	93%	NNE	21.5 mph	27.5 mph	-- in	0 in	0.07 in	1	43.5 w/m ²
4:00 PM	75.4 °F	73.2 °F	93%	NNE	19 mph	24.8 mph	-- in	0 in	0.07 in	0	30.5 w/m ²
4:06 PM	75.4 °F	73.2 °F	93%	NNE	17.5 mph	19.9 mph	-- in	0 in	0.07 in	0	29.6 w/m ²
4:08 PM	75.4 °F	73.6 °F	94%	North	22.1 mph	24.8 mph	-- in	0 in	0.07 in	0	23.61 w/m ²
4:13 PM	75.4 °F	72.9 °F	92%	NNE	30 mph	34.9 mph	-- in	0 in	0.07 in	0	22.62 w/m ²
4:18 PM	75.2 °F	72.7 °F	92%	NNE	19.9 mph	22.4 mph	-- in	0 in	0.07 in	0	34.19 w/m ²
4:23 PM	75.2 °F	72.7 °F	92%	North	23.9 mph	30 mph	-- in	0 in	0.07 in	0	18.8 w/m ²
4:28 PM	75.2 °F	72.7 °F	92%	NNE	26.8 mph	34.9 mph	-- in	0 in	0.07 in	0	20.78 w/m ²
4:33 PM	75.4 °F	72.9 °F	92%	NNE	23 mph	27.5 mph	-- in	0 in	0.07 in	0	29.69 w/m ²
4:38 PM	75.4 °F	72.9 °F	92%	NNE	21.7 mph	24.8 mph	-- in	0 in	0.07 in	0	5.42 w/m ²
4:43 PM	75.6 °F	73 °F	92%	North	17.7 mph	24.8 mph	-- in	0.14 in	0.09 in	0	15.88 w/m ²
4:48 PM	75.7 °F	73.2 °F	92%	NNE	28.6 mph	32.4 mph	-- in	0.14 in	0.09 in	0	18.62 w/m ²
4:53 PM	75.7 °F	73.2 °F	92%	NNE	24.6 mph	27.5 mph	-- in	0 in	0.09 in	0	16.46 w/m ²
4:58 PM	75.7 °F	73 °F	91%	NNE	31.1 mph	37.4 mph	-- in	0 in	0.09 in	0	25.14 w/m ²
5:03 PM	75.7 °F	73 °F	91%	NNE	26.8 mph	30 mph	-- in	0 in	0.09 in	0	28.79 w/m ²
5:08 PM	75.7 °F	73 °F	91%	NNE	31.8 mph	37.4 mph	-- in	0 in	0.09 in	0	23.25 w/m ²
5:14 PM	75.7 °F	73 °F	91%	NNE	33.1 mph	40 mph	-- in	0 in	0.09 in	0	18.8 w/m ²
5:19 PM	75.7 °F	73 °F	91%	NNE	23.7 mph	30 mph	-- in	0 in	0.09 in	0	17.94 w/m ²
5:24 PM	75.7 °F	73 °F	91%	ENE	37.1 mph	45 mph	-- in	0 in	0.09 in	0	17.67 w/m ²
5:29 PM	75.7 °F	73 °F	91%	NNE	31.8 mph	37.4 mph	-- in	0 in	0.09 in	0	6.12 w/m ²
5:34 PM	75.7 °F	73 °F	91%	NNE	21.5 mph	22.4 mph	-- in	0 in	0.09 in	0	16.1 w/m ²
5:39 PM	75.7 °F	73 °F	91%	NNE	34.7 mph	47.4 mph	-- in	0 in	0.09 in	0	3.15 w/m ²
5:44 PM	75.7 °F	73 °F	91%	NE	23.7 mph	30 mph	-- in	0 in	0.09 in	0	8.2 w/m ²
5:47 PM	75.7 °F	73 °F	91%	NNE	35.6 mph	40 mph	-- in	0 in	0.09 in	0	6.98 w/m ²
5:52 PM	75.7 °F	73 °F	91%	NE	34 mph	45 mph	-- in	0 in	0.09 in	0	9.67 w/m ²
5:57 PM	75.9 °F	73.2 °F	91%	NE	30.2 mph	37.4 mph	-- in	0 in	0.09 in	0	3.54 w/m ²
6:02 PM	75.9 °F	73.2 °F	91%	NE	38.5 mph	45 mph	-- in	0 in	0.09 in	0	3.43 w/m ²
6:07 PM	76.1 °F	73.4 °F	91%	NNE	28.6 mph	32.4 mph	-- in	0 in	0.09 in	0	2.14 w/m ²
6:12 PM	76.3 °F	73.6 °F	91%	NE	22.8 mph	27.5 mph	-- in	0 in	0.09 in	0	0.34 w/m ²
6:17 PM	76.3 °F	73.6 °F	91%	NE	22.8 mph	32.4 mph	-- in	0 in	0.09 in	0	3.04 w/m ²
6:22 PM	76.3 °F	73.6 °F	91%	NE	26.2 mph	34.9 mph	-- in	0 in	0.09 in	0	0.51 w/m ²
6:27 PM	76.5 °F	73.4 °F	90%	ENE	27.1 mph	34.9 mph	-- in	0 in	0.09 in	0	0.51 w/m ²
6:32 PM	76.5 °F	73.8 °F	91%	NE	33.3 mph	40 mph	-- in	0 in	0.09 in	0	1.35 w/m ²
6:38 PM	76.5 °F	73.4 °F	90%	NE	30.9 mph	37.4 mph	-- in	0 in	0.09 in	0	1.8 w/m ²
6:43 PM	76.3 °F	73.2 °F	90%	NE	30.2 mph	34.9 mph	-- in	0 in	0.09 in	0	1.74 w/m ²
6:48 PM	76.1 °F	73 °F	90%	ENE	31.1 mph	34.9 mph	-- in	0 in	0.09 in	0	0 w/m ²
6:53 PM	75.9 °F	72.9 °F	90%	NE	28.6 mph	37.4 mph	-- in	0 in	0.09 in	0	0 w/m ²
6:58 PM	75.7 °F	72.7 °F	90%	NE	30.6 mph	37.4 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:03 PM	75.6 °F	72.5 °F	90%	NE	35.6 mph	42.5 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:08 PM	75.6 °F	72.5 °F	90%	ENE	35.6 mph	45 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:13 PM	75.7 °F	72.7 °F	90%	NE	20.1 mph	27.5 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:18 PM	75.7 °F	72.7 °F	90%	ENE	24.8 mph	27.5 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:23 PM	75.9 °F	72.9 °F	90%	ENE	26.8 mph	30 mph	-- in	0 in	0.09 in	0	0 w/m ²

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
7:28 PM	76.1 °F	72.7 °F	89%	ENE	24.4 mph	27.5 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:33 PM	76.3 °F	72.9 °F	89%	ENE	19.2 mph	22.4 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:38 PM	76.5 °F	72.7 °F	88%	East	35.3 mph	40 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:43 PM	76.6 °F	72.9 °F	88%	East	38.9 mph	47.4 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:48 PM	76.8 °F	73 °F	88%	ESE	35.3 mph	42.5 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:54 PM	76.8 °F	73 °F	88%	ENE	29.3 mph	40 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:59 PM	77 °F	73.2 °F	88%	East	25.3 mph	32.4 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:04 PM	77 °F	72.9 °F	87%	East	39.4 mph	47.4 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:09 PM	77 °F	72.9 °F	87%	East	34.9 mph	42.5 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:14 PM	77 °F	72.9 °F	87%	East	43.4 mph	52.6 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:19 PM	77 °F	72.9 °F	87%	East	30.2 mph	45 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:24 PM	77.2 °F	73 °F	87%	East	43.2 mph	47.4 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:29 PM	77.2 °F	72.7 °F	86%	ESE	38.9 mph	45 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:34 PM	77.2 °F	72.7 °F	86%	East	45.6 mph	52.6 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:39 PM	77.2 °F	72.7 °F	86%	ESE	41.8 mph	52.6 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:44 PM	77 °F	72.5 °F	86%	East	45.6 mph	52.6 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:49 PM	77 °F	72.5 °F	86%	ESE	38.5 mph	45 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:54 PM	77 °F	72.5 °F	86%	ESE	49.7 mph	60 mph	-- in	0 in	0.09 in	0	0 w/m ²
9:00 PM	77.2 °F	72.7 °F	86%	ESE	30.6 mph	40 mph	-- in	0 in	0.09 in	0	0 w/m ²
9:05 PM	77.2 °F	72.7 °F	86%	WSW	49.4 mph	57.5 mph	-- in	0 in	0.09 in	0	0 w/m ²



Forensic Analysis of Crooked Lake 69kV Tapline Structures AL-14-1 to AL-14-13

Hurricane Irma

November 30, 2017



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1.0 Executive Summary

Structures: Crooked Lake 69kv Tapline Structures AL-14-1 to AL-14-13

Location – Central Polk County, FL (27°53'22.51"N; 81°35'51.78"W to 27°52'51.66"N;
81°35'51.67"W)

Date of Outage – 09-10-17

Time of Outage – 22:04 EST

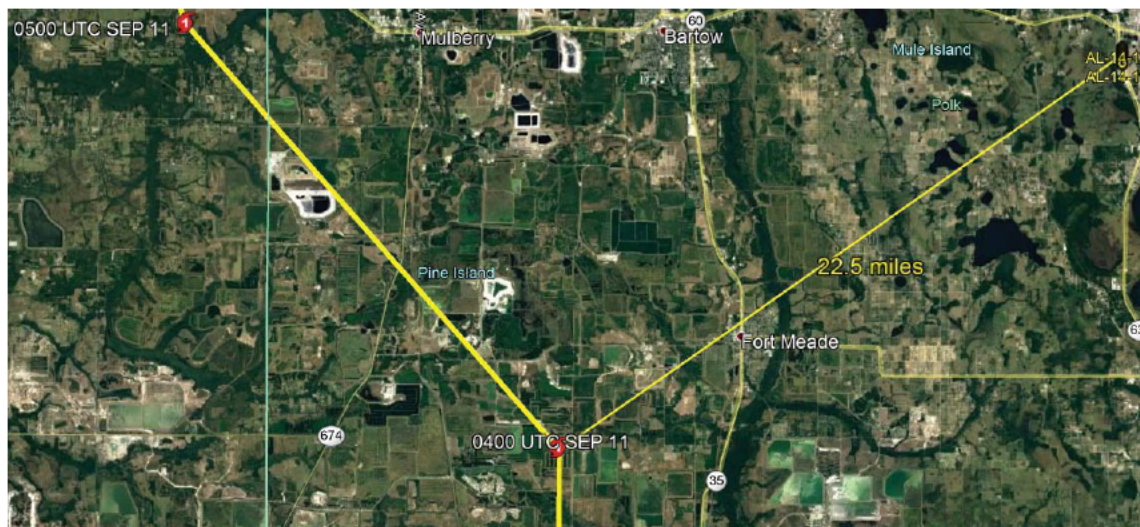
Inspection Date – 09-17-17

At 10:04 pm, on Sunday, September 10th, an outage was reported on Crooked Lake 69kv Tapline. The outage was a result of wood pole failures.

At the time of the outage, 63 mph wind velocities were reported in the vicinity of structures AL-14-1 to AL-14-13 by the National Oceanic and Atmospheric Administration (NOAA). The outage occurred approximately an hour in advance of the hurricane being at a location nearest to the poles. Hurricane Irma's eye passed approximately 22.5 miles southwest of poles AL-14-1 to AL-14-13 at 11:00 pm EST Sunday, September 10, 2017.

Per a discussion with the construction inspector, there were five (5) wood poles, various insulators and wire failures. At the time of the field visit all failed poles and insulators had been replaced and new wire installed. Crews were in process of removing the failed material.

The pole and hardware failures most likely occurred due to high wind velocities as a result of Hurricane Irma's landfall. Possible wood rot could have aided in some of the wood pole's failures followed by additional cascading failures of adjacent structures.



Distance from Hurricane Irma's path to structure AL-14-7.



Replaced light duty (LD) steel poles AL-14-5 to AL-14-3. Looking north.

2.0 Maintenance Data

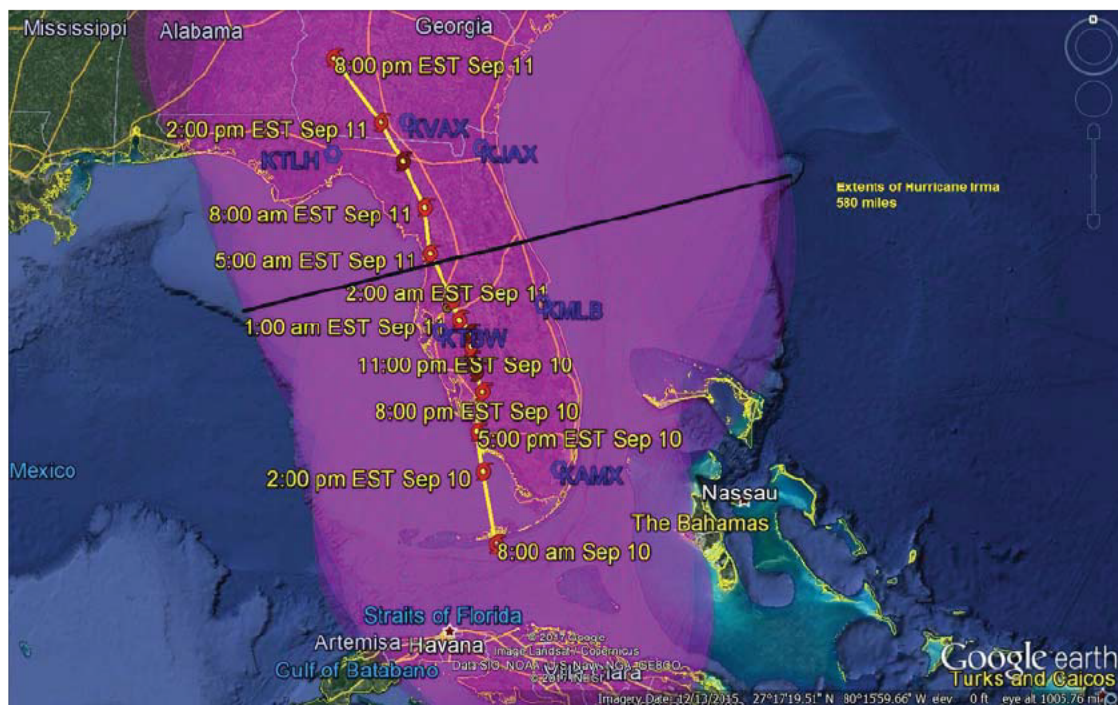
Maintenance data is not available at this time for poles AL-14-1 to AL-14-13.

3.0 Weather Data

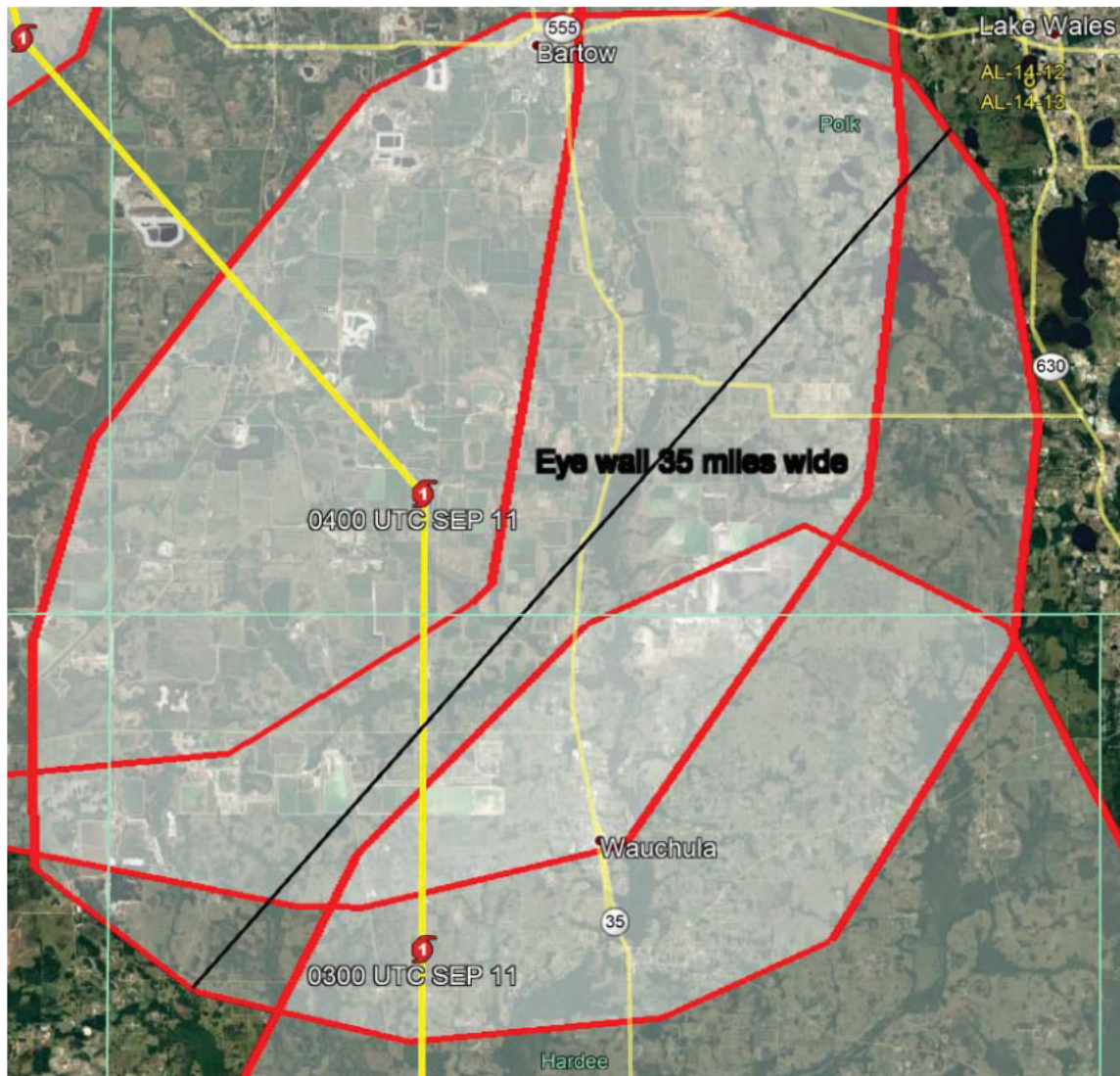
Hurricane Irma made continental landfall in Naples, Florida at 4:00 pm EST on Sunday, September 10, 2017 as a category 2 hurricane and weakened to a tropical depression over the Georgia - Alabama border 12 hours later.

At the time of the Crooked Lake 69kv Tapline outage, approximately at 10:04 pm EST, September 10, 2017, the hurricane was designated as a category 1 hurricane and the eye of the hurricane was located approximately 32 miles southwest of pole AL-14-13. 63 mph wind velocity was reported near poles AL-14-1 to AL-14-13 at the time of the outage.

The hurricane was nearest to wood poles AL-14-1 to AL-14-13 at approximately 11:00 pm EST on Sunday, September 10, 2017 as a category 1 hurricane with recorded 100 mph wind velocities. The hurricane eye at that time was 75 miles wide and located 22.5 miles southwest of AL-14-13.



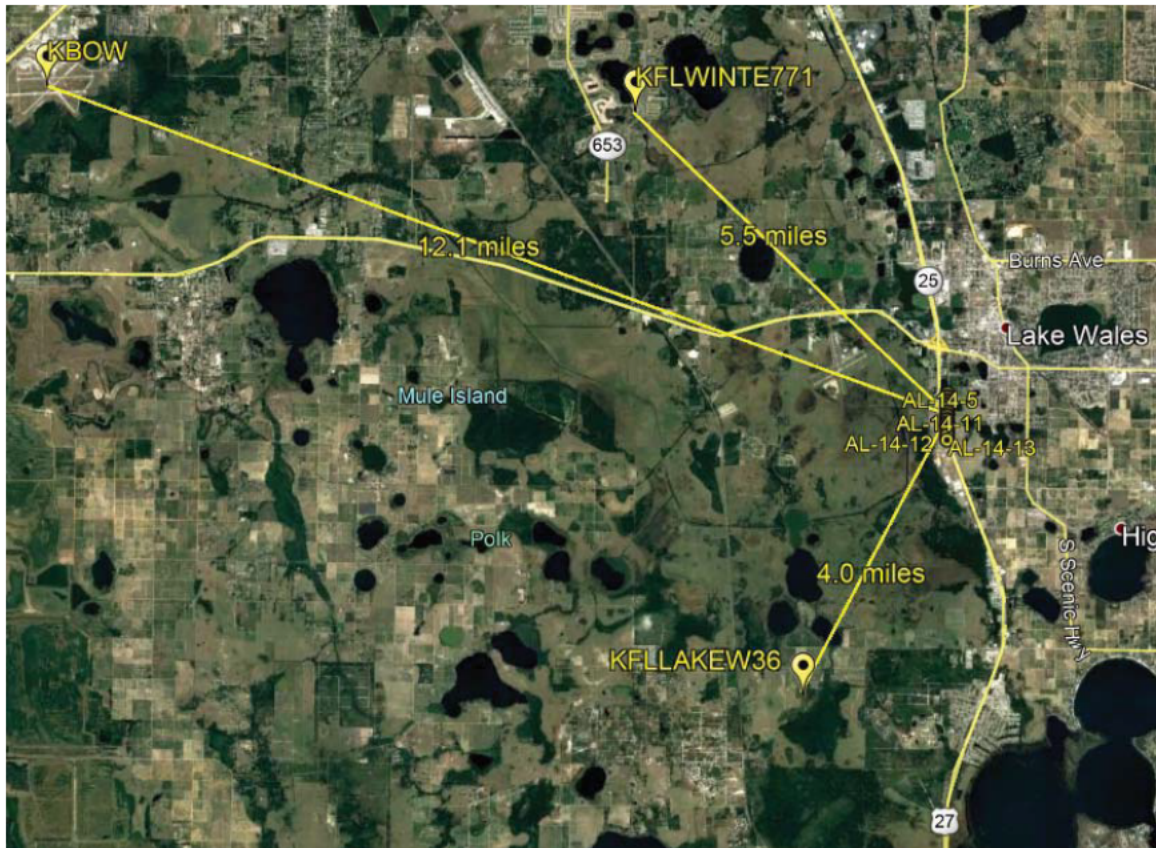
Extents and path of Hurricane Irma.



Hurricane Irma eye wall in vicinity of AL-14-13.

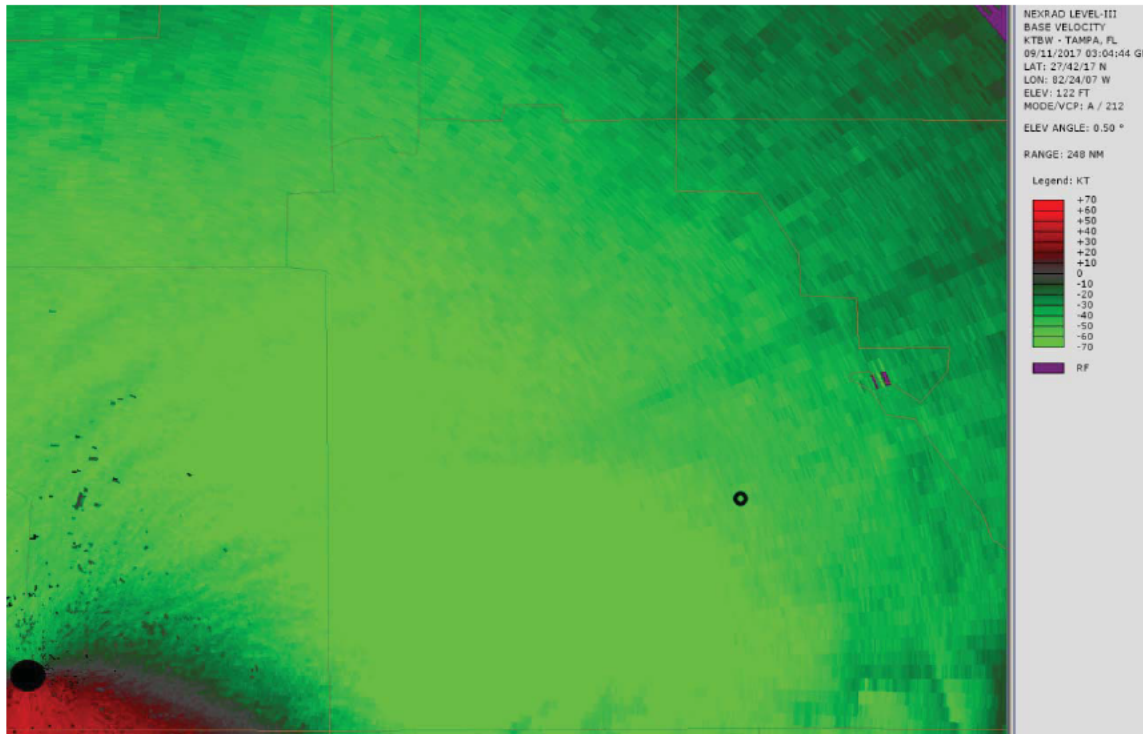
Three local weather stations: KBOW, KFLWINT771 and KFLLAKEW36 show wind velocities in range of 24 to 41 mph and wind gusts in range of 47 to 57 mph. According to the NOAA site specific maps, the wind speeds have reached 63 mph at time of the outage.

Station Name & Location	Time	Temp	Wind Dir	Wind Vel.	Wind Gust.	Distance from AL-14-13
KBOW, Bartow Municipal Airport	10:15:00 PM	75.2 °F	ENE	41.4 mph	57.5 mph	12.1 mi
KFLWINT771, Winter Haven, FL	10:02:00 PM	76.6 °F	ENE	30.4 mph	47.2 mph	5.5 mi
KFLLAKEW36, Lake Wales, FL	10:11:00 PM	75.9 °F	E	24 mph	47 mph	4.0 mi



Weather stations and distances from AL-14-1 to AL-14-13.

The following map shows NOAA wind velocities at the time of failure. The green shading indicates 55 knot wind speed which equates to 63 mph.



NOAA cyclone activity at the time of the outage was also reviewed and found no evidence of any cyclones near the Crooked Lake 69kv Tapline.

4.0 Conclusion

Per a discussion with the construction inspector, there were five (5) wood poles, various insulators and wire failures. At the time of the field visit all failed poles and insulators had been replaced and new wire installed. Crews were in process of removing the failed material.

The failed portion of the tapline is located on a slightly higher elevation and open landscape without vegetation or manmade cover. The open landscape increases wind exposure which in turn increases the risk of pole failure due to wind damage.

The pole and hardware failures most likely occurred due to high wind velocities as a result of Hurricane Irma's landfall. Possible wood rot could have aided in some of the wood pole's failures followed by additional cascading failures of adjacent structures.

5.0 Restoration

At the time of the site visit the wood failed poles, wire and hardware were being restored with LD steel poles.

Appendix A: Weather Data

KBOW Weather data for September 10 2017												
Time (EDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:15 AM	80.6 °F	85.4 °F	73.4 °F	79%	29.82 in	10.0 mi	ENE	17.3 mph	31.1 mph	N/A		Overcast
12:35 AM	80.6 °F	85.4 °F	73.4 °F	79%	29.81 in	10.0 mi	ENE	16.1 mph	24.2 mph	N/A		Overcast
12:55 AM	78.8 °F	-	73.4 °F	83%	29.80 in	10.0 mi	East	13.8 mph	24.2 mph	N/A		Overcast
1:15 AM	78.8 °F	-	75.2 °F	89%	29.80 in	10.0 mi	ENE	15.0 mph	21.9 mph	N/A		Overcast
1:35 AM	78.8 °F	-	75.2 °F	89%	29.80 in	10.0 mi	East	13.8 mph	23.0 mph	N/A		Overcast
1:55 AM	78.8 °F	-	77.0 °F	94%	29.80 in	10.0 mi	East	13.8 mph	26.5 mph	N/A		Overcast
2:15 AM	77.0 °F	-	77.0 °F	100%	29.80 in	4.0 mi	East	20.7 mph	26.5 mph	N/A	Rain	Light Rain
2:35 AM	75.2 °F	-	-	N/A%	29.79 in	4.0 mi	ENE	17.3 mph	24.2 mph	N/A	Rain	Light Rain
2:55 AM	75.2 °F	-	-	N/A%	29.78 in	5.0 mi	ENE	15.0 mph	-	N/A	Rain	Light Rain
3:15 AM	75.2 °F	-	-	N/A%	29.77 in	7.0 mi	NE	13.8 mph	-	N/A	Rain	Light Rain
3:35 AM	75.2 °F	-	-	N/A%	29.75 in	8.0 mi	ENE	12.7 mph	20.7 mph	N/A	Rain	Light Rain
3:55 AM	75.2 °F	-	-	N/A%	29.75 in	10.0 mi	ENE	12.7 mph	-	N/A		Mostly Cloudy
4:15 AM	75.2 °F	-	-	N/A%	29.76 in	10.0 mi	ENE	12.7 mph	-	N/A		Mostly Cloudy
4:35 AM	75.2 °F	-	-	N/A%	29.75 in	10.0 mi	ENE	13.8 mph	-	N/A	Rain	Light Rain
4:55 AM	75.2 °F	-	75.2 °F	100%	29.75 in	10.0 mi	ENE	12.7 mph	18.4 mph	N/A		Overcast
5:15 AM	75.2 °F	-	-	N/A%	29.75 in	10.0 mi	NE	9.2 mph	15.0 mph	N/A		Light Drizzle
5:35 AM	75.2 °F	-	-	N/A%	29.76 in	9.0 mi	ENE	10.4 mph	21.9 mph	N/A	Rain	Light Rain
5:55 AM	75.2 °F	-	-	N/A%	29.76 in	5.0 mi	ENE	13.8 mph	25.3 mph	N/A	Rain	Light Rain
6:15 AM	73.4 °F	-	-	N/A%	29.75 in	7.0 mi	ENE	15.0 mph	21.9 mph	N/A	Rain	Light Rain
6:35 AM	73.4 °F	-	-	N/A%	29.74 in	10.0 mi	NE	11.5 mph	18.4 mph	N/A		Light Drizzle
6:55 AM	75.2 °F	-	-	N/A%	29.73 in	10.0 mi	NE	12.7 mph	18.4 mph	N/A		Mostly Cloudy
7:15 AM	73.4 °F	-	-	N/A%	29.74 in	4.0 mi	NNE	10.4 mph	18.4 mph	N/A	Rain	Rain
5:35 PM	73.4 °F	-	-	N/A%	29.42 in	0.8 mi	NNE	25.3 mph	41.4 mph	N/A	Rain	Heavy Rain
5:55 PM	73.4 °F	-	-	N/A%	29.39 in	0.8 mi	NE	31.1 mph	49.5 mph	N/A	Rain	Heavy Rain
6:15 PM	73.4 °F	-	-	N/A%	29.36 in	-	NNE	27.6 mph	46.0 mph	N/A	Rain	Heavy Rain
6:35 PM	71.6 °F	-	-	N/A%	29.32 in	0.2 mi	NE	38.0 mph	49.5 mph	N/A	Rain	Heavy Rain
6:55 PM	71.6 °F	-	-	N/A%	29.32 in	0.2 mi	NNE	26.5 mph	47.2 mph	N/A	Rain	Heavy Rain
7:15 PM	73.4 °F	-	-	N/A%	29.27 in	0.2 mi	NE	27.6 mph	47.2 mph	N/A	Rain	Heavy Rain
7:35 PM	73.4 °F	-	-	N/A%	29.23 in	0.2 mi	NE	35.7 mph	46.0 mph	N/A	Rain	Heavy Rain
7:55 PM	73.4 °F	-	-	N/A%	29.18 in	0.5 mi	NE	32.2 mph	48.3 mph	N/A	Rain	Heavy Rain
8:15 PM	75.2 °F	-	-	N/A%	29.15 in	0.2 mi	NE	35.7 mph	55.2 mph	N/A	Rain	Heavy Rain
8:35 PM	75.2 °F	-	-	N/A%	29.11 in	1.2 mi	ENE	38.0 mph	44.9 mph	N/A	Rain	Heavy Rain
8:55 PM	75.2 °F	-	-	N/A%	29.07 in	2.0 mi	NE	33.4 mph	50.6 mph	N/A	Rain	Rain
9:15 PM	75.2 °F	-	-	N/A%	29.03 in	0.8 mi	NE	38.0 mph	49.5 mph	N/A	Rain	Heavy Rain
9:35 PM	75.2 °F	-	-	N/A%	28.97 in	0.8 mi	NE	42.6 mph	62.1 mph	N/A	Rain	Heavy Rain
9:55 PM	75.2 °F	-	-	N/A%	28.94 in	1.0 mi	ENE	36.8 mph	56.4 mph	N/A	Rain	Heavy Rain
10:15 PM	75.2 °F	-	-	N/A%	28.89 in	-	ENE	41.4 mph	57.5 mph	N/A	Rain	Heavy Rain
10:35 PM	75.2 °F	-	-	N/A%	28.84 in	0.5 mi	ENE	38.0 mph	61.0 mph	N/A	Rain	Heavy Rain
10:55 PM	75.2 °F	-	-	N/A%	28.79 in	0.5 mi	ENE	38.0 mph	64.4 mph	N/A	Rain	Heavy Rain
11:15 PM	-	-	-	N/A%	-	-	North	-	-	N/A		Unknown
11:35 PM	-	-	-	N/A%	-	-	North	-	-	N/A		Unknown
11:55 PM	-	-	-	N/A%	-	-	North	-	-	N/A		Unknown

KFLLAKEW36 Weather data for September 10 2017									
Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
12:10 AM	80.2 °F	75 °F	86%	ENE	11 mph	20 mph	29.84 in	0 in	0 in
12:26 AM	79.9 °F	75 °F	87%	ESE	10 mph	21 mph	29.83 in	0 in	0 in
12:41 AM	79.2 °F	74 °F	85%	ENE	9 mph	19 mph	29.83 in	0 in	0 in
1:01 AM	78.5 °F	74 °F	86%	East	7 mph	18 mph	29.82 in	0 in	0 in
1:20 AM	76.2 °F	73 °F	92%	East	6 mph	13 mph	29.82 in	0.01 in	0.01 in
1:40 AM	76.7 °F	75 °F	95%	NE	8 mph	17 mph	29.82 in	0.03 in	0.03 in
2:00 AM	76.6 °F	75 °F	95%	ESE	6 mph	15 mph	29.82 in	0.07 in	0.07 in
2:21 AM	76.2 °F	74 °F	95%	East	7 mph	14 mph	29.82 in	0.09 in	0.1 in
2:40 AM	75.8 °F	74 °F	96%	East	6 mph	11 mph	29.81 in	0.12 in	0.15 in
2:55 AM	75.6 °F	74 °F	96%	ENE	5 mph	10 mph	29.8 in	0.1 in	0.16 in
3:15 AM	75.5 °F	74 °F	96%	ENE	5 mph	13 mph	29.78 in	0.07 in	0.16 in
3:35 AM	75.7 °F	74 °F	96%	ENE	7 mph	13 mph	29.78 in	0.02 in	0.16 in
3:50 AM	75.7 °F	74 °F	96%	ENE	5 mph	12 mph	29.77 in	0 in	0.16 in
4:10 AM	75.8 °F	74 °F	96%	ESE	6 mph	15 mph	29.78 in	0 in	0.16 in
4:25 AM	75.7 °F	74 °F	96%	ENE	4 mph	10 mph	29.77 in	0 in	0.16 in
4:45 AM	75.5 °F	74 °F	96%	ENE	5 mph	10 mph	29.77 in	0.02 in	0.18 in
5:00 AM	75.4 °F	74 °F	96%	NNE	4 mph	11 mph	29.77 in	0.03 in	0.19 in
5:20 AM	75.5 °F	74 °F	96%	ENE	7 mph	17 mph	29.78 in	0.06 in	0.22 in
5:40 AM	75.3 °F	74 °F	96%	ENE	8 mph	16 mph	29.77 in	0.13 in	0.31 in
5:55 AM	75.1 °F	73 °F	96%	ENE	9 mph	17 mph	29.77 in	0.19 in	0.38 in
6:10 AM	74.7 °F	73 °F	96%	East	6 mph	14 mph	29.77 in	0.23 in	0.42 in
6:30 AM	74.8 °F	73 °F	96%	ENE	5 mph	12 mph	29.76 in	0.2 in	0.46 in
6:50 AM	74.7 °F	73 °F	97%	East	6 mph	12 mph	29.75 in	0.13 in	0.48 in
7:10 AM	74.9 °F	73 °F	97%	NNE	10 mph	20 mph	29.74 in	0.28 in	0.7 in
7:30 AM	74.9 °F	73 °F	97%	East	7 mph	14 mph	29.74 in	0.37 in	0.83 in
7:50 AM	73.7 °F	72 °F	97%	NE	6 mph	13 mph	29.74 in	0.86 in	1.34 in
8:06 AM	75.2 °F	74 °F	97%	NNE	6 mph	13 mph	29.74 in	0.71 in	1.38 in
8:26 AM	76 °F	75 °F	97%	ENE	7 mph	17 mph	29.75 in	0.62 in	1.44 in
8:47 AM	76.5 °F	75 °F	97%	ENE	8 mph	19 mph	29.75 in	0.22 in	1.52 in
9:05 AM	76.5 °F	75 °F	97%	ENE	8 mph	14 mph	29.75 in	0.32 in	1.7 in
9:25 AM	76.2 °F	75 °F	97%	ENE	10 mph	18 mph	29.75 in	0.45 in	1.89 in
9:45 AM	75.7 °F	74 °F	97%	ENE	11 mph	19 mph	29.76 in	0.58 in	2.11 in
10:00 AM	75.6 °F	74 °F	97%	NE	8 mph	18 mph	29.76 in	0.68 in	2.3 in
10:16 AM	75.2 °F	74 °F	97%	ENE	9 mph	17 mph	29.77 in	0.68 in	2.52 in
10:35 AM	74.3 °F	73 °F	96%	ENE	9 mph	18 mph	29.75 in	0.64 in	2.68 in
10:50 AM	73.2 °F	71 °F	96%	NE	11 mph	21 mph	29.79 in	0.67 in	2.84 in
11:05 AM	72.6 °F	71 °F	97%	ENE	7 mph	14 mph	29.75 in	0.54 in	2.94 in
11:25 AM	71.2 °F	70 °F	96%	ENE	9 mph	17 mph	29.75 in	0.37 in	3.01 in
11:40 AM	72.5 °F	71 °F	97%	NE	9 mph	20 mph	29.74 in	0.36 in	3.05 in
12:05 PM	73.5 °F	72 °F	96%	NE	11 mph	21 mph	29.72 in	0.18 in	3.12 in
12:20 PM	73.8 °F	72 °F	97%	NE	11 mph	23 mph	29.71 in	0.14 in	3.13 in
12:40 PM	73.5 °F	72 °F	96%	East	12 mph	23 mph	29.7 in	0.16 in	3.21 in
1:00 PM	73.7 °F	72 °F	97%	NNE	11 mph	20 mph	29.68 in	0.2 in	3.31 in
1:15 PM	73.1 °F	71 °F	96%	NE	13 mph	24 mph	29.68 in	0.42 in	3.54 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
1:35 PM	73.4 °F	72 °F	97%	ENE	12 mph	21 mph	29.65 in	0.38 in	3.59 in
1:56 PM	74 °F	73 °F	97%	NNE	12 mph	23 mph	29.63 in	0.36 in	3.63 in
2:11 PM	73.9 °F	72 °F	96%	ENE	14 mph	26 mph	29.61 in	0.18 in	3.71 in
2:31 PM	74.2 °F	72 °F	96%	NE	13 mph	30 mph	29.59 in	0.17 in	3.76 in
2:51 PM	74.1 °F	72 °F	96%	North	13 mph	23 mph	29.57 in	0.19 in	3.81 in
3:05 PM	73.9 °F	72 °F	96%	NNE	14 mph	28 mph	29.55 in	0.21 in	3.87 in
3:21 PM	73.9 °F	72 °F	96%	NE	13 mph	26 mph	29.53 in	0.22 in	3.97 in
3:40 PM	73.7 °F	72 °F	97%	ENE	14 mph	23 mph	29.52 in	0.42 in	4.2 in
4:00 PM	73.6 °F	72 °F	97%	NE	13 mph	26 mph	29.52 in	0.63 in	4.46 in
4:21 PM	73.6 °F	72 °F	97%	NNE	14 mph	28 mph	29.49 in	0.68 in	4.66 in
4:36 PM	73.4 °F	72 °F	97%	ENE	15 mph	31 mph	29.46 in	0.6 in	4.76 in
4:56 PM	73.7 °F	72 °F	97%	ENE	14 mph	41 mph	29.45 in	0.53 in	4.92 in
5:18 PM	74 °F	73 °F	97%	ENE	14 mph	31 mph	29.43 in	0.43 in	5.06 in
5:35 PM	74.3 °F	73 °F	97%	East	17 mph	38 mph	29.4 in	0.53 in	5.29 in
5:55 PM	74.2 °F	73 °F	97%	NNE	18 mph	34 mph	29.36 in	0.72 in	5.64 in
6:10 PM	74.3 °F	73 °F	97%	North	17 mph	29 mph	29.34 in	0.89 in	5.88 in
6:30 PM	73.9 °F	72 °F	97%	NE	20 mph	40 mph	29.31 in	1.11 in	6.35 in
6:51 PM	73.9 °F	72 °F	97%	NNE	17 mph	39 mph	29.28 in	1.3 in	6.87 in
7:10 PM	74.1 °F	73 °F	97%	NE	20 mph	37 mph	29.25 in	1.25 in	7.14 in
7:28 PM	75.1 °F	74 °F	98%	ENE	17 mph	34 mph	29.23 in	1.06 in	7.28 in
7:45 PM	75 °F	74 °F	98%	ENE	20 mph	37 mph	29.18 in	0.75 in	7.52 in
8:05 PM	75.6 °F	74 °F	98%	NE	19 mph	43 mph	29.13 in	0.68 in	7.79 in
8:26 PM	75.6 °F	74 °F	97%	NE	20 mph	37 mph	29.1 in	0.65 in	7.96 in
8:50 PM	75.9 °F	74 °F	97%	ENE	22 mph	46 mph	29.05 in	0.45 in	8.07 in
9:05 PM	75.9 °F	74 °F	97%	NNE	22 mph	40 mph	29 in	0.48 in	8.28 in
10:11 PM	75.9 °F	74 °F	97%	East	24 mph	47 mph	28.88 in	0.95 in	9.29 in
10:35 PM	75.8 °F	74 °F	97%	East	22 mph	47 mph	28.83 in	1.17 in	9.82 in
10:56 PM	75.9 °F	74 °F	97%	SSE	24 mph	53 mph	28.78 in	1.2 in	10.24 in
11:40 PM	76 °F	75 °F	97%	East	25 mph	47 mph	28.7 in	1.27 in	10.87 in
11:55 PM	75.7 °F	75 °F	98%	ESE	28 mph	49 mph	28.69 in	1.37 in	11.62 in

KFLWINT771 Weather data for September 10 2017									
Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
12:02 AM	80.8 °F	79.5 °F	96%	ENE	16.1 mph	19.9 mph	29.78 in	0 in	0 in
12:07 AM	80.8 °F	79.5 °F	96%	NE	13 mph	19.9 mph	29.78 in	0 in	0 in
12:12 AM	80.8 °F	79.5 °F	96%	ENE	13 mph	19.9 mph	29.76 in	0 in	0 in
12:17 AM	80.8 °F	79.5 °F	96%	NE	16.1 mph	19.9 mph	29.77 in	0 in	0 in
12:22 AM	80.8 °F	79.5 °F	96%	East	11.9 mph	18.1 mph	29.76 in	0 in	0 in
12:27 AM	80.8 °F	79.5 °F	96%	East	15 mph	18.1 mph	29.77 in	0 in	0 in
12:32 AM	80.8 °F	79.5 °F	96%	NE	8.1 mph	18.1 mph	29.77 in	0 in	0 in
12:37 AM	80.8 °F	79.5 °F	96%	NE	16.8 mph	19.9 mph	29.77 in	0 in	0 in
12:42 AM	80.6 °F	79 °F	95%	East	18.6 mph	19.9 mph	29.76 in	0 in	0 in
12:47 AM	80.6 °F	79 °F	95%	SSE	15.4 mph	19.9 mph	29.76 in	0 in	0 in
12:52 AM	80.4 °F	78.4 °F	94%	ENE	11.2 mph	19.9 mph	29.76 in	0 in	0 in
12:57 AM	80.4 °F	78.4 °F	94%	ENE	9.4 mph	19.9 mph	29.76 in	0 in	0 in
1:02 AM	80.4 °F	78.8 °F	95%	NE	15 mph	19.9 mph	29.75 in	0 in	0 in
1:07 AM	80.2 °F	79 °F	96%	ENE	13.6 mph	19.9 mph	29.76 in	0 in	0 in
1:12 AM	80.2 °F	79 °F	96%	ENE	16.8 mph	19.9 mph	29.76 in	0 in	0 in
1:17 AM	80.2 °F	79.5 °F	97%	NE	9.8 mph	19.9 mph	29.76 in	0 in	0 in
1:22 AM	80.1 °F	79.5 °F	98%	East	8.1 mph	19.9 mph	29.75 in	0 in	0 in
1:27 AM	80.1 °F	79.5 °F	98%	ENE	10.5 mph	19.9 mph	29.76 in	0 in	0 in
1:32 AM	79.9 °F	79.5 °F	99%	ENE	16.1 mph	19.9 mph	29.76 in	0 in	0 in
1:37 AM	79.9 °F	79.5 °F	99%	NE	11.9 mph	19.9 mph	29.75 in	0 in	0 in
1:42 AM	79.9 °F	79.5 °F	99%	NE	8.7 mph	18.1 mph	29.76 in	0 in	0 in
1:47 AM	79.9 °F	79.5 °F	99%	NE	13 mph	18.1 mph	29.75 in	0 in	0 in
1:52 AM	79.7 °F	79.3 °F	99%	NNE	18.1 mph	18.1 mph	29.75 in	0 in	0 in
1:57 AM	79.7 °F	79.3 °F	99%	ENE	9.8 mph	18.1 mph	29.76 in	0.06 in	0.01 in
2:02 AM	79.5 °F	79.2 °F	99%	NE	8.7 mph	18.1 mph	29.76 in	0.12 in	0.02 in
2:07 AM	79.5 °F	79.2 °F	99%	ENE	6.9 mph	18.1 mph	29.75 in	0.12 in	0.03 in
2:12 AM	79.5 °F	79.2 °F	99%	East	14.3 mph	18.1 mph	29.76 in	0.12 in	0.04 in
2:17 AM	79.3 °F	79 °F	99%	ENE	13.6 mph	18.1 mph	29.75 in	0.12 in	0.05 in
2:22 AM	79.3 °F	79 °F	99%	NE	10.5 mph	18.1 mph	29.75 in	0.06 in	0.05 in
2:27 AM	79.2 °F	78.8 °F	99%	NE	7.4 mph	18.1 mph	29.75 in	0.12 in	0.06 in
2:32 AM	79 °F	78.6 °F	99%	NE	8.7 mph	18.1 mph	29.75 in	0.12 in	0.07 in
2:37 AM	78.8 °F	78.4 °F	99%	NE	6.3 mph	18.1 mph	29.75 in	0.12 in	0.08 in
2:42 AM	78.8 °F	78.4 °F	99%	NE	6.9 mph	18.1 mph	29.75 in	0.12 in	0.09 in
2:47 AM	78.8 °F	78.4 °F	99%	NE	5.6 mph	18.1 mph	29.74 in	0.12 in	0.1 in
2:52 AM	78.8 °F	78.4 °F	99%	ENE	5.6 mph	18.1 mph	29.74 in	0.12 in	0.11 in
2:56 AM	78.6 °F	78.3 °F	99%	NNE	6.9 mph	18.1 mph	29.73 in	0.12 in	0.11 in
3:01 AM	78.6 °F	78.3 °F	99%	ENE	11.9 mph	18.1 mph	29.73 in	0.06 in	0.12 in
3:06 AM	78.4 °F	78.1 °F	99%	NE	11.2 mph	18.1 mph	29.73 in	0.12 in	0.13 in
3:11 AM	78.4 °F	78.1 °F	99%	ENE	8.1 mph	18.1 mph	29.72 in	0.06 in	0.13 in
3:16 AM	78.3 °F	77.9 °F	99%	NNE	4.3 mph	18.1 mph	29.71 in	0 in	0.13 in
3:21 AM	78.3 °F	77.9 °F	99%	ENE	6.3 mph	15 mph	29.71 in	0.06 in	0.14 in
3:26 AM	78.3 °F	77.9 °F	99%	ENE	7.4 mph	15 mph	29.71 in	0.06 in	0.14 in
3:31 AM	78.3 °F	77.9 °F	99%	NE	8.7 mph	15.4 mph	29.71 in	0 in	0.14 in
3:36 AM	78.3 °F	77.9 °F	99%	ENE	8.7 mph	15.4 mph	29.71 in	0 in	0.14 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
3:41 AM	78.3 °F	77.9 °F	99%	ENE	10.5 mph	15.4 mph	29.7 in	0 in	0.14 in
3:46 AM	78.3 °F	77.9 °F	99%	East	8.1 mph	15.4 mph	29.71 in	0 in	0.14 in
3:51 AM	78.3 °F	77.9 °F	99%	ENE	9.8 mph	15.4 mph	29.7 in	0 in	0.14 in
3:56 AM	78.3 °F	77.9 °F	99%	ENE	11.2 mph	15.4 mph	29.71 in	0 in	0.14 in
4:01 AM	78.3 °F	77.9 °F	99%	East	8.7 mph	15.4 mph	29.71 in	0 in	0.14 in
4:06 AM	78.3 °F	77.9 °F	99%	ENE	8.1 mph	15.4 mph	29.72 in	0 in	0.14 in
4:11 AM	78.3 °F	77.9 °F	99%	East	9.8 mph	15.4 mph	29.72 in	0 in	0.14 in
4:16 AM	78.3 °F	77.9 °F	99%	NNE	11.2 mph	18.1 mph	29.71 in	0 in	0.14 in
4:21 AM	78.3 °F	77.9 °F	99%	NE	11.2 mph	18.1 mph	29.71 in	0 in	0.14 in
4:26 AM	78.3 °F	77.9 °F	99%	NE	10.5 mph	18.1 mph	29.7 in	0 in	0.14 in
4:31 AM	78.3 °F	77.9 °F	99%	NE	5.6 mph	18.1 mph	29.7 in	0 in	0.14 in
4:36 AM	78.3 °F	77.9 °F	99%	ENE	6.9 mph	18.1 mph	29.71 in	0 in	0.14 in
4:41 AM	78.1 °F	77.7 °F	99%	East	6.3 mph	18.1 mph	29.7 in	0 in	0.14 in
4:46 AM	78.3 °F	77.9 °F	99%	ENE	6.3 mph	18.1 mph	29.71 in	0 in	0.14 in
4:56 AM	78.1 °F	77.7 °F	99%	NE	7.4 mph	18.1 mph	29.7 in	0 in	0.14 in
5:01 AM	77.9 °F	77.5 °F	99%	NNE	3.8 mph	18.1 mph	29.71 in	0 in	0.14 in
5:06 AM	77.9 °F	77.5 °F	99%	NE	9.4 mph	18.1 mph	29.71 in	0 in	0.14 in
5:11 AM	77.9 °F	77.5 °F	99%	ENE	6.9 mph	13 mph	29.7 in	0 in	0.14 in
5:16 AM	77.9 °F	77.5 °F	99%	NE	10.5 mph	13 mph	29.71 in	0 in	0.14 in
5:21 AM	77.9 °F	77.5 °F	99%	ENE	9.4 mph	11.9 mph	29.71 in	0 in	0.14 in
5:26 AM	77.9 °F	77.5 °F	99%	NE	8.1 mph	13 mph	29.72 in	0.06 in	0.15 in
5:31 AM	77.9 °F	77.5 °F	99%	East	13 mph	13 mph	29.71 in	0.18 in	0.17 in
5:36 AM	77.9 °F	77.5 °F	99%	NE	10.5 mph	13 mph	29.71 in	0.18 in	0.18 in
5:41 AM	77.7 °F	77.4 °F	99%	NE	9.4 mph	13.6 mph	29.71 in	0.24 in	0.2 in
5:46 AM	77.7 °F	77.4 °F	99%	ENE	9.8 mph	15.4 mph	29.71 in	0.18 in	0.21 in
5:51 AM	77.7 °F	77.4 °F	99%	NE	11.9 mph	15.4 mph	29.71 in	0.3 in	0.24 in
5:56 AM	77.7 °F	77.4 °F	99%	NNE	12.5 mph	15.4 mph	29.71 in	0.3 in	0.26 in
6:01 AM	77.5 °F	77.2 °F	99%	NE	9.4 mph	15.4 mph	29.71 in	0.24 in	0.27 in
6:06 AM	77.5 °F	77.2 °F	99%	NE	7.4 mph	15.4 mph	29.71 in	0.12 in	0.28 in
6:11 AM	77.4 °F	77 °F	99%	NNE	11.2 mph	15.4 mph	29.7 in	0.06 in	0.28 in
6:16 AM	77.4 °F	77 °F	99%	North	10.5 mph	15.4 mph	29.7 in	0 in	0.28 in
6:21 AM	77.4 °F	77 °F	99%	ENE	5.6 mph	15.4 mph	29.7 in	0 in	0.28 in
6:26 AM	77.2 °F	76.8 °F	99%	NNE	6.3 mph	15.4 mph	29.7 in	0 in	0.28 in
6:31 AM	77.2 °F	76.8 °F	99%	NE	6.9 mph	15.4 mph	29.69 in	0.06 in	0.29 in
6:36 AM	77.2 °F	76.8 °F	99%	NE	6.9 mph	15.4 mph	29.7 in	0.06 in	0.29 in
6:41 AM	77.2 °F	76.8 °F	99%	NE	5.6 mph	14.3 mph	29.69 in	0 in	0.29 in
6:47 AM	77.2 °F	76.8 °F	99%	NNE	9.8 mph	14.3 mph	29.69 in	0 in	0.29 in
6:52 AM	77.2 °F	76.8 °F	99%	North	7.4 mph	14.3 mph	29.69 in	0.06 in	0.3 in
6:57 AM	77.2 °F	76.8 °F	99%	NNE	4.9 mph	14.3 mph	29.69 in	0.12 in	0.31 in
7:02 AM	77.2 °F	76.8 °F	99%	NE	6.9 mph	13 mph	29.69 in	0.12 in	0.32 in
7:07 AM	77.2 °F	76.8 °F	99%	NNE	6.9 mph	13 mph	29.69 in	0.06 in	0.32 in
7:12 AM	77.2 °F	76.8 °F	99%	North	7.4 mph	13 mph	29.69 in	0.06 in	0.33 in
7:17 AM	77 °F	76.6 °F	99%	NNE	8.7 mph	13 mph	29.69 in	0.12 in	0.34 in
7:22 AM	77 °F	76.6 °F	99%	NNE	7.4 mph	13 mph	29.69 in	0.24 in	0.37 in
7:27 AM	77 °F	76.6 °F	99%	NNE	3.8 mph	13 mph	29.68 in	0.54 in	0.43 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
7:32 AM	77 °F	76.6 °F	99%	NNE	7.4 mph	13 mph	29.67 in	0.48 in	0.44 in
7:37 AM	77 °F	76.6 °F	99%	NNE	11.9 mph	13 mph	29.67 in	0.18 in	0.46 in
7:42 AM	77 °F	76.6 °F	99%	NNE	8.1 mph	13 mph	29.67 in	0.18 in	0.47 in
7:47 AM	77 °F	76.6 °F	99%	NNE	8.1 mph	15 mph	29.67 in	0.12 in	0.48 in
7:52 AM	77 °F	76.6 °F	99%	North	9.4 mph	15 mph	29.67 in	0.18 in	0.5 in
7:57 AM	77 °F	76.6 °F	99%	NNE	11.9 mph	15 mph	29.67 in	0.18 in	0.51 in
8:02 AM	77.2 °F	76.8 °F	99%	NE	8.7 mph	16.8 mph	29.67 in	0.12 in	0.52 in
8:07 AM	77.2 °F	76.8 °F	99%	NE	7.4 mph	16.8 mph	29.68 in	0.12 in	0.53 in
8:12 AM	77.4 °F	77 °F	99%	SW	9.8 mph	16.8 mph	29.68 in	0.12 in	0.54 in
8:17 AM	77.4 °F	77 °F	99%	NNE	14.3 mph	16.8 mph	29.68 in	0.12 in	0.55 in
8:22 AM	77.5 °F	77.2 °F	99%	East	9.8 mph	16.8 mph	29.69 in	0.18 in	0.57 in
8:27 AM	77.5 °F	77.2 °F	99%	NNE	10.5 mph	16.8 mph	29.68 in	0.18 in	0.58 in
8:32 AM	77.7 °F	77.4 °F	99%	North	9.4 mph	16.8 mph	29.68 in	0.18 in	0.59 in
8:37 AM	77.9 °F	77.5 °F	99%	North	9.8 mph	16.8 mph	29.69 in	0.18 in	0.61 in
8:42 AM	77.9 °F	77.5 °F	99%	ENE	13.6 mph	16.8 mph	29.69 in	0.18 in	0.62 in
8:45 AM	77.9 °F	77.5 °F	99%	NE	9.4 mph	18.6 mph	29.69 in	0.24 in	0.64 in
8:50 AM	78.1 °F	77.7 °F	99%	NNE	8.7 mph	18.6 mph	29.69 in	0.3 in	0.66 in
8:51 AM	78.1 °F	77.7 °F	99%	NE	15 mph	18.6 mph	29.69 in	0.24 in	0.66 in
8:56 AM	78.1 °F	77.7 °F	99%	NE	9.8 mph	18.6 mph	29.7 in	0.24 in	0.68 in
9:01 AM	78.1 °F	77.7 °F	99%	NNE	9.8 mph	19.2 mph	29.69 in	0.24 in	0.7 in
9:06 AM	78.1 °F	77.7 °F	99%	NNE	8.7 mph	19.2 mph	29.69 in	0.24 in	0.72 in
9:11 AM	78.3 °F	77.9 °F	99%	NNE	12.5 mph	19.2 mph	29.69 in	0.24 in	0.74 in
9:16 AM	78.1 °F	77.7 °F	99%	NE	9.8 mph	19.2 mph	29.69 in	0.3 in	0.77 in
9:21 AM	78.1 °F	77.7 °F	99%	NE	13 mph	19.2 mph	29.69 in	0.42 in	0.8 in
9:26 AM	78.1 °F	77.7 °F	99%	NE	11.2 mph	19.2 mph	29.69 in	0.3 in	0.81 in
9:31 AM	78.1 °F	77.7 °F	99%	NE	14.3 mph	19.2 mph	29.68 in	0.12 in	0.82 in
9:36 AM	78.1 °F	77.7 °F	99%	ENE	12.5 mph	19.9 mph	29.7 in	0.24 in	0.85 in
9:41 AM	78.1 °F	77.7 °F	99%	NW	11.9 mph	19.9 mph	29.69 in	0.3 in	0.87 in
9:46 AM	78.1 °F	77.7 °F	99%	East	8.7 mph	19.9 mph	29.69 in	0.24 in	0.88 in
9:51 AM	78.1 °F	77.7 °F	99%	NNE	6.9 mph	19.9 mph	29.69 in	0.18 in	0.89 in
9:56 AM	78.1 °F	77.7 °F	99%	ENE	15 mph	19.9 mph	29.7 in	0.12 in	0.9 in
10:01 AM	77.9 °F	77.5 °F	99%	NNE	9.8 mph	19.9 mph	29.71 in	0.24 in	0.93 in
10:06 AM	77.9 °F	77.5 °F	99%	East	6.9 mph	19.9 mph	29.7 in	0.3 in	0.95 in
10:11 AM	77.9 °F	77.5 °F	99%	ESE	13.6 mph	19.9 mph	29.71 in	0.24 in	0.97 in
10:16 AM	77.7 °F	77.4 °F	99%	East	9.8 mph	23 mph	29.71 in	0.36 in	1.01 in
10:21 AM	77.7 °F	77.4 °F	99%	NE	10.5 mph	23 mph	29.7 in	0.3 in	1.01 in
10:26 AM	77.5 °F	77.2 °F	99%	ENE	11.2 mph	23 mph	29.7 in	0.18 in	1.03 in
10:31 AM	77.4 °F	77 °F	99%	NE	10.5 mph	23 mph	29.71 in	0.24 in	1.05 in
10:36 AM	77.2 °F	76.8 °F	99%	ENE	16.8 mph	23 mph	29.7 in	0.6 in	1.12 in
10:41 AM	77 °F	76.6 °F	99%	East	9.8 mph	23 mph	29.69 in	0.72 in	1.16 in
10:46 AM	76.8 °F	76.5 °F	99%	NE	7.4 mph	23 mph	29.71 in	0.42 in	1.19 in
10:51 AM	76.6 °F	76.3 °F	99%	ENE	6.9 mph	23 mph	29.73 in	0.72 in	1.28 in
10:56 AM	76.5 °F	76.1 °F	99%	East	13 mph	23 mph	29.74 in	2.16 in	1.55 in
11:01 AM	76.1 °F	75.7 °F	99%	NE	23 mph	23 mph	29.7 in	2.7 in	1.71 in
11:03 AM	75.9 °F	75.6 °F	99%	NE	13.6 mph	23 mph	29.7 in	2.46 in	1.74 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
11:08 AM	75.6 °F	75.2 °F	99%	NE	18.6 mph	23 mph	29.7 in	0.84 in	1.77 in
11:13 AM	75.2 °F	74.8 °F	99%	NE	8.1 mph	23 mph	29.7 in	0.36 in	1.79 in
11:18 AM	75 °F	74.7 °F	99%	NE	11.9 mph	23 mph	29.69 in	0.18 in	1.8 in
11:23 AM	75 °F	74.7 °F	99%	NNE	14.3 mph	23 mph	29.69 in	0.12 in	1.81 in
11:28 AM	74.8 °F	74.5 °F	99%	ENE	11.9 mph	23 mph	29.7 in	0.12 in	1.82 in
11:33 AM	75 °F	74.7 °F	99%	ENE	9.4 mph	23 mph	29.69 in	0.18 in	1.84 in
11:38 AM	75 °F	74.7 °F	99%	East	8.1 mph	23 mph	29.7 in	0.18 in	1.85 in
11:43 AM	75.2 °F	74.8 °F	99%	NNE	11.2 mph	23 mph	29.69 in	0.12 in	1.86 in
11:48 AM	75.4 °F	75 °F	99%	ENE	16.1 mph	23 mph	29.69 in	0.12 in	1.87 in
11:53 AM	75.4 °F	75 °F	99%	East	11.2 mph	23 mph	29.7 in	0.18 in	1.89 in
11:58 AM	75.4 °F	75 °F	99%	ENE	8.7 mph	22.4 mph	29.68 in	0.3 in	1.92 in
12:03 PM	75.4 °F	75 °F	99%	North	15.4 mph	22.4 mph	29.66 in	0.36 in	1.95 in
12:08 PM	75.4 °F	75 °F	99%	NE	16.8 mph	22.4 mph	29.66 in	0.24 in	1.96 in
12:13 PM	75.6 °F	75.2 °F	99%	NE	20.6 mph	22.4 mph	29.65 in	0.12 in	1.96 in
12:18 PM	75.6 °F	75.2 °F	99%	NNE	16.1 mph	22.4 mph	29.65 in	0.06 in	1.96 in
12:23 PM	75.6 °F	75.2 °F	99%	ENE	13 mph	22.4 mph	29.65 in	0 in	1.96 in
12:28 PM	75.6 °F	75.2 °F	99%	NE	21 mph	22.4 mph	29.65 in	0.06 in	1.97 in
12:33 PM	75.6 °F	75.2 °F	99%	NE	15.4 mph	22.4 mph	29.64 in	0.06 in	1.97 in
12:38 PM	75.7 °F	75.4 °F	99%	NE	15.4 mph	22.4 mph	29.65 in	0 in	1.97 in
12:43 PM	75.7 °F	75.4 °F	99%	NNE	18.6 mph	22.4 mph	29.64 in	0.06 in	1.98 in
12:48 PM	75.7 °F	75.4 °F	99%	NE	15.4 mph	21.7 mph	29.64 in	0.12 in	1.99 in
12:53 PM	75.7 °F	75.4 °F	99%	NE	20.6 mph	21.7 mph	29.63 in	0.18 in	2.01 in
12:58 PM	75.6 °F	75.2 °F	99%	NNE	12.5 mph	21.7 mph	29.63 in	0.12 in	2.01 in
1:03 PM	75.4 °F	75 °F	99%	NE	16.1 mph	21.7 mph	29.64 in	0.3 in	2.05 in
1:08 PM	75.2 °F	74.8 °F	99%	NE	9.4 mph	21.7 mph	29.63 in	0.48 in	2.09 in
1:13 PM	75.2 °F	74.8 °F	99%	NE	20.6 mph	21.7 mph	29.63 in	0.48 in	2.12 in
1:18 PM	75 °F	74.7 °F	99%	ESE	16.8 mph	21.7 mph	29.62 in	0.48 in	2.16 in
1:23 PM	75 °F	74.7 °F	99%	NE	15 mph	21.7 mph	29.63 in	0.36 in	2.18 in
1:28 PM	75 °F	74.7 °F	99%	NNE	14.3 mph	24.2 mph	29.61 in	0.36 in	2.22 in
1:33 PM	75 °F	74.7 °F	99%	NNE	29.3 mph	29.3 mph	29.6 in	0.42 in	2.25 in
1:38 PM	75.2 °F	74.8 °F	99%	NNE	24.8 mph	29.3 mph	29.6 in	0.18 in	2.25 in
1:43 PM	75.4 °F	75 °F	99%	NNE	13 mph	29.3 mph	29.58 in	0.06 in	2.25 in
1:48 PM	75.6 °F	75.2 °F	99%	NE	21.7 mph	29.3 mph	29.58 in	0 in	2.25 in
1:53 PM	75.6 °F	75.2 °F	99%	ENE	16.8 mph	29.3 mph	29.58 in	0.06 in	2.26 in
1:58 PM	75.6 °F	75.2 °F	99%	NE	6.9 mph	29.3 mph	29.58 in	0.06 in	2.26 in
2:03 PM	75.7 °F	75.4 °F	99%	North	13 mph	29.3 mph	29.58 in	0.06 in	2.27 in
2:08 PM	75.7 °F	75.4 °F	99%	NNE	19.9 mph	29.3 mph	29.57 in	0.12 in	2.28 in
2:13 PM	75.7 °F	75.4 °F	99%	West	14.3 mph	29.3 mph	29.57 in	0.18 in	2.29 in
2:18 PM	75.6 °F	75.2 °F	99%	North	22.4 mph	29.3 mph	29.55 in	0.18 in	2.3 in
2:19 PM	75.6 °F	75.2 °F	99%	NE	16.8 mph	29.3 mph	29.55 in	0.12 in	2.3 in
2:24 PM	75.7 °F	75.4 °F	99%	ENE	19.9 mph	29.3 mph	29.55 in	0.12 in	2.31 in
2:29 PM	75.7 °F	75.4 °F	99%	NE	13 mph	27.3 mph	29.54 in	0.12 in	2.32 in
2:34 PM	75.7 °F	75.4 °F	99%	NNE	13 mph	27.3 mph	29.54 in	0.06 in	2.32 in
2:39 PM	75.7 °F	75.4 °F	99%	North	11.2 mph	27.3 mph	29.54 in	0.06 in	2.33 in
2:44 PM	75.7 °F	75.4 °F	99%	SE	18.6 mph	27.3 mph	29.54 in	0.12 in	2.34 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
2:49 PM	75.7 °F	75.4 °F	99%	North	14.3 mph	27.3 mph	29.53 in	0.06 in	2.34 in
2:54 PM	75.7 °F	75.4 °F	99%	NNE	19.2 mph	27.3 mph	29.53 in	0.06 in	2.35 in
2:59 PM	75.7 °F	75.4 °F	99%	NNE	11.9 mph	27.3 mph	29.52 in	0.06 in	2.35 in
3:04 PM	75.7 °F	75.4 °F	99%	NNE	15.4 mph	27.3 mph	29.51 in	0.06 in	2.36 in
3:09 PM	75.6 °F	75.2 °F	99%	NNE	27.3 mph	27.3 mph	29.5 in	0.3 in	2.4 in
3:14 PM	75.6 °F	75.2 °F	99%	NE	24.2 mph	27.3 mph	29.5 in	0.36 in	2.42 in
3:19 PM	75.7 °F	75.4 °F	99%	North	20.6 mph	27.3 mph	29.49 in	0.18 in	2.43 in
3:24 PM	75.6 °F	75.2 °F	99%	NNE	19.2 mph	27.3 mph	29.5 in	0.3 in	2.47 in
3:29 PM	75.6 °F	75.2 °F	99%	ENE	23.7 mph	27.3 mph	29.49 in	0.66 in	2.54 in
3:34 PM	75.4 °F	75 °F	99%	NNE	21 mph	27.3 mph	29.48 in	0.78 in	2.59 in
3:39 PM	75.4 °F	75 °F	99%	NE	19.9 mph	27.3 mph	29.48 in	0.72 in	2.65 in
3:44 PM	75.4 °F	75 °F	99%	NNE	16.1 mph	27.3 mph	29.47 in	0.78 in	2.72 in
3:49 PM	75.2 °F	74.8 °F	99%	NNE	12.5 mph	27.3 mph	29.47 in	0.66 in	2.75 in
3:54 PM	75.4 °F	75 °F	99%	NE	23 mph	27.3 mph	29.46 in	0.3 in	2.77 in
3:59 PM	75.4 °F	75 °F	99%	NNE	19.9 mph	27.3 mph	29.47 in	0.24 in	2.79 in
4:04 PM	75.2 °F	74.8 °F	99%	NNE	18.6 mph	27.3 mph	29.46 in	0.18 in	2.8 in
4:09 PM	75.2 °F	74.8 °F	99%	ENE	15.4 mph	26.6 mph	29.46 in	0.24 in	2.82 in
4:14 PM	75.2 °F	74.8 °F	99%	NE	17.4 mph	26.6 mph	29.45 in	0.24 in	2.84 in
4:19 PM	75.2 °F	74.8 °F	99%	NE	15.4 mph	26.6 mph	29.44 in	0.42 in	2.89 in
4:24 PM	75 °F	74.7 °F	99%	NE	24.2 mph	26.6 mph	29.44 in	0.66 in	2.95 in
4:29 PM	75 °F	74.7 °F	99%	NNE	16.8 mph	29.3 mph	29.44 in	0.84 in	3.01 in
4:34 PM	75 °F	74.7 °F	99%	NNE	19.2 mph	29.3 mph	29.43 in	0.72 in	3.06 in
4:39 PM	74.8 °F	74.5 °F	99%	NNE	15 mph	29.3 mph	29.42 in	0.54 in	3.09 in
4:44 PM	74.8 °F	74.5 °F	99%	NNE	25.5 mph	34.2 mph	29.41 in	0.54 in	3.14 in
4:49 PM	75 °F	74.7 °F	99%	NE	21.7 mph	34.2 mph	29.4 in	0.54 in	3.18 in
4:54 PM	74.8 °F	74.5 °F	99%	North	22.4 mph	34.2 mph	29.39 in	0.66 in	3.24 in
4:59 PM	74.8 °F	74.5 °F	99%	NNE	19.9 mph	34.2 mph	29.4 in	0.72 in	3.29 in
5:04 PM	74.8 °F	74.5 °F	99%	NE	19.9 mph	34.2 mph	29.4 in	0.6 in	3.32 in
5:09 PM	75 °F	74.7 °F	99%	NE	18.6 mph	34.2 mph	29.39 in	0.36 in	3.34 in
5:14 PM	75.2 °F	74.8 °F	99%	North	13 mph	34.2 mph	29.39 in	0.24 in	3.35 in
5:19 PM	75.4 °F	75 °F	99%	ENE	21.7 mph	34.2 mph	29.39 in	0.3 in	3.39 in
5:24 PM	75.4 °F	75 °F	99%	NNE	15 mph	34.2 mph	29.37 in	0.66 in	3.46 in
5:29 PM	75.4 °F	75 °F	99%	North	22.4 mph	34.2 mph	29.38 in	0.66 in	3.49 in
5:34 PM	75.4 °F	75 °F	99%	NNE	18.1 mph	34.2 mph	29.35 in	0.48 in	3.53 in
5:39 PM	75.6 °F	75.2 °F	99%	NE	18.1 mph	29.8 mph	29.34 in	0.6 in	3.58 in
5:44 PM	75.4 °F	75 °F	99%	SE	34.2 mph	34.2 mph	29.34 in	0.72 in	3.63 in
5:49 PM	75.4 °F	75 °F	99%	North	21.7 mph	34.2 mph	29.34 in	0.66 in	3.68 in
5:54 PM	75.2 °F	74.8 °F	99%	NNW	26.6 mph	34.2 mph	29.33 in	0.6 in	3.72 in
5:59 PM	75.4 °F	75 °F	99%	NE	26.2 mph	34.2 mph	29.32 in	0.54 in	3.76 in
6:04 PM	75.2 °F	74.8 °F	99%	ENE	31.8 mph	34.2 mph	29.31 in	0.78 in	3.84 in
6:09 PM	75.2 °F	74.8 °F	99%	WNW	19.9 mph	34.2 mph	29.31 in	1.08 in	3.93 in
6:10 PM	75 °F	74.7 °F	99%	ENE	28.6 mph	34.2 mph	29.31 in	1.08 in	3.94 in
6:16 PM	74.8 °F	74.5 °F	99%	SE	19.9 mph	34.2 mph	29.3 in	0.96 in	4.01 in
6:21 PM	74.7 °F	74.3 °F	99%	NNE	31.8 mph	34.2 mph	29.29 in	0.9 in	4.09 in
6:26 PM	74.5 °F	74.1 °F	99%	NNE	24.8 mph	34.2 mph	29.28 in	1.02 in	4.18 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
6:31 PM	74.5 °F	74.1 °F	99%	ENE	20.6 mph	36 mph	29.28 in	0.96 in	4.25 in
6:36 PM	74.3 °F	73.9 °F	99%	North	26.2 mph	36 mph	29.26 in	0.96 in	4.34 in
6:41 PM	74.3 °F	73.9 °F	99%	East	16.8 mph	36 mph	29.25 in	0.96 in	4.41 in
6:46 PM	74.3 °F	73.9 °F	99%	NNE	29.3 mph	36 mph	29.26 in	0.9 in	4.49 in
6:51 PM	74.5 °F	74.1 °F	99%	NNE	23.7 mph	36 mph	29.26 in	0.84 in	4.55 in
6:56 PM	74.5 °F	74.1 °F	99%	ENE	29.3 mph	36 mph	29.25 in	0.9 in	4.64 in
7:01 PM	74.5 °F	74.1 °F	99%	East	23 mph	36 mph	29.24 in	0.9 in	4.7 in
7:06 PM	74.5 °F	74.1 °F	99%	NNE	26.6 mph	36 mph	29.23 in	1.02 in	4.81 in
7:11 PM	74.7 °F	74.3 °F	99%	NNE	28 mph	36 mph	29.21 in	1.14 in	4.89 in
7:16 PM	74.7 °F	74.3 °F	99%	NE	19.9 mph	36 mph	29.21 in	1.02 in	4.98 in
7:21 PM	74.8 °F	74.5 °F	99%	NE	21 mph	36 mph	29.2 in	1.02 in	5.06 in
7:26 PM	74.8 °F	74.5 °F	99%	NE	26.6 mph	36 mph	29.18 in	1.02 in	5.15 in
7:31 PM	75 °F	74.7 °F	99%	NNE	23 mph	46.1 mph	29.19 in	0.84 in	5.2 in
7:36 PM	75 °F	74.7 °F	99%	East	21.7 mph	46.1 mph	29.17 in	0.66 in	5.26 in
7:41 PM	75.2 °F	74.8 °F	99%	NE	30.4 mph	46.1 mph	29.16 in	0.84 in	5.34 in
7:46 PM	75.4 °F	75 °F	99%	NE	22.4 mph	46.1 mph	29.15 in	1.02 in	5.43 in
7:47 PM	75.4 °F	75 °F	99%	NNW	21 mph	46.1 mph	29.14 in	1.14 in	5.46 in
7:52 PM	75.4 °F	75 °F	99%	ENE	18.1 mph	46.1 mph	29.15 in	1.2 in	5.55 in
7:57 PM	75.4 °F	75 °F	99%	NW	23.7 mph	46.1 mph	29.13 in	1.14 in	5.64 in
8:02 PM	75.4 °F	75 °F	99%	NE	24.2 mph	46.1 mph	29.13 in	1.32 in	5.76 in
8:07 PM	75.6 °F	75.2 °F	99%	NE	33.6 mph	46.1 mph	29.11 in	1.38 in	5.86 in
8:12 PM	75.7 °F	75.4 °F	99%	NNE	29.3 mph	46.1 mph	29.1 in	1.08 in	5.92 in
8:17 PM	75.7 °F	75.4 °F	99%	North	28 mph	46.1 mph	29.09 in	0.66 in	5.96 in
8:22 PM	75.7 °F	75.4 °F	99%	NE	31.8 mph	46.1 mph	29.08 in	0.42 in	5.99 in
8:27 PM	75.9 °F	75.6 °F	99%	NE	28 mph	46.1 mph	29.08 in	0.42 in	6.02 in
8:32 PM	76.1 °F	75.7 °F	99%	ENE	34.9 mph	39.8 mph	29.06 in	0.54 in	6.07 in
8:37 PM	76.1 °F	75.7 °F	99%	North	19.9 mph	39.8 mph	29.05 in	0.42 in	6.09 in
8:42 PM	76.1 °F	75.7 °F	99%	NE	24.2 mph	44.1 mph	29.05 in	0.24 in	6.11 in
8:47 PM	76.3 °F	75.9 °F	99%	NNE	33.6 mph	44.1 mph	29.04 in	0.24 in	6.13 in
8:52 PM	76.3 °F	75.9 °F	99%	NE	26.6 mph	44.1 mph	29.03 in	0.24 in	6.15 in
8:57 PM	76.5 °F	76.1 °F	99%	NE	28 mph	44.1 mph	29.02 in	0.3 in	6.18 in
9:02 PM	76.5 °F	76.1 °F	99%	NNE	29.8 mph	44.1 mph	29.01 in	0.36 in	6.2 in
9:07 PM	76.5 °F	76.1 °F	99%	ENE	28 mph	44.1 mph	29 in	0.54 in	6.26 in
9:12 PM	76.5 °F	76.1 °F	99%	ENE	31.1 mph	44.1 mph	28.98 in	0.6 in	6.29 in
9:17 PM	76.6 °F	76.3 °F	99%	NNE	23.7 mph	44.1 mph	28.98 in	0.48 in	6.32 in
9:22 PM	76.6 °F	76.3 °F	99%	NE	34.9 mph	44.1 mph	28.97 in	0.6 in	6.38 in
9:27 PM	76.6 °F	76.3 °F	99%	ENE	29.8 mph	44.1 mph	28.94 in	0.78 in	6.44 in
9:32 PM	76.6 °F	76.3 °F	99%	East	32.9 mph	44.1 mph	28.94 in	0.84 in	6.5 in
9:37 PM	76.6 °F	76.3 °F	99%	East	34.2 mph	44.1 mph	28.94 in	0.72 in	6.55 in
9:42 PM	76.6 °F	76.3 °F	99%	ENE	32.9 mph	44.1 mph	28.93 in	0.72 in	6.61 in
9:47 PM	76.6 °F	76.3 °F	99%	ENE	27.3 mph	44.1 mph	28.91 in	0.66 in	6.66 in
9:52 PM	76.6 °F	76.3 °F	99%	ENE	31.1 mph	44.1 mph	28.9 in	0.66 in	6.71 in
9:57 PM	76.8 °F	76.5 °F	99%	NE	29.8 mph	44.1 mph	28.88 in	0.72 in	6.77 in
10:02 PM	76.6 °F	76.3 °F	99%	ENE	30.4 mph	47.2 mph	28.88 in	1.02 in	6.87 in
10:07 PM	76.6 °F	76.3 °F	99%	NNE	29.3 mph	47.2 mph	28.87 in	1.02 in	6.93 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
10:12 PM	76.5 °F	76.1 °F	99%	NE	32.2 mph	47.2 mph	28.86 in	1.02 in	7.03 in
10:17 PM	76.5 °F	76.1 °F	99%	NE	31.8 mph	47.2 mph	28.84 in	1.38 in	7.15 in
10:23 PM	76.5 °F	76.1 °F	99%	NE	32.9 mph	47.2 mph	28.83 in	1.2 in	7.23 in
10:28 PM	76.5 °F	76.1 °F	99%	East	26.6 mph	47.2 mph	28.81 in	1.02 in	7.32 in
10:33 PM	76.5 °F	76.1 °F	99%	ENE	37.8 mph	47.2 mph	28.81 in	1.02 in	7.4 in
10:38 PM	76.3 °F	75.9 °F	99%	ENE	36.7 mph	47.2 mph	28.8 in	1.02 in	7.49 in
10:43 PM	76.3 °F	75.9 °F	99%	ENE	31.1 mph	47.2 mph	28.8 in	1.08 in	7.58 in
10:48 PM	76.3 °F	75.9 °F	99%	ENE	37.4 mph	47.2 mph	28.78 in	1.38 in	7.71 in
10:53 PM	76.3 °F	75.9 °F	99%	ENE	41.6 mph	47.2 mph	28.76 in	1.44 in	7.8 in
10:58 PM	76.3 °F	75.9 °F	99%	East	40.9 mph	47.2 mph	28.76 in	0.9 in	7.85 in
11:03 PM	76.3 °F	75.9 °F	99%	ENE	37.8 mph	47.2 mph	28.77 in	0.9 in	7.94 in
11:08 PM	76.3 °F	75.9 °F	99%	ENE	47.2 mph	47.9 mph	28.74 in	1.2 in	8.05 in
11:22 PM	76.3 °F	75.9 °F	99%	East	42.9 mph	61.5 mph	28.72 in	1.26 in	8.31 in
11:24 PM	76.3 °F	75.9 °F	99%	NNE	39.1 mph	61.5 mph	28.72 in	1.2 in	8.35 in
11:29 PM	76.3 °F	75.9 °F	99%	East	39.8 mph	61.5 mph	28.7 in	1.08 in	8.42 in
11:31 PM	76.3 °F	75.9 °F	99%	ESE	37.8 mph	61.5 mph	28.71 in	0.96 in	8.44 in
11:35 PM	76.3 °F	75.9 °F	99%	NE	47.2 mph	61.5 mph	28.7 in	0.96 in	8.5 in
11:36 PM	76.3 °F	75.9 °F	99%	NE	46.5 mph	61.5 mph	28.71 in	0.96 in	8.53 in
11:37 PM	76.3 °F	75.9 °F	99%	ENE	40.9 mph	61.5 mph	28.68 in	0.9 in	8.54 in
11:42 PM	76.3 °F	75.9 °F	99%	ENE	39.1 mph	61.5 mph	28.69 in	1.02 in	8.62 in
11:47 PM	76.3 °F	75.9 °F	99%	ENE	47.2 mph	61.5 mph	28.69 in	1.32 in	8.75 in
11:52 PM	76.1 °F	75.7 °F	99%	NE	34.9 mph	61.5 mph	28.69 in	1.92 in	8.93 in
11:57 PM	76.1 °F	75.7 °F	99%	East	34.9 mph	61.5 mph	28.67 in	2.58 in	9.17 in



Forensic Analysis of Avon Park – Lake Placid 69 kV Transmission Line
Structures ALP-205 Through ALP-208 and ALP-223 Through ALP-226

Hurricane Irma

December 1, 2017



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1.0 Executive Summary

Structures: Avon Park – Lake Placid 69 kV Transmission Line

Structures ALP-205 Through ALP-208 and ALP-221 Through ALP-226

Location: central western Highlands County, FL (27°27'49.61"N; 81°30'53.59"W to 27°26'47.76"N; 81°30'54.19"W)

Date of Outage: 09-10-17

Time of Outage: 21:10 EDT (0110 UTC)

Inspection Date: 09-19-17

At 9:10 pm, Eastern Daylight Savings Time on Sunday, September 10th, an outage was reported on the Avon Park – Lake Placid 69 kV transmission line. The outage was a result of wood pole failures.

At the time of the outage, 81 mph wind velocities were reported in the vicinity of structures ALP-205 to ALP-226 by the National Oceanic and Atmospheric Administration (NOAA). The outage occurred approximately 1.5 hours in advance of the hurricane being at a location nearest to the poles. Hurricane Irma's eye passed approximately 23.6 miles west of poles ALP-205 to ALP-226 at 10:40 pm EDT Sunday, September 10, 2017.

At the time of the field visit all failed poles and insulators had been replaced and the failed material had already been removed.

The pole and hardware failures most likely occurred due to high wind velocities resulting from Hurricane Irma's landfall. Possible wood rot could have aided in some of the wood pole's failures followed by additional failures of adjacent structures, especially as most of the failed poles were located on a culvert embankment near standing water.

New insulators installed on the middle and bottom phases of several adjacent structures indicate that the existing post insulators may have failed due to longitudinal loading, perhaps due to broken wires.

The failed portions of the transmission line are located on a slightly higher elevation and open landscape to the east (windward) without vegetation or manmade cover. The open landscape increases wind exposure which in turn increases the risk of pole failure due to wind damage.

Light duty steel poles at adjacent structures ALP-222 and ALP-227 were undamaged and the existing LD poles were left in place. These steel poles likely played a part in preventing further structure failures down the line and keeping damage localized.

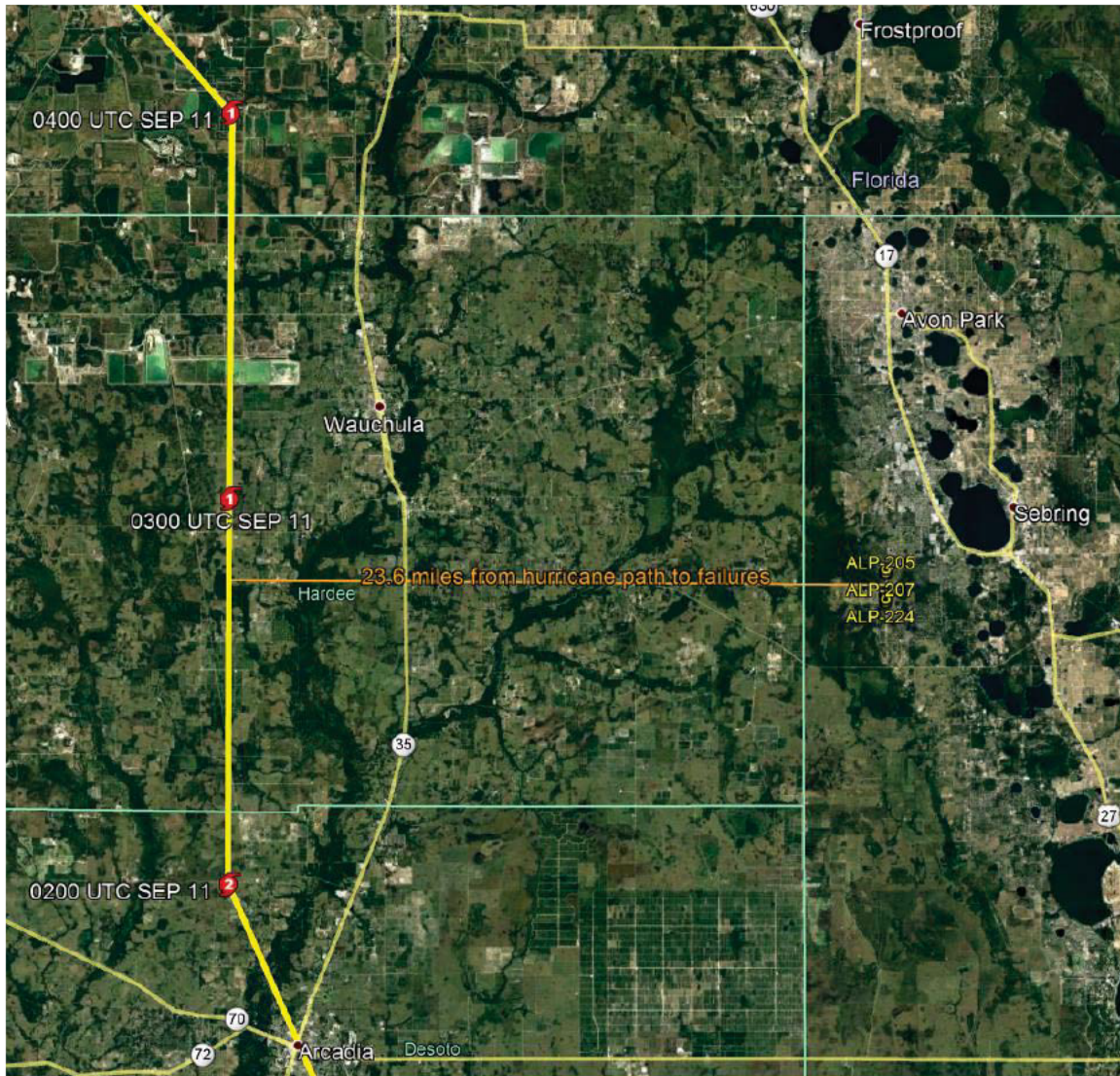


Figure 1: Distance from Hurricane Irma's path to structures ALP-205 through ALP-226.



Figure 2: Open area east of transmission line exposed structures to westbound hurricane winds.

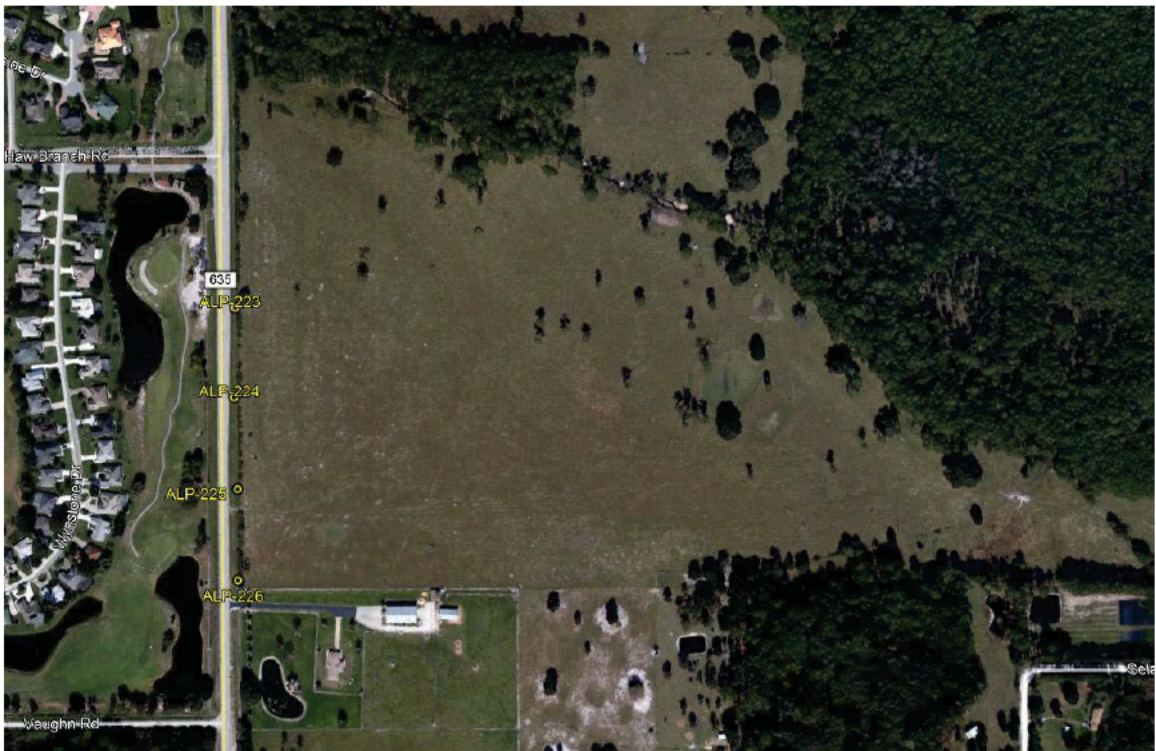


Figure 3: Open area east of transmission line exposed structures to westbound hurricane winds.



Figure 4: Existing LD steel pole ALP-222 was undamaged and left in place, looking southeast.

2.0 Maintenance Data

Maintenance data is not available at this time for poles ALP-205 through ALP-208, ALP-223, and ALP-226.

The 09/20/2017 maintenance report indicated that poles ALP-224 and ALP-225 were identified as requiring replacement with a target date of 10/26/2013, but it is unclear what maintenance work was performed. The corresponding MX Order numbers are 2013-3004224053 and 2013-3004224054, respectively.

3.0 Weather Data

Hurricane Irma made continental landfall in Naples, Florida at 4:00 pm EDT on Sunday, September 10, 2017 as a category 2 hurricane and weakened to a tropical depression over the Georgia - Alabama border 12 hours later.

At the time of the Avon Park – Lake Placid 69 kV line outage, approximately at 9:10 pm EDT, September 10, 2017, the hurricane was designated as a category 2 hurricane and the eye of the hurricane was located approximately 28.4 miles southwest of pole ALP-205. 81 mph wind velocity was reported near poles ALP-205 to ALP-226 at the time of the outage.

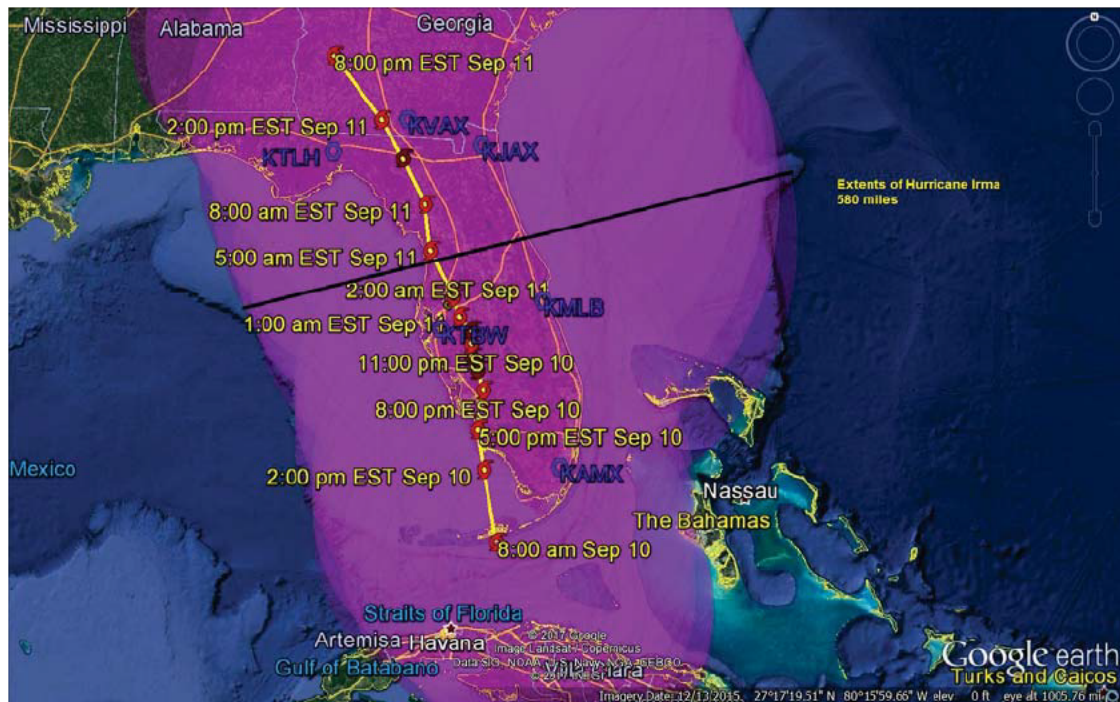


Figure 5: Extents and path of Hurricane Irma.

The hurricane was nearest to structures ALP-205 through ALP-226 at approximately 10:40 pm EDT on Sunday, September 10, 2017 as a category 2 hurricane. The hurricane eye at that time was 33 miles wide and encompassed the damaged structures.

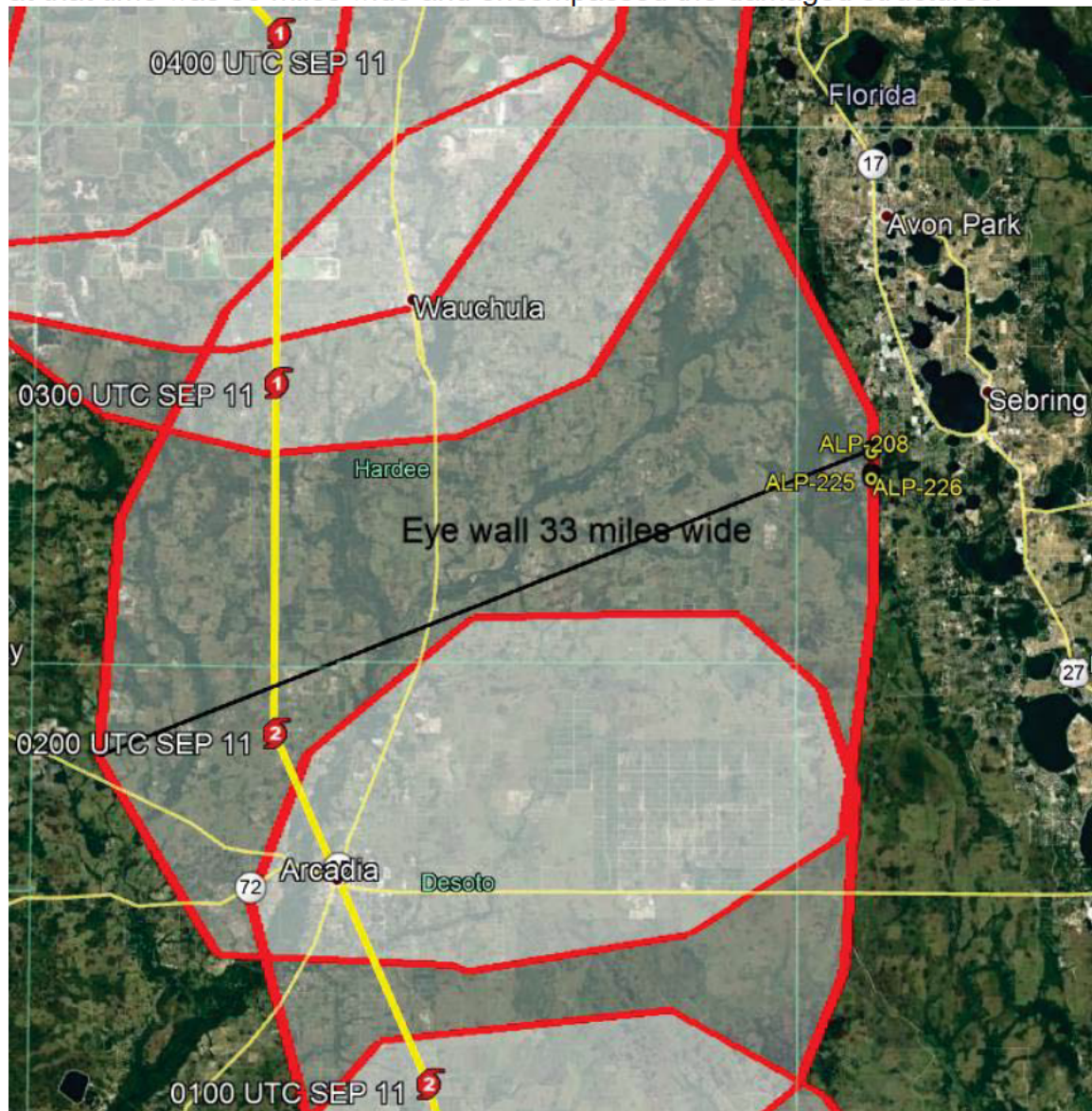


Figure 6: Hurricane Irma eye wall in vicinity of ALP-205.

Three local weather stations: KBOW, KFLARCAD1, and FLKFLSEBRI25 show wind velocities in range of 38 to 54 mph and wind gusts in range of 49 to 57 mph. According to the NOAA site specific maps, the wind speeds have reached 81 mph at time of the outage.

Station Name & Location	Time	Temp	Wind Dir	Wind Vel.	Wind Gust.	Distance from ALP-208
KBOW, Bartow Municipal Airport	9:15:00 PM	75.2 °F	NE	38.0 mph	49.5 mph	37.4 mi
KFLARCAD1, Arcadia, FL	9:11:00 PM	76.2 °F	NE	54.1 mph	54.1 mph	26.9 mi
FLKFLSEBRI25, Sebring, FL	9:05:00 PM	77.2 °F	WSW	49.4 mph	57.5 mph	9.9 mi

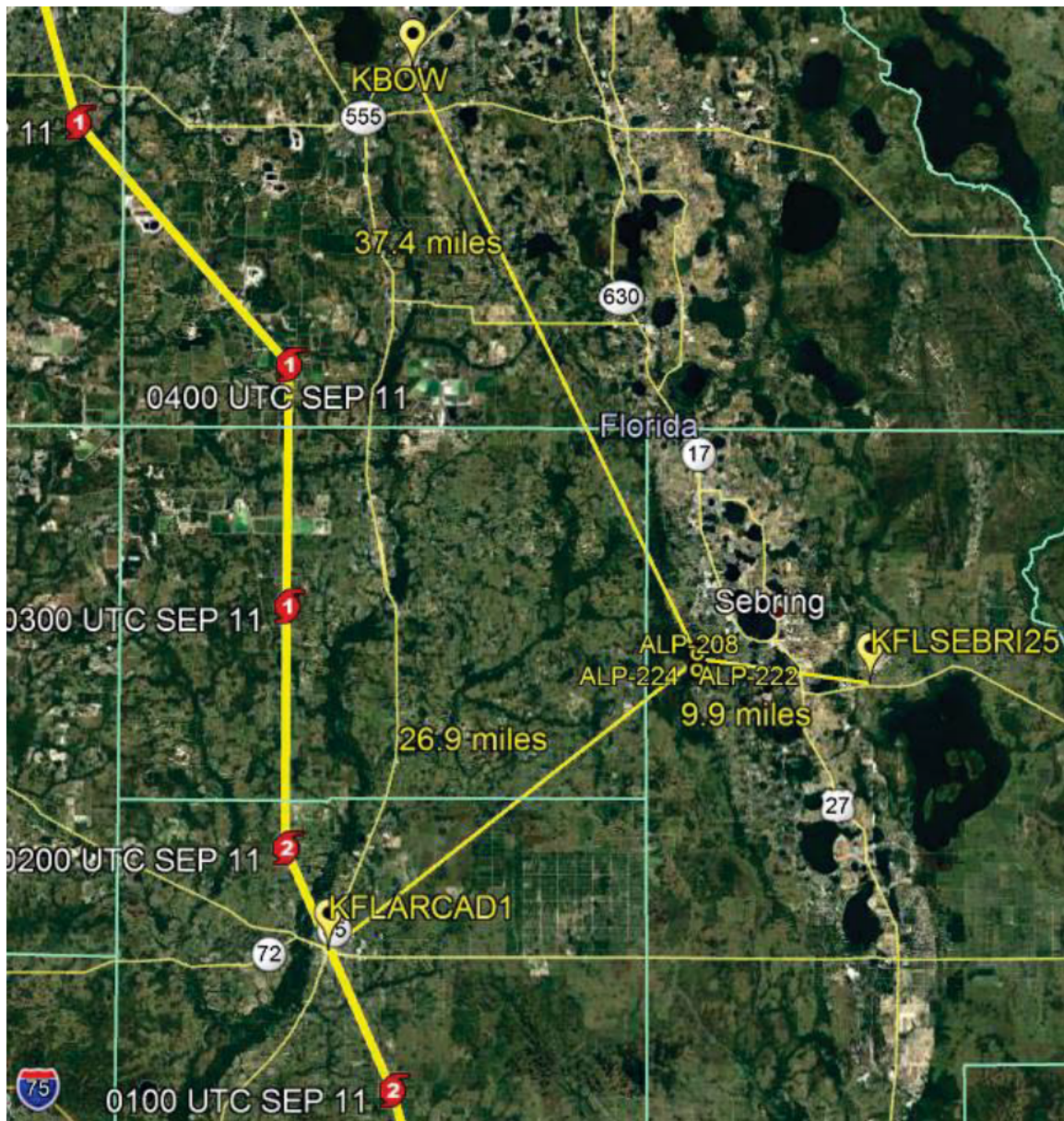


Figure 7: Weather stations and distances from ALP-205 to ALP-226.

The following map shows NOAA wind velocities at the time of failure. The green shading indicates 70 knot wind speed which equates to 81 mph.

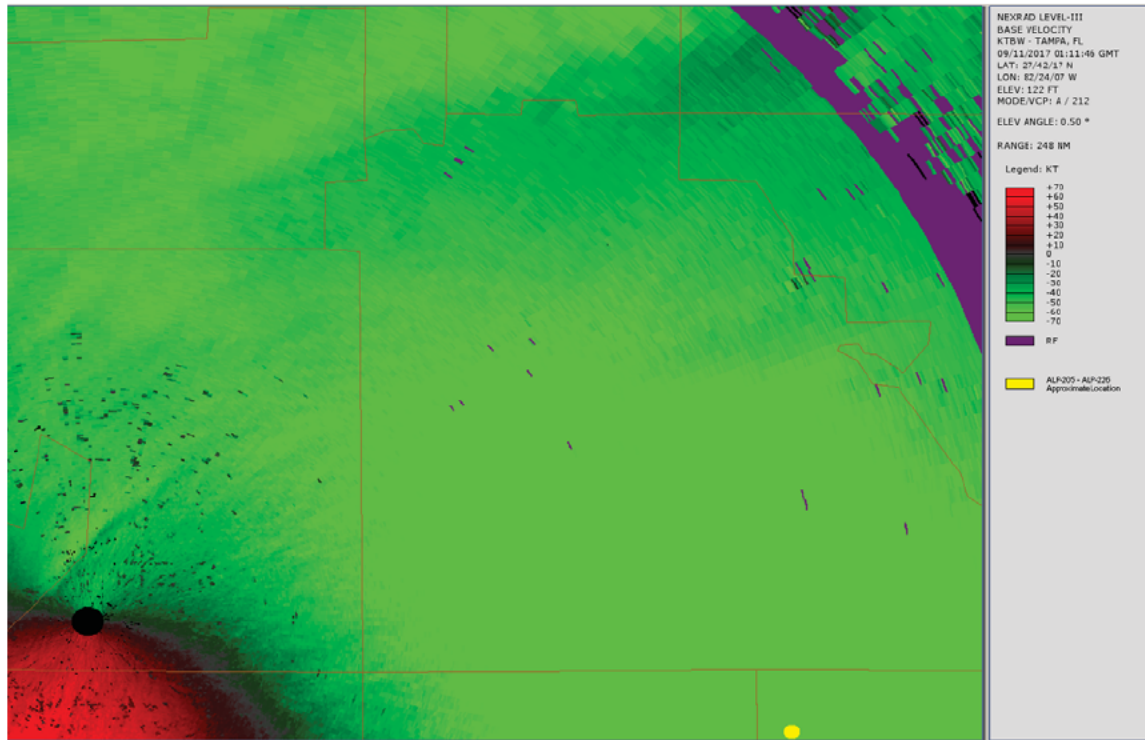


Figure 8: NOAA base velocities at the approximate time of the Avon Park – Lake Placid 69 kV line outage.

NOAA cyclone activity at the time of the outage was also reviewed and found no evidence of any cyclones near the Avon Park – Lake Placid 69 kV transmission line.

4.0 Conclusion

At the time of the field visit all failed poles and insulators had been replaced and the failed material had already been removed.

The pole and hardware failures most likely occurred due to high wind velocities resulting from Hurricane Irma's landfall. Possible wood rot could have aided in some of the wood pole's failures followed by additional failures of adjacent structures, especially as most of the failed poles were located on a culvert embankment near standing water.

New insulators installed on the middle and bottom phases of several adjacent structures indicate that the existing post insulators may have failed due to longitudinal loading, perhaps due to broken wires.

The failed portions of the transmission line are located on a slightly higher elevation and open landscape to the east (windward) without vegetation or manmade cover. The open landscape increases wind exposure which in turn increases the risk of pole failure due to wind damage.

Light duty steel poles at adjacent structures ALP-222 and ALP-227 were undamaged and the existing LD poles were left in place. These steel poles likely played a part in preventing further structure failures down the line and keeping damage localized.

5.0 Restoration

At the time of the site visit the wood failed poles, wire and hardware had already been restored with LD steel poles. Several insulators were also replaced on adjacent wood poles that had not been damaged.

Appendix A: Additional Photos



Figure 9: Failed pole ALP-205, looking southeast.



Figure 10: Failed pole ALP-206, looking southeast.



Figure 11: Failed poled ALP-207, looking southeast.



Figure 12: Failed pole ALP-208, looking southeast.



Figure 13: Failed pole ALP-223, looking southeast.



Figure 14: Failed pole ALP-224, looking southeast.



Figure 15: Failed pole ALP-225, looking southeast.



Figure 16: Failed pole ALP-226, looking southeast.

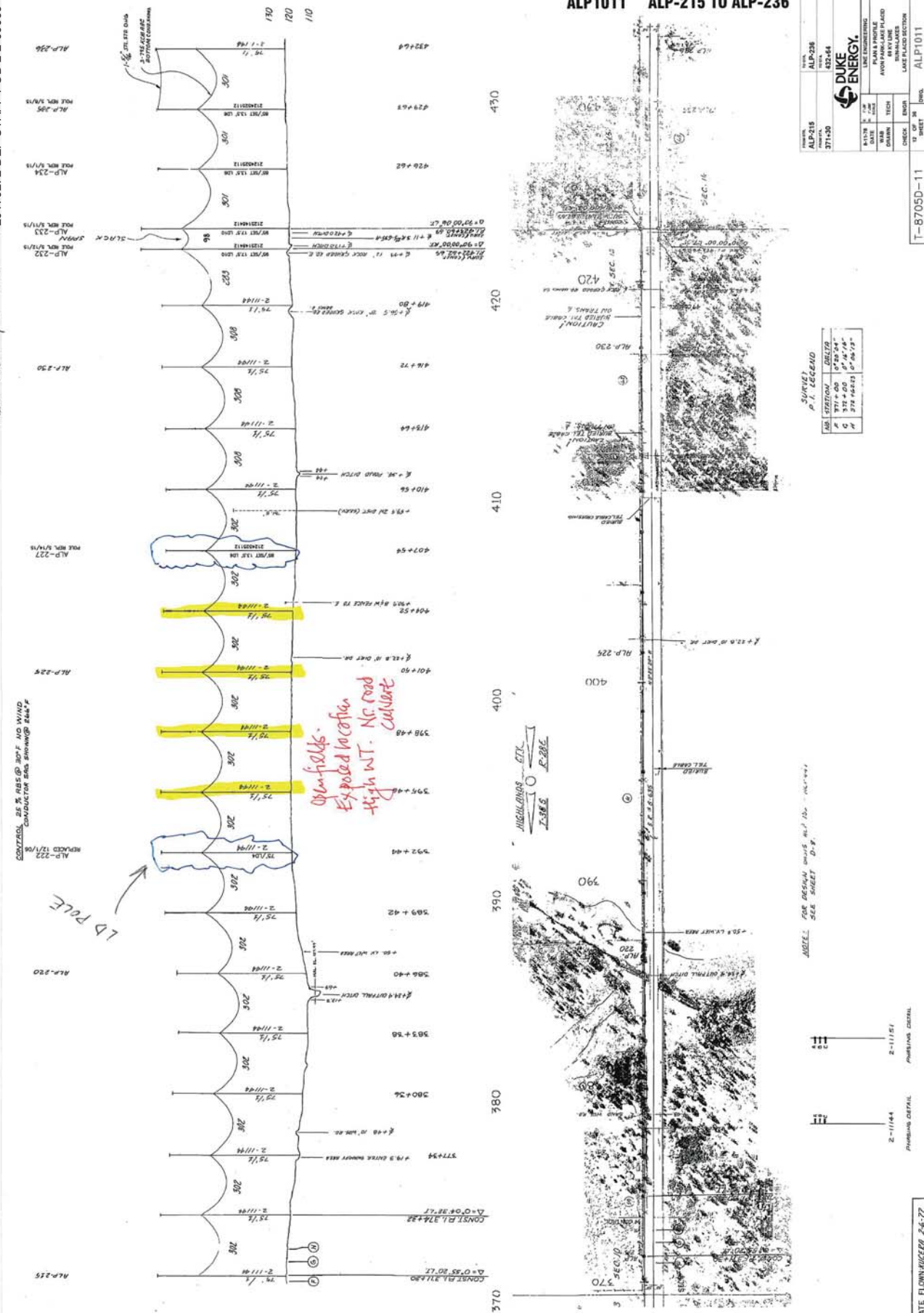
Appendix B: Avon Park – Lake Placid 69 kV Plan and Profile Drawings

[illegible]

CONTRACT 25% RBS @ 30°F NO WIND
CONDUCTOR SAGS SHOWN @ 26.6°F

LD Pole

Open fields.
Exposed location
High WT. N. road
culvert



DATE FLOWN-XUCEPA 2-6-77

T-8

-11-

ALP10

Appendix C: Weather Data

KBOW Weather data for September 10 2017												
Time (EDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:15 AM	80.6 °F	85.4 °F	73.4 °F	79%	29.82 in	10.0 mi	ENE	17.3 mph	31.1 mph	N/A		Overcast
12:35 AM	80.6 °F	85.4 °F	73.4 °F	79%	29.81 in	10.0 mi	ENE	16.1 mph	24.2 mph	N/A		Overcast
12:55 AM	78.8 °F	-	73.4 °F	83%	29.80 in	10.0 mi	East	13.8 mph	24.2 mph	N/A		Overcast
1:15 AM	78.8 °F	-	75.2 °F	89%	29.80 in	10.0 mi	ENE	15.0 mph	21.9 mph	N/A		Overcast
1:35 AM	78.8 °F	-	75.2 °F	89%	29.80 in	10.0 mi	East	13.8 mph	23.0 mph	N/A		Overcast
1:55 AM	78.8 °F	-	77.0 °F	94%	29.80 in	10.0 mi	East	13.8 mph	26.5 mph	N/A		Overcast
2:15 AM	77.0 °F	-	77.0 °F	100%	29.80 in	4.0 mi	East	20.7 mph	26.5 mph	N/A	Rain	Light Rain
2:35 AM	75.2 °F	-	-	N/A%	29.79 in	4.0 mi	ENE	17.3 mph	24.2 mph	N/A	Rain	Light Rain
2:55 AM	75.2 °F	-	-	N/A%	29.78 in	5.0 mi	ENE	15.0 mph	-	N/A	Rain	Light Rain
3:15 AM	75.2 °F	-	-	N/A%	29.77 in	7.0 mi	NE	13.8 mph	-	N/A	Rain	Light Rain
3:35 AM	75.2 °F	-	-	N/A%	29.75 in	8.0 mi	ENE	12.7 mph	20.7 mph	N/A	Rain	Light Rain
3:55 AM	75.2 °F	-	-	N/A%	29.75 in	10.0 mi	ENE	12.7 mph	-	N/A		Mostly Cloudy
4:15 AM	75.2 °F	-	-	N/A%	29.76 in	10.0 mi	ENE	12.7 mph	-	N/A		Mostly Cloudy
4:35 AM	75.2 °F	-	-	N/A%	29.75 in	10.0 mi	ENE	13.8 mph	-	N/A	Rain	Light Rain
4:55 AM	75.2 °F	-	75.2 °F	100%	29.75 in	10.0 mi	ENE	12.7 mph	18.4 mph	N/A		Overcast
5:15 AM	75.2 °F	-	-	N/A%	29.75 in	10.0 mi	NE	9.2 mph	15.0 mph	N/A		Light Drizzle
5:35 AM	75.2 °F	-	-	N/A%	29.76 in	9.0 mi	ENE	10.4 mph	21.9 mph	N/A	Rain	Light Rain
5:55 AM	75.2 °F	-	-	N/A%	29.76 in	5.0 mi	ENE	13.8 mph	25.3 mph	N/A	Rain	Light Rain
6:15 AM	73.4 °F	-	-	N/A%	29.75 in	7.0 mi	ENE	15.0 mph	21.9 mph	N/A	Rain	Light Rain
6:35 AM	73.4 °F	-	-	N/A%	29.74 in	10.0 mi	NE	11.5 mph	18.4 mph	N/A		Light Drizzle
6:55 AM	75.2 °F	-	-	N/A%	29.73 in	10.0 mi	NE	12.7 mph	18.4 mph	N/A		Mostly Cloudy
7:15 AM	73.4 °F	-	-	N/A%	29.74 in	4.0 mi	NNE	10.4 mph	18.4 mph	N/A	Rain	Rain
5:35 PM	73.4 °F	-	-	N/A%	29.42 in	0.8 mi	NNE	25.3 mph	41.4 mph	N/A	Rain	Heavy Rain
5:55 PM	73.4 °F	-	-	N/A%	29.39 in	0.8 mi	NE	31.1 mph	49.5 mph	N/A	Rain	Heavy Rain
6:15 PM	73.4 °F	-	-	N/A%	29.36 in	-	NNE	27.6 mph	46.0 mph	N/A	Rain	Heavy Rain
6:35 PM	71.6 °F	-	-	N/A%	29.32 in	0.2 mi	NE	38.0 mph	49.5 mph	N/A	Rain	Heavy Rain
6:55 PM	71.6 °F	-	-	N/A%	29.32 in	0.2 mi	NNE	26.5 mph	47.2 mph	N/A	Rain	Heavy Rain
7:15 PM	73.4 °F	-	-	N/A%	29.27 in	0.2 mi	NE	27.6 mph	47.2 mph	N/A	Rain	Heavy Rain
7:35 PM	73.4 °F	-	-	N/A%	29.23 in	0.2 mi	NE	35.7 mph	46.0 mph	N/A	Rain	Heavy Rain
7:55 PM	73.4 °F	-	-	N/A%	29.18 in	0.5 mi	NE	32.2 mph	48.3 mph	N/A	Rain	Heavy Rain
8:15 PM	75.2 °F	-	-	N/A%	29.15 in	0.2 mi	NE	35.7 mph	55.2 mph	N/A	Rain	Heavy Rain
8:35 PM	75.2 °F	-	-	N/A%	29.11 in	1.2 mi	ENE	38.0 mph	44.9 mph	N/A	Rain	Heavy Rain
8:55 PM	75.2 °F	-	-	N/A%	29.07 in	2.0 mi	NE	33.4 mph	50.6 mph	N/A	Rain	Rain
9:15 PM	75.2 °F	-	-	N/A%	29.03 in	0.8 mi	NE	38.0 mph	49.5 mph	N/A	Rain	Heavy Rain
9:35 PM	75.2 °F	-	-	N/A%	28.97 in	0.8 mi	NE	42.6 mph	62.1 mph	N/A	Rain	Heavy Rain
9:55 PM	75.2 °F	-	-	N/A%	28.94 in	1.0 mi	ENE	36.8 mph	56.4 mph	N/A	Rain	Heavy Rain
10:15 PM	75.2 °F	-	-	N/A%	28.89 in	-	ENE	41.4 mph	57.5 mph	N/A	Rain	Heavy Rain
10:35 PM	75.2 °F	-	-	N/A%	28.84 in	0.5 mi	ENE	38.0 mph	61.0 mph	N/A	Rain	Heavy Rain
10:55 PM	75.2 °F	-	-	N/A%	28.79 in	0.5 mi	ENE	38.0 mph	64.4 mph	N/A	Rain	Heavy Rain
11:15 PM	-	-	-	N/A%	-	-	North	-	-	N/A		Unknown
11:35 PM	-	-	-	N/A%	-	-	North	-	-	N/A		Unknown
11:55 PM	-	-	-	N/A%	-	-	North	-	-	N/A		Unknown

KFLARCAD1 Weather data for September 10 2017									
Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
12:00 AM	79.1 °F	74.7 °F	86%	NE	16.9 mph	24.3 mph	29.77 in	0.03 in	0.03 in
12:05 AM	78.9 °F	74.7 °F	87%	East	11.2 mph	21.3 mph	29.77 in	0.01 in	0.01 in
12:10 AM	78.4 °F	74.4 °F	88%	NNE	15.7 mph	18.1 mph	29.77 in	0.02 in	0.02 in
12:15 AM	77.8 °F	74 °F	88%	NNE	18.6 mph	18.6 mph	29.77 in	0.04 in	0.03 in
12:20 AM	77.3 °F	73.9 °F	89%	NE	17.3 mph	23.2 mph	29.77 in	0.05 in	0.05 in
12:25 AM	77 °F	73.9 °F	90%	NE	21.5 mph	22.1 mph	29.76 in	0.07 in	0.06 in
12:30 AM	76.7 °F	73.9 °F	91%	NNE	15.8 mph	20.3 mph	29.76 in	0.08 in	0.08 in
12:35 AM	76.6 °F	74 °F	92%	NE	18.9 mph	26.2 mph	29.76 in	0.09 in	0.09 in
12:40 AM	76.7 °F	74.2 °F	92%	NE	23.9 mph	23.9 mph	29.75 in	0.09 in	0.09 in
12:45 AM	76.6 °F	74.1 °F	92%	NE	14.9 mph	21.6 mph	29.76 in	0.1 in	0.1 in
12:50 AM	76.4 °F	74 °F	92%	NE	11.7 mph	24.4 mph	29.76 in	0.11 in	0.11 in
12:55 AM	76.4 °F	74 °F	92%	NNE	17.9 mph	22.6 mph	29.76 in	0.12 in	0.12 in
1:00 AM	76.3 °F	73.9 °F	92%	NNE	17.2 mph	26.1 mph	29.76 in	0.13 in	0.13 in
1:05 AM	76.2 °F	73.8 °F	92%	NNE	22.7 mph	22.7 mph	29.75 in	0.14 in	0.14 in
1:10 AM	76.1 °F	73.9 °F	93%	NNE	9.6 mph	25.5 mph	29.75 in	0.16 in	0.16 in
1:15 AM	76.1 °F	74.1 °F	94%	NE	9.6 mph	16.9 mph	29.76 in	0.18 in	0.18 in
1:20 AM	76.1 °F	74.2 °F	94%	NE	10 mph	17.1 mph	29.75 in	0.2 in	0.2 in
1:25 AM	76.1 °F	74.4 °F	94%	NNE	22.8 mph	22.8 mph	29.75 in	0.22 in	0.22 in
1:30 AM	76 °F	74.4 °F	95%	NNE	18.2 mph	24 mph	29.74 in	0.27 in	0.27 in
1:35 AM	75.9 °F	74.4 °F	95%	NE	11.9 mph	23.7 mph	29.74 in	0.33 in	0.33 in
1:40 AM	75.9 °F	74.5 °F	95%	NNE	17.8 mph	21.8 mph	29.74 in	0.35 in	0.35 in
1:46 AM	75.7 °F	74.3 °F	95%	NE	17.9 mph	20.6 mph	29.74 in	0.37 in	0.37 in
1:51 AM	75.4 °F	73.6 °F	94%	NE	14.5 mph	19.9 mph	29.74 in	0.37 in	0.37 in
1:56 AM	75.1 °F	73.2 °F	94%	NNE	12.2 mph	23.1 mph	29.74 in	0.37 in	0.37 in
2:01 AM	74.9 °F	72.9 °F	93%	NE	15.8 mph	16.3 mph	29.73 in	0.38 in	0.38 in
2:06 AM	74.8 °F	72.6 °F	93%	NNE	14.5 mph	18.6 mph	29.73 in	0.38 in	0.38 in
2:11 AM	74.4 °F	72.2 °F	93%	NNE	11.1 mph	24.7 mph	29.73 in	0.39 in	0.39 in
2:16 AM	74.5 °F	72.4 °F	93%	NE	15 mph	19.3 mph	29.73 in	0.4 in	0.4 in
2:21 AM	74.6 °F	72.6 °F	93%	NNE	18.2 mph	20.4 mph	29.72 in	0.4 in	0.4 in
2:26 AM	74.7 °F	72.8 °F	94%	NE	11.2 mph	23.4 mph	29.72 in	0.4 in	0.4 in
2:31 AM	74.9 °F	73.1 °F	94%	NE	17.8 mph	21.2 mph	29.72 in	0.4 in	0.4 in
2:36 AM	75 °F	73.2 °F	94%	North	16 mph	19.8 mph	29.72 in	0.4 in	0.4 in
2:41 AM	75.1 °F	73.2 °F	94%	NNE	12.6 mph	16.8 mph	29.72 in	0.4 in	0.4 in
2:46 AM	75.1 °F	73.3 °F	94%	NNE	13.4 mph	14 mph	29.72 in	0.4 in	0.4 in
2:51 AM	75.1 °F	73.3 °F	94%	NNE	9.3 mph	20.9 mph	29.72 in	0.4 in	0.4 in
2:56 AM	75.1 °F	73.4 °F	94%	NNE	15.7 mph	20.8 mph	29.71 in	0.4 in	0.4 in
3:01 AM	75.1 °F	73.4 °F	94%	NE	22.4 mph	23.3 mph	29.71 in	0.4 in	0.4 in
3:06 AM	75.3 °F	73.6 °F	94%	NE	7.7 mph	19 mph	29.71 in	0.4 in	0.4 in
3:11 AM	75.4 °F	73.8 °F	95%	NNE	11.7 mph	18.8 mph	29.7 in	0.41 in	0.41 in
3:16 AM	75.5 °F	73.8 °F	95%	NE	11.7 mph	23.4 mph	29.7 in	0.41 in	0.41 in
3:21 AM	75.7 °F	74 °F	94%	NNE	6.8 mph	17.5 mph	29.7 in	0.41 in	0.41 in
3:26 AM	75.8 °F	74.1 °F	94%	ENE	8.6 mph	21.9 mph	29.71 in	0.41 in	0.41 in
3:31 AM	75.7 °F	73.8 °F	94%	NE	14.4 mph	21.1 mph	29.7 in	0.41 in	0.41 in
3:36 AM	75.7 °F	73.6 °F	93%	NE	13.9 mph	19.6 mph	29.7 in	0.41 in	0.41 in
3:41 AM	75.9 °F	73.7 °F	93%	NE	14.7 mph	25.3 mph	29.7 in	0.41 in	0.41 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
3:46 AM	75.9 °F	73.7 °F	93%	NE	14.3 mph	20.4 mph	29.71 in	0.41 in	0.41 in
3:51 AM	75.9 °F	73.7 °F	93%	NNE	15 mph	21.9 mph	29.71 in	0.43 in	0.43 in
3:56 AM	75.9 °F	73.8 °F	93%	NE	15.5 mph	20.3 mph	29.71 in	0.43 in	0.43 in
4:01 AM	75.8 °F	73.7 °F	93%	NE	18.5 mph	18.5 mph	29.7 in	0.44 in	0.44 in
4:06 AM	75.7 °F	73.6 °F	93%	ENE	12.9 mph	20.9 mph	29.7 in	0.44 in	0.44 in
4:11 AM	75.6 °F	73.5 °F	93%	NE	21.3 mph	23.7 mph	29.69 in	0.44 in	0.44 in
4:16 AM	75.8 °F	73.7 °F	93%	NNE	9.3 mph	17.9 mph	29.69 in	0.44 in	0.44 in
4:21 AM	75.7 °F	73.6 °F	93%	NE	20 mph	22.9 mph	29.69 in	0.45 in	0.45 in
4:26 AM	75.6 °F	73.5 °F	93%	NE	19 mph	20.1 mph	29.69 in	0.45 in	0.45 in
4:31 AM	75.7 °F	73.5 °F	93%	NNE	13.2 mph	23.7 mph	29.69 in	0.45 in	0.45 in
4:36 AM	75.7 °F	73.4 °F	93%	NE	20.3 mph	24.2 mph	29.69 in	0.45 in	0.45 in
4:41 AM	75.6 °F	73.3 °F	92%	NE	19.8 mph	28.6 mph	29.69 in	0.45 in	0.45 in
4:46 AM	75.6 °F	73.3 °F	92%	NNE	19.9 mph	23.5 mph	29.69 in	0.45 in	0.45 in
4:52 AM	75.6 °F	73.4 °F	93%	NE	27.3 mph	27.3 mph	29.69 in	0.45 in	0.45 in
4:57 AM	75.4 °F	73.3 °F	93%	NNE	9.9 mph	28.6 mph	29.69 in	0.45 in	0.45 in
5:02 AM	75.3 °F	73.3 °F	94%	NE	15 mph	24 mph	29.69 in	0.45 in	0.45 in
5:07 AM	75.4 °F	73.4 °F	94%	NNE	25.9 mph	25.9 mph	29.68 in	0.45 in	0.45 in
5:12 AM	75.4 °F	73.4 °F	94%	NNE	14.5 mph	23.2 mph	29.68 in	0.45 in	0.45 in
5:17 AM	75.3 °F	73.3 °F	94%	North	17.8 mph	21.1 mph	29.67 in	0.45 in	0.45 in
5:18 AM	75.3 °F	73.3 °F	94%	North	18.4 mph	21.1 mph	29.67 in	0.45 in	0.45 in
5:23 AM	75.3 °F	73.2 °F	93%	NNW	12.2 mph	27.9 mph	29.67 in	0.45 in	0.45 in
5:28 AM	75.4 °F	73.3 °F	93%	North	19.2 mph	25.5 mph	29.67 in	0.45 in	0.45 in
5:33 AM	75.7 °F	73.6 °F	93%	NNE	12.6 mph	21.3 mph	29.67 in	0.45 in	0.45 in
5:38 AM	75.5 °F	73.5 °F	93%	NNE	11.6 mph	18.6 mph	29.67 in	0.45 in	0.45 in
5:43 AM	75.7 °F	73.6 °F	93%	NNE	12.2 mph	19.4 mph	29.67 in	0.45 in	0.45 in
5:48 AM	75.8 °F	73.6 °F	93%	North	11 mph	19.5 mph	29.67 in	0.45 in	0.45 in
5:53 AM	75.7 °F	73.4 °F	93%	North	6.3 mph	17.1 mph	29.66 in	0.45 in	0.45 in
5:58 AM	75.7 °F	73.4 °F	93%	North	14.6 mph	22.4 mph	29.66 in	0.45 in	0.45 in
6:03 AM	75.8 °F	73.5 °F	92%	NNE	11.2 mph	20.8 mph	29.65 in	0.45 in	0.45 in
6:08 AM	75.8 °F	73.5 °F	92%	North	12.4 mph	20 mph	29.65 in	0.45 in	0.45 in
6:13 AM	75.8 °F	73.4 °F	92%	NNE	17.9 mph	20.9 mph	29.65 in	0.45 in	0.45 in
6:18 AM	75.8 °F	73.4 °F	92%	NE	12.5 mph	21.6 mph	29.65 in	0.45 in	0.45 in
6:23 AM	75.8 °F	73.3 °F	92%	North	9.9 mph	20.8 mph	29.65 in	0.45 in	0.45 in
6:28 AM	76 °F	73.5 °F	92%	North	15.6 mph	21.7 mph	29.64 in	0.45 in	0.45 in
6:33 AM	75.9 °F	73.3 °F	92%	NNE	17.3 mph	23.4 mph	29.64 in	0.45 in	0.45 in
6:38 AM	75.9 °F	73.3 °F	92%	North	17.3 mph	21.4 mph	29.64 in	0.45 in	0.45 in
6:43 AM	75.9 °F	73.3 °F	92%	North	19.8 mph	25.2 mph	29.64 in	0.46 in	0.46 in
6:48 AM	75.9 °F	73.2 °F	92%	NE	18.8 mph	23.9 mph	29.63 in	0.46 in	0.46 in
6:53 AM	75.9 °F	73.2 °F	91%	ENE	11.4 mph	27.6 mph	29.63 in	0.46 in	0.46 in
6:58 AM	75.9 °F	73.2 °F	91%	ENE	9.7 mph	21.8 mph	29.64 in	0.47 in	0.47 in
7:03 AM	75.8 °F	73.1 °F	91%	NE	12.6 mph	25.4 mph	29.63 in	0.47 in	0.47 in
7:08 AM	75.8 °F	73.2 °F	92%	North	10.2 mph	26.9 mph	29.62 in	0.47 in	0.47 in
7:13 AM	75.8 °F	73.2 °F	92%	NNE	20.4 mph	29 mph	29.63 in	0.48 in	0.48 in
7:18 AM	75.8 °F	73.3 °F	92%	North	23.6 mph	27.7 mph	29.63 in	0.49 in	0.49 in
7:23 AM	75.6 °F	73.2 °F	92%	NNW	17.1 mph	25.4 mph	29.62 in	0.51 in	0.51 in
7:28 AM	75.7 °F	73.4 °F	93%	North	17.6 mph	20.3 mph	29.63 in	0.53 in	0.53 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
7:33 AM	75.6 °F	73.5 °F	93%	North	19.1 mph	26.4 mph	29.63 in	0.55 in	0.55 in
7:41 AM	75.8 °F	73.8 °F	93%	NNE	15 mph	15 mph	29.64 in	0 in	0.59 in
7:46 AM	75.6 °F	73.6 °F	93%	NNE	11.5 mph	23.1 mph	29.64 in	0.6 in	0.6 in
7:51 AM	75.7 °F	73.7 °F	93%	NNE	12.3 mph	25.8 mph	29.64 in	0.61 in	0.61 in
7:57 AM	75.6 °F	73.8 °F	94%	NNE	8.3 mph	25.2 mph	29.66 in	0.74 in	0.74 in
8:02 AM	75.7 °F	73.9 °F	94%	NNE	11.3 mph	20.3 mph	29.65 in	0.8 in	0.8 in
8:07 AM	75.6 °F	74.1 °F	95%	ENE	11.2 mph	11.9 mph	29.67 in	0.85 in	0.84 in
8:12 AM	75.7 °F	74.3 °F	95%	ENE	9.5 mph	14.9 mph	29.66 in	1.19 in	1.19 in
8:17 AM	75.1 °F	73.7 °F	95%	NE	6.8 mph	14.9 mph	29.66 in	1.26 in	1.26 in
8:22 AM	74.9 °F	74.1 °F	97%	ENE	12.6 mph	23.6 mph	29.67 in	1.38 in	1.38 in
8:27 AM	74.6 °F	73.5 °F	96%	NE	14.9 mph	20.4 mph	29.67 in	1.47 in	1.47 in
8:32 AM	74.1 °F	73.3 °F	97%	NE	13.5 mph	17.8 mph	29.65 in	1.5 in	1.5 in
8:37 AM	74.1 °F	73.3 °F	98%	NE	13.8 mph	21.9 mph	29.65 in	1.51 in	1.51 in
8:42 AM	74.4 °F	73.7 °F	98%	NNE	11.2 mph	27.8 mph	29.65 in	1.52 in	1.52 in
8:47 AM	74.7 °F	73.9 °F	98%	NNE	6.3 mph	16.2 mph	29.64 in	1.53 in	1.53 in
8:52 AM	74.9 °F	74.2 °F	98%	NNE	15.7 mph	20.4 mph	29.64 in	1.53 in	1.53 in
8:57 AM	75.1 °F	74.3 °F	98%	NNE	13.7 mph	18.3 mph	29.64 in	1.54 in	1.54 in
9:02 AM	75.3 °F	74.5 °F	97%	NNE	14.7 mph	22.1 mph	29.63 in	1.54 in	1.54 in
9:07 AM	75.4 °F	74.4 °F	97%	NNE	8.2 mph	23.6 mph	29.64 in	1.54 in	1.54 in
9:12 AM	75.5 °F	74.4 °F	96%	North	8.6 mph	27.5 mph	29.64 in	1.55 in	1.55 in
9:17 AM	75.8 °F	74.6 °F	96%	NNE	15.6 mph	20.1 mph	29.64 in	1.55 in	1.55 in
9:22 AM	76 °F	74.7 °F	96%	NNE	23.9 mph	26.4 mph	29.64 in	1.55 in	1.55 in
9:23 AM	76 °F	74.6 °F	96%	North	23.2 mph	26.4 mph	29.64 in	1.56 in	1.56 in
9:28 AM	76 °F	74.4 °F	95%	NE	11.1 mph	21.3 mph	29.64 in	1.56 in	1.56 in
9:33 AM	75.9 °F	73.9 °F	94%	NNE	20.6 mph	30.8 mph	29.64 in	1.58 in	1.58 in
9:38 AM	75.9 °F	74 °F	94%	NNE	17.8 mph	24.1 mph	29.64 in	1.59 in	1.59 in
9:43 AM	75.9 °F	74.1 °F	94%	NNW	14.8 mph	22.6 mph	29.63 in	1.61 in	1.61 in
9:48 AM	75.8 °F	73.9 °F	94%	NNE	22.1 mph	25.8 mph	29.63 in	1.63 in	1.63 in
9:49 AM	75.8 °F	73.8 °F	94%	NNE	24.4 mph	28.8 mph	29.62 in	1.63 in	1.63 in
9:54 AM	75.4 °F	73.3 °F	93%	NNE	23.2 mph	28.3 mph	29.62 in	1.64 in	1.64 in
9:59 AM	75.4 °F	73.3 °F	93%	NE	27.1 mph	29.7 mph	29.62 in	1.65 in	1.65 in
10:04 AM	75.5 °F	73.5 °F	94%	NNE	7.8 mph	27.8 mph	29.62 in	1.66 in	1.66 in
10:09 AM	75.5 °F	73.6 °F	94%	NE	17.1 mph	27.7 mph	29.62 in	1.66 in	1.66 in
10:14 AM	75.7 °F	73.7 °F	94%	NNE	11.9 mph	25.4 mph	29.62 in	1.68 in	1.68 in
10:19 AM	75.5 °F	73.5 °F	94%	NE	21.7 mph	22.3 mph	29.61 in	1.69 in	1.69 in
10:24 AM	75.6 °F	73.4 °F	93%	North	20.1 mph	20.1 mph	29.6 in	1.69 in	1.69 in
10:29 AM	75.6 °F	73.3 °F	93%	NE	15.7 mph	26.8 mph	29.59 in	1.69 in	1.69 in
10:34 AM	75.3 °F	73 °F	93%	North	20.1 mph	31.8 mph	29.58 in	1.7 in	1.7 in
10:39 AM	75.1 °F	72.5 °F	92%	North	28.6 mph	35.5 mph	29.58 in	1.7 in	1.7 in
10:44 AM	75.2 °F	72.8 °F	92%	North	25.2 mph	35.9 mph	29.59 in	1.7 in	1.7 in
10:49 AM	75.4 °F	73 °F	92%	NNE	31.4 mph	40.5 mph	29.58 in	1.7 in	1.7 in
10:54 AM	75.2 °F	72.8 °F	92%	North	22.1 mph	33.1 mph	29.58 in	1.7 in	1.7 in
11:00 AM	75.2 °F	73 °F	93%	NNE	20.2 mph	30.8 mph	29.57 in	1.71 in	1.71 in
11:05 AM	75 °F	72.9 °F	93%	NNE	38.3 mph	41.9 mph	29.57 in	1.71 in	1.71 in
11:10 AM	75.1 °F	72.9 °F	93%	North	13.4 mph	36 mph	29.57 in	1.71 in	1.71 in
11:15 AM	75.1 °F	72.7 °F	92%	NNE	28.2 mph	38.2 mph	29.56 in	1.71 in	1.71 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
11:20 AM	75.4 °F	72.9 °F	92%	NNE	26.2 mph	33.1 mph	29.56 in	1.72 in	1.72 in
11:25 AM	75.4 °F	72.9 °F	92%	NNE	19.1 mph	32.6 mph	29.56 in	1.72 in	1.72 in
11:30 AM	75.2 °F	72.8 °F	92%	North	23.7 mph	42.1 mph	29.56 in	1.72 in	1.72 in
11:35 AM	75.1 °F	72.8 °F	93%	NNE	28.1 mph	29.1 mph	29.56 in	1.73 in	1.73 in
11:40 AM	75.1 °F	72.8 °F	93%	NNE	16.5 mph	38.9 mph	29.56 in	1.74 in	1.74 in
11:45 AM	74.9 °F	72.7 °F	93%	NNE	22 mph	33.1 mph	29.56 in	1.75 in	1.75 in
11:50 AM	75 °F	72.9 °F	93%	NNE	16.8 mph	26.8 mph	29.56 in	1.76 in	1.76 in
11:55 AM	75 °F	72.9 °F	93%	NNE	23.5 mph	37.8 mph	29.56 in	1.76 in	1.76 in
12:00 PM	75.1 °F	72.9 °F	93%	NE	17.1 mph	28.8 mph	29.55 in	1.77 in	1.77 in
12:05 PM	75.3 °F	73.2 °F	93%	NNE	21.6 mph	26.5 mph	29.55 in	1.77 in	1.77 in
12:10 PM	75.6 °F	73.5 °F	93%	North	20.1 mph	24.2 mph	29.54 in	1.77 in	1.77 in
12:15 PM	75.7 °F	73.5 °F	93%	North	14.7 mph	26.6 mph	29.54 in	1.77 in	1.77 in
12:20 PM	75.7 °F	73.4 °F	93%	NE	12.8 mph	34 mph	29.53 in	1.78 in	1.78 in
12:25 PM	75.9 °F	73.6 °F	93%	NE	23.1 mph	32.4 mph	29.52 in	1.78 in	1.78 in
12:30 PM	75.9 °F	73.6 °F	93%	NNE	16.2 mph	29.8 mph	29.52 in	1.79 in	1.79 in
12:35 PM	75.8 °F	73.6 °F	93%	NNE	29.7 mph	31.2 mph	29.51 in	1.79 in	1.79 in
12:40 PM	75.7 °F	73.4 °F	93%	NNE	15.3 mph	36.8 mph	29.51 in	1.8 in	1.8 in
12:45 PM	75.6 °F	73.2 °F	92%	NE	18.2 mph	34.2 mph	29.5 in	1.8 in	1.8 in
12:50 PM	75.8 °F	73.3 °F	92%	North	14.4 mph	31.6 mph	29.49 in	1.81 in	1.81 in
12:55 PM	75.7 °F	73.2 °F	92%	NNE	27.2 mph	36.8 mph	29.49 in	1.82 in	1.82 in
1:00 PM	75.9 °F	73.6 °F	93%	NNE	22.6 mph	38.3 mph	29.5 in	1.82 in	1.82 in
1:05 PM	76 °F	73.7 °F	93%	NNE	20.6 mph	29.5 mph	29.49 in	1.82 in	1.82 in
1:10 PM	75.7 °F	73.4 °F	92%	North	25 mph	41.6 mph	29.48 in	1.83 in	1.83 in
1:15 PM	75.7 °F	73.3 °F	92%	NNE	30.8 mph	35.9 mph	29.48 in	1.83 in	1.83 in
1:20 PM	75.7 °F	73.5 °F	93%	North	18.6 mph	29.1 mph	29.47 in	1.85 in	1.85 in
1:25 PM	75.5 °F	73.4 °F	93%	North	32.9 mph	38 mph	29.45 in	1.86 in	1.86 in
1:30 PM	75.6 °F	73.5 °F	93%	NNE	24.6 mph	38.2 mph	29.45 in	1.86 in	1.86 in
1:35 PM	75.4 °F	73.1 °F	93%	North	38.5 mph	44.4 mph	29.44 in	1.86 in	1.86 in
1:40 PM	75.7 °F	73.4 °F	93%	North	27.8 mph	37.3 mph	29.45 in	1.88 in	1.88 in
1:45 PM	75.8 °F	73.5 °F	93%	NNE	23.1 mph	36.2 mph	29.45 in	1.89 in	1.89 in
1:50 PM	75.7 °F	73.6 °F	93%	NNE	25 mph	38.3 mph	29.45 in	1.9 in	1.9 in
1:55 PM	75.7 °F	73.6 °F	93%	North	15.4 mph	40.8 mph	29.43 in	1.91 in	1.91 in
2:00 PM	75.7 °F	73.8 °F	94%	NNE	29.3 mph	32.1 mph	29.43 in	1.91 in	1.91 in
2:05 PM	75.7 °F	73.7 °F	93%	NNE	27.3 mph	33.1 mph	29.42 in	1.92 in	1.92 in
2:10 PM	75.8 °F	73.7 °F	93%	NNE	19.8 mph	31.3 mph	29.41 in	1.92 in	1.92 in
2:15 PM	76 °F	73.8 °F	93%	North	20.9 mph	38 mph	29.42 in	1.94 in	1.94 in
2:20 PM	75.7 °F	73.4 °F	93%	North	26.8 mph	34.2 mph	29.4 in	1.95 in	1.95 in
2:25 PM	75.8 °F	73.7 °F	93%	NNE	19.5 mph	27.9 mph	29.4 in	1.97 in	1.97 in
2:30 PM	75.6 °F	73.6 °F	94%	North	15.8 mph	33.9 mph	29.4 in	1.99 in	1.99 in
2:35 PM	75.6 °F	73.8 °F	94%	NNW	23.1 mph	30.8 mph	29.4 in	2.04 in	2.04 in
2:40 PM	75.4 °F	73.7 °F	94%	NNE	28.5 mph	36.3 mph	29.39 in	2.05 in	2.05 in
2:45 PM	75.5 °F	73.8 °F	95%	NNE	22.2 mph	33.9 mph	29.39 in	2.07 in	2.07 in
2:50 PM	75.5 °F	73.8 °F	94%	NNE	25.7 mph	42 mph	29.38 in	2.09 in	2.09 in
2:55 PM	75.4 °F	73.8 °F	95%	North	17.7 mph	30.8 mph	29.37 in	2.13 in	2.13 in
3:00 PM	75.4 °F	74 °F	95%	North	22.4 mph	25.8 mph	29.36 in	2.17 in	2.17 in
3:05 PM	75.4 °F	74.2 °F	96%	North	15 mph	30.9 mph	29.35 in	2.19 in	2.19 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
3:10 PM	75.7 °F	74.6 °F	96%	NNE	16.1 mph	27.7 mph	29.35 in	2.2 in	2.2 in
3:15 PM	75.6 °F	74.5 °F	96%	NE	15.4 mph	29.8 mph	29.35 in	2.28 in	2.28 in
3:20 PM	75.5 °F	74.5 °F	97%	NNE	29.5 mph	34.2 mph	29.34 in	2.31 in	2.31 in
3:25 PM	75.6 °F	74.7 °F	97%	NE	20 mph	39.7 mph	29.33 in	2.33 in	2.33 in
3:30 PM	75.8 °F	74.9 °F	97%	North	26.3 mph	41.3 mph	29.32 in	2.38 in	2.38 in
3:35 PM	76 °F	75 °F	97%	North	14.3 mph	38.4 mph	29.31 in	2.4 in	2.4 in
3:40 PM	76 °F	74.9 °F	96%	North	25.5 mph	33.4 mph	29.3 in	2.45 in	2.45 in
3:45 PM	75.9 °F	74.8 °F	96%	North	19.1 mph	33.1 mph	29.28 in	2.5 in	2.5 in
3:50 PM	75.8 °F	74.6 °F	96%	North	22.3 mph	32.2 mph	29.27 in	2.54 in	2.54 in
3:55 PM	75.9 °F	74.7 °F	96%	NNW	14.7 mph	35 mph	29.27 in	2.57 in	2.57 in
4:00 PM	75.9 °F	74.8 °F	96%	North	17.3 mph	36.4 mph	29.25 in	2.6 in	2.6 in
4:05 PM	76 °F	74.3 °F	95%	North	18.8 mph	55.5 mph	29.24 in	2.63 in	2.63 in
4:10 PM	75.9 °F	74.2 °F	94%	NE	21.6 mph	43.9 mph	29.22 in	2.69 in	2.69 in
4:15 PM	75.7 °F	74.2 °F	95%	NNE	44.3 mph	44.3 mph	29.2 in	2.74 in	2.74 in
4:20 PM	75.7 °F	74.6 °F	96%	NNE	25.1 mph	54.1 mph	29.22 in	2.78 in	2.78 in
4:25 PM	75.7 °F	74.9 °F	97%	NE	18.2 mph	28.6 mph	29.21 in	2.85 in	2.84 in
4:30 PM	75.7 °F	74.9 °F	97%	NNE	41.4 mph	47.4 mph	29.2 in	2.87 in	2.87 in
4:35 PM	75.8 °F	75 °F	97%	North	27.8 mph	43.8 mph	29.18 in	2.9 in	2.9 in
4:40 PM	75.8 °F	74.9 °F	97%	NNE	18.3 mph	46.2 mph	29.17 in	2.95 in	2.95 in
4:45 PM	75.6 °F	74.7 °F	97%	North	37.7 mph	47.2 mph	29.16 in	2.99 in	2.99 in
4:50 PM	75.6 °F	74.7 °F	97%	North	18.5 mph	57.6 mph	29.14 in	3.02 in	3.02 in
4:55 PM	75.6 °F	74.8 °F	97%	NNE	27.7 mph	38.2 mph	29.14 in	3.06 in	3.06 in
5:00 PM	75.7 °F	74.9 °F	97%	North	37.3 mph	46.4 mph	29.13 in	3.08 in	3.08 in
5:05 PM	75.5 °F	74.8 °F	98%	North	18 mph	46.4 mph	29.12 in	3.13 in	3.12 in
5:10 PM	75.6 °F	75 °F	98%	NNW	17.5 mph	45.9 mph	29.12 in	3.19 in	3.19 in
5:15 PM	75.6 °F	75.1 °F	98%	NE	29.3 mph	42.8 mph	29.11 in	3.31 in	3.3 in
5:20 PM	75.6 °F	75.2 °F	99%	NNE	37.7 mph	48.7 mph	29.08 in	3.4 in	3.4 in
5:25 PM	75.7 °F	75.4 °F	99%	NNE	31.8 mph	56.2 mph	29.1 in	3.44 in	3.43 in
5:30 PM	75.4 °F	75.2 °F	99%	NNE	37.3 mph	58.8 mph	29.09 in	3.47 in	3.47 in
5:35 PM	75.5 °F	75.3 °F	99%	NNE	32.1 mph	49.6 mph	29.09 in	3.49 in	3.49 in
5:40 PM	75.7 °F	75.6 °F	100%	NE	30.6 mph	42.5 mph	29.08 in	3.5 in	3.5 in
5:45 PM	75.9 °F	75.8 °F	100%	NNE	18.4 mph	47.9 mph	29.08 in	3.54 in	3.54 in
5:51 PM	76 °F	75.8 °F	99%	NNE	38.9 mph	44.1 mph	29.07 in	3.57 in	3.57 in
5:56 PM	76.1 °F	75.7 °F	99%	NNE	44.6 mph	47.9 mph	29.06 in	3.59 in	3.59 in
6:01 PM	76.1 °F	75.7 °F	99%	NE	19.6 mph	42.1 mph	29.04 in	3.66 in	3.66 in
6:06 PM	76 °F	75.7 °F	99%	NNE	22.8 mph	46.6 mph	29.02 in	3.72 in	3.72 in
6:11 PM	76 °F	75.8 °F	100%	North	31.1 mph	37.9 mph	29.01 in	3.77 in	3.77 in
6:16 PM	76.1 °F	76 °F	100%	NE	14.2 mph	41.6 mph	28.99 in	3.84 in	3.84 in
6:21 PM	75.9 °F	75.8 °F	100%	North	32.6 mph	37.7 mph	28.97 in	3.91 in	3.91 in
6:26 PM	76.1 °F	76 °F	100%	NNE	17.6 mph	47.8 mph	28.96 in	3.94 in	3.94 in
6:31 PM	75.7 °F	75.7 °F	100%	NNE	22.8 mph	52.1 mph	28.93 in	3.99 in	3.98 in
6:36 PM	75.9 °F	75.8 °F	100%	NNE	35.4 mph	45.7 mph	28.92 in	4.01 in	4.01 in
6:41 PM	75.8 °F	75.7 °F	100%	NE	40.1 mph	42.1 mph	28.92 in	4.03 in	4.03 in
6:46 PM	75.9 °F	75.8 °F	100%	NE	34.7 mph	43 mph	28.91 in	4.05 in	4.05 in
6:51 PM	76.1 °F	75.9 °F	100%	NNE	28.4 mph	46.4 mph	28.89 in	4.07 in	4.07 in
6:56 PM	76.1 °F	75.9 °F	100%	NNE	23.4 mph	41.3 mph	28.88 in	4.1 in	4.1 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
7:01 PM	76 °F	75.8 °F	100%	NE	40.8 mph	49.2 mph	28.87 in	4.12 in	4.12 in
7:06 PM	76.1 °F	75.9 °F	99%	NNE	33.9 mph	50.6 mph	28.86 in	4.14 in	4.14 in
7:11 PM	75.7 °F	75.5 °F	99%	NE	46.5 mph	52.9 mph	28.83 in	4.17 in	4.17 in
7:16 PM	75.7 °F	75.6 °F	100%	NNE	30.3 mph	46.8 mph	28.82 in	4.19 in	4.19 in
7:21 PM	75.8 °F	75.8 °F	100%	NNE	19 mph	49.5 mph	28.81 in	4.21 in	4.21 in
7:26 PM	75.7 °F	75.7 °F	100%	NE	52.5 mph	56.9 mph	28.8 in	4.23 in	4.23 in
7:31 PM	76 °F	76 °F	100%	NE	39.8 mph	51.3 mph	28.78 in	4.27 in	4.27 in
7:36 PM	76.1 °F	76.1 °F	100%	NNE	27.2 mph	42.1 mph	28.78 in	4.29 in	4.29 in
7:41 PM	76.1 °F	76.1 °F	100%	NE	39.6 mph	42.9 mph	28.76 in	4.31 in	4.31 in
7:46 PM	76.3 °F	76.3 °F	100%	NNE	44.4 mph	55.2 mph	28.75 in	4.34 in	4.34 in
7:51 PM	76.5 °F	76.5 °F	100%	NNE	23.7 mph	43.5 mph	28.72 in	4.37 in	4.37 in
7:56 PM	76.8 °F	76.8 °F	100%	NE	17 mph	54.7 mph	28.72 in	4.38 in	4.38 in
8:01 PM	76.8 °F	76.7 °F	100%	NNE	27 mph	40.1 mph	28.71 in	4.39 in	4.39 in
8:06 PM	76.9 °F	76.7 °F	99%	NNE	36.3 mph	63.4 mph	28.66 in	4.42 in	4.42 in
8:11 PM	76.7 °F	76.5 °F	99%	North	44.1 mph	50.6 mph	28.65 in	4.43 in	4.43 in
8:16 PM	76.7 °F	76.5 °F	99%	NE	35.7 mph	44.7 mph	28.64 in	4.44 in	4.44 in
8:21 PM	76.8 °F	76.5 °F	99%	NNE	40.8 mph	52.8 mph	28.62 in	4.45 in	4.45 in
8:26 PM	76.7 °F	76.3 °F	99%	NE	40 mph	46.9 mph	28.6 in	4.45 in	4.45 in
8:31 PM	76.8 °F	76.3 °F	98%	NNE	45.4 mph	55.9 mph	28.58 in	4.46 in	4.46 in
8:36 PM	76.7 °F	76.3 °F	99%	East	28.1 mph	54.6 mph	28.56 in	4.48 in	4.48 in
8:41 PM	76.6 °F	76.4 °F	99%	NE	29.5 mph	57.5 mph	28.54 in	4.52 in	4.52 in
8:46 PM	76.7 °F	76.6 °F	100%	NNE	16.9 mph	54.1 mph	28.49 in	4.55 in	4.55 in
8:51 PM	76.4 °F	76.3 °F	100%	NE	33.6 mph	64.7 mph	28.45 in	4.58 in	4.58 in
8:56 PM	76.6 °F	76.6 °F	100%	NNE	38.6 mph	54.7 mph	28.41 in	4.6 in	4.6 in
9:01 PM	76.3 °F	76.3 °F	100%	NNE	41.1 mph	44.3 mph	28.37 in	4.64 in	4.64 in
9:06 PM	76 °F	76 °F	100%	NE	35.9 mph	54.1 mph	28.33 in	4.67 in	4.67 in
9:11 PM	76.2 °F	76.2 °F	100%	NE	54.1 mph	54.1 mph	28.29 in	4.71 in	4.71 in
9:16 PM	76.2 °F	76.2 °F	100%	NE	60.6 mph	65.6 mph	28.24 in	4.74 in	4.74 in
9:21 PM	76.2 °F	76.2 °F	100%	NE	32.2 mph	78.7 mph	28.18 in	4.76 in	4.76 in
9:26 PM	76.2 °F	76.2 °F	100%	NE	45 mph	67.4 mph	28.16 in	4.77 in	4.77 in
9:31 PM	76.2 °F	76.2 °F	100%	NE	35.4 mph	47.8 mph	28.15 in	4.78 in	4.78 in
9:36 PM	76.5 °F	76.5 °F	100%	NNE	0 mph	33.6 mph	28.13 in	4.79 in	4.79 in
9:41 PM	76.5 °F	76.5 °F	100%	NE	0 mph	10.3 mph	28.11 in	4.8 in	4.8 in
9:46 PM	76.5 °F	76.5 °F	100%	NE	0 mph	0 mph	28.1 in	4.82 in	4.82 in
9:51 PM	76.5 °F	76.5 °F	100%	NE	0 mph	0 mph	28.11 in	4.83 in	4.83 in
9:56 PM	76.5 °F	76.5 °F	100%	NE	0 mph	0 mph	28.12 in	4.83 in	4.83 in
10:01 PM	76.6 °F	76.6 °F	100%	NE	0 mph	0 mph	28.13 in	4.84 in	4.84 in
10:06 PM	76.3 °F	76.3 °F	100%	NE	0 mph	0 mph	28.16 in	4.85 in	4.85 in
10:11 PM	76.3 °F	76.3 °F	100%	NE	0 mph	0 mph	28.2 in	4.86 in	4.86 in
10:16 PM	76.3 °F	76.3 °F	100%	SSW	26.5 mph	34.4 mph	28.25 in	4.86 in	4.86 in
10:21 PM	76.3 °F	76.3 °F	100%	SSE	0 mph	24.5 mph	28.31 in	4.87 in	4.87 in
10:26 PM	76.4 °F	76.4 °F	100%	South	20.4 mph	26.5 mph	28.36 in	4.87 in	4.87 in
10:31 PM	76.4 °F	76.4 °F	100%	SSW	26.5 mph	36.9 mph	28.42 in	4.87 in	4.87 in
10:36 PM	76.4 °F	76.4 °F	100%	SSE	0 mph	0 mph	28.45 in	4.87 in	4.87 in
10:41 PM	76.3 °F	76.3 °F	100%	SSW	19.4 mph	30.5 mph	28.49 in	4.87 in	4.87 in
10:46 PM	76.4 °F	76.4 °F	100%	SSW	38.3 mph	38.3 mph	28.52 in	4.87 in	4.87 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
10:51 PM	76.5 °F	76.5 °F	100%	South	21.9 mph	30.3 mph	28.55 in	4.87 in	4.87 in
10:56 PM	76.4 °F	76.3 °F	100%	South	0 mph	22.9 mph	28.58 in	4.87 in	4.87 in
11:01 PM	76.5 °F	76.3 °F	99%	South	20.8 mph	29.6 mph	28.6 in	4.87 in	4.87 in
11:06 PM	76.5 °F	76.2 °F	99%	SSW	27.6 mph	31.6 mph	28.63 in	4.87 in	4.87 in
11:12 PM	76.6 °F	76.1 °F	98%	South	12.7 mph	28.3 mph	28.66 in	4.87 in	4.87 in
11:18 PM	76.8 °F	75.9 °F	97%	South	29.3 mph	34.2 mph	28.68 in	4.87 in	4.87 in
11:19 PM	76.7 °F	75.8 °F	97%	SSW	23.4 mph	35.9 mph	28.7 in	4.87 in	4.87 in
11:22 PM	76.7 °F	75.8 °F	97%	South	15.1 mph	29.1 mph	28.71 in	4.87 in	4.87 in
11:26 PM	76.7 °F	75.8 °F	97%	South	37.1 mph	37.5 mph	28.72 in	4.87 in	4.87 in
11:30 PM	76.8 °F	75.9 °F	97%	South	21.9 mph	28.3 mph	28.73 in	4.87 in	4.87 in
11:32 PM	76.6 °F	75.8 °F	97%	South	22.2 mph	28.1 mph	28.74 in	4.88 in	4.88 in
11:36 PM	76.8 °F	76 °F	97%	South	26.8 mph	30.5 mph	28.75 in	4.88 in	4.88 in
11:41 PM	76.9 °F	76.1 °F	97%	SSW	17.3 mph	26.5 mph	28.78 in	4.88 in	4.88 in
11:46 PM	76.6 °F	75.8 °F	97%	SSE	13.8 mph	29 mph	28.79 in	4.88 in	4.88 in
11:56 PM	76.7 °F	76 °F	98%	SSW	0 mph	20.8 mph	28.82 in	4.88 in	4.88 in

KFLSEBRI25 Weather data for September 10 2017

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
12:02 AM	76.1 °F	73.4 °F	91%	NE	19.7 mph	22.4 mph	-- in	0 in	0 in	0	0 w/m ²
12:08 AM	75.9 °F	73.4 °F	92%	NNE	17.7 mph	22.4 mph	-- in	0 in	0 in	0	0 w/m ²
12:14 AM	75.7 °F	73 °F	91%	NE	13.9 mph	17.5 mph	-- in	0 in	0 in	0	0 w/m ²
12:19 AM	75.6 °F	72.9 °F	91%	ENE	12.3 mph	15 mph	-- in	0 in	0 in	0	0 w/m ²
12:25 AM	75.4 °F	72.9 °F	92%	NE	7.2 mph	7.4 mph	-- in	0.07 in	0.01 in	0	0 w/m ²
12:30 AM	75.4 °F	72.9 °F	92%	NE	8.3 mph	9.8 mph	-- in	0.07 in	0.01 in	0	0 w/m ²
12:35 AM	75.4 °F	72.9 °F	92%	NE	15 mph	17.5 mph	-- in	0.07 in	0.02 in	0	0 w/m ²
12:41 AM	75.2 °F	72.7 °F	92%	NE	15.2 mph	17.5 mph	-- in	0.07 in	0.02 in	0	0 w/m ²
12:46 AM	75.4 °F	73.2 °F	93%	NNE	18.1 mph	19.9 mph	-- in	0.21 in	0.06 in	0	0 w/m ²
12:51 AM	75.2 °F	73 °F	93%	NE	13.6 mph	17.5 mph	-- in	0.21 in	0.06 in	0	0 w/m ²
12:56 AM	75 °F	72.9 °F	93%	NNE	10.5 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:01 AM	75 °F	73.2 °F	94%	NE	10.5 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:06 AM	74.8 °F	73 °F	94%	East	4.5 mph	7.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:12 AM	74.7 °F	72.9 °F	94%	ENE	5.8 mph	7.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:17 AM	74.5 °F	71.8 °F	91%	ENE	11.9 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:22 AM	74.3 °F	71.6 °F	91%	NNE	8.3 mph	9.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:27 AM	73.9 °F	71.6 °F	92%	ENE	6 mph	7.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:32 AM	73.4 °F	71.1 °F	92%	NE	6.5 mph	9.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:37 AM	73.2 °F	70.9 °F	92%	ENE	5.8 mph	7.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:42 AM	73.2 °F	71.4 °F	94%	NE	15.9 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:47 AM	73 °F	71.2 °F	94%	ENE	9.2 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:52 AM	73.2 °F	71.4 °F	94%	NE	7.6 mph	9.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
1:58 AM	73.8 °F	72 °F	94%	NE	8.3 mph	9.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:04 AM	74.1 °F	72 °F	93%	NNE	19.7 mph	24.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:09 AM	74.5 °F	72.3 °F	93%	NE	17.7 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:14 AM	74.8 °F	72.3 °F	92%	ENE	16.5 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:19 AM	75 °F	72.5 °F	92%	ENE	12.1 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:25 AM	75.2 °F	73 °F	93%	ENE	11.4 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:30 AM	75.2 °F	73.4 °F	94%	NNE	11.4 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:35 AM	75.2 °F	73.4 °F	94%	NNE	14.3 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:40 AM	75.2 °F	73 °F	93%	NE	10.3 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:45 AM	75 °F	72.9 °F	93%	NE	15.4 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:50 AM	75 °F	72.9 °F	93%	NE	11.9 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
2:55 AM	75 °F	72.9 °F	93%	NE	22.4 mph	24.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:01 AM	75 °F	72.9 °F	93%	ENE	15.4 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:06 AM	75 °F	73.2 °F	94%	NNE	11.4 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:11 AM	75 °F	73.2 °F	94%	NE	16.8 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:16 AM	75 °F	73.2 °F	94%	NE	11.9 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:22 AM	74.8 °F	73 °F	94%	NE	18.6 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:27 AM	74.8 °F	73 °F	94%	NE	12.1 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:32 AM	74.7 °F	72.9 °F	94%	NE	12.3 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:38 AM	74.7 °F	72.9 °F	94%	NE	11.9 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:43 AM	74.7 °F	72.5 °F	93%	NNE	17 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:48 AM	74.7 °F	72.5 °F	93%	NNE	14.5 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
3:53 AM	74.8 °F	72.7 °F	93%	NE	11.4 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
3:58 AM	74.8 °F	72.7 °F	93%	NNE	8.9 mph	9.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:04 AM	74.8 °F	73 °F	94%	NE	10.7 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:10 AM	74.8 °F	73 °F	94%	NNE	11.4 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:15 AM	74.8 °F	73 °F	94%	NE	6.7 mph	7.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:21 AM	74.8 °F	73 °F	94%	NE	7.6 mph	9.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:26 AM	74.8 °F	73.4 °F	95%	NE	5.6 mph	7.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:32 AM	74.7 °F	73.2 °F	95%	ENE	6 mph	7.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:37 AM	74.7 °F	73.2 °F	95%	NE	2.5 mph	2.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:43 AM	74.5 °F	73 °F	95%	NE	10.3 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:48 AM	74.5 °F	73 °F	95%	NE	18.3 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:53 AM	74.5 °F	73 °F	95%	NE	15.4 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
4:58 AM	74.5 °F	72.7 °F	94%	NE	14.3 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:03 AM	74.5 °F	72.7 °F	94%	NE	13.6 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:08 AM	74.5 °F	72.7 °F	94%	NE	14.5 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:13 AM	74.5 °F	72.3 °F	93%	NE	12.3 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:19 AM	74.5 °F	72.7 °F	94%	NE	13.4 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:24 AM	74.5 °F	72.7 °F	94%	NNE	8.7 mph	9.8 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:29 AM	74.5 °F	72.7 °F	94%	NNE	9.6 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:36 AM	74.7 °F	72.9 °F	94%	North	11.9 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:41 AM	74.7 °F	72.1 °F	92%	NNE	10.5 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:46 AM	74.7 °F	72.1 °F	92%	NNE	9.2 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:49 AM	74.7 °F	72.1 °F	92%	NNE	19.2 mph	22.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:54 AM	74.7 °F	72.1 °F	92%	NE	14.3 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
5:59 AM	74.8 °F	72.3 °F	92%	NNE	15 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:04 AM	74.8 °F	72.3 °F	92%	NNE	11.9 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:09 AM	75 °F	72.5 °F	92%	NNE	13.4 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:15 AM	75 °F	72.9 °F	93%	NNE	11.2 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:20 AM	75 °F	72.9 °F	93%	NNE	9.6 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:25 AM	74.8 °F	72.7 °F	93%	NNE	13.4 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:30 AM	74.8 °F	72.7 °F	93%	NE	16.8 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:36 AM	74.8 °F	72.7 °F	93%	NE	16.8 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:41 AM	74.8 °F	72.7 °F	93%	NNE	11.9 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:47 AM	74.7 °F	72.5 °F	93%	NE	11.4 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:52 AM	74.7 °F	72.1 °F	92%	NE	17 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
6:58 AM	74.7 °F	72.5 °F	93%	North	19 mph	27.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:03 AM	74.7 °F	72.1 °F	92%	NNE	17.5 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:08 AM	74.7 °F	72.1 °F	92%	NNE	15 mph	17.5 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:14 AM	74.7 °F	72.1 °F	92%	NNE	19.7 mph	22.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:20 AM	74.7 °F	72.1 °F	92%	NNE	13.6 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:25 AM	74.5 °F	72.1 °F	92%	NNE	16.5 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:30 AM	74.5 °F	72.3 °F	93%	NNE	19.9 mph	22.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:35 AM	74.5 °F	71.8 °F	91%	NNE	16.8 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:40 AM	74.5 °F	72.1 °F	92%	NNE	17 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:45 AM	74.5 °F	72.3 °F	93%	NNE	13.9 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
7:50 AM	74.5 °F	72.3 °F	93%	NNE	13 mph	15 mph	-- in	0 in	0.06 in	0	0 w/m ²
7:55 AM	74.5 °F	72.3 °F	93%	NE	18.6 mph	22.4 mph	-- in	0 in	0.06 in	0	0 w/m ²
8:01 AM	74.5 °F	72.3 °F	93%	NNE	15.9 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
8:06 AM	74.5 °F	72.3 °F	93%	ENE	11.2 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
8:11 AM	74.7 °F	72.5 °F	93%	NE	17.5 mph	19.9 mph	-- in	0 in	0.06 in	0	0 w/m ²
8:16 AM	74.8 °F	72.7 °F	93%	East	9.8 mph	12.3 mph	-- in	0 in	0.06 in	0	0 w/m ²
8:21 AM	74.8 °F	72.7 °F	93%	ENE	10.7 mph	12.3 mph	-- in	0 in	0.06 in	0	0.17 w/m ²
8:47 AM	74.5 °F	72.7 °F	94%	NE	18.1 mph	19.9 mph	-- in	0 in	0.07 in	0	21.95 w/m ²
8:52 AM	74.3 °F	72.5 °F	94%	NE	11.9 mph	12.3 mph	-- in	0 in	0.07 in	0	24.69 w/m ²
8:57 AM	74.3 °F	72.1 °F	93%	NE	13.6 mph	17.5 mph	-- in	0 in	0.07 in	0	24.51 w/m ²
9:02 AM	74.3 °F	72.1 °F	93%	NE	16.1 mph	19.9 mph	-- in	0 in	0.07 in	0	29.1 w/m ²
9:07 AM	74.1 °F	72 °F	93%	NE	16.1 mph	19.9 mph	-- in	0 in	0.07 in	0	33.96 w/m ²
9:12 AM	74.1 °F	71.8 °F	92%	ENE	15 mph	17.5 mph	-- in	0 in	0.07 in	0	38.01 w/m ²
9:17 AM	73.9 °F	71.6 °F	92%	NE	15 mph	17.5 mph	-- in	0 in	0.07 in	0	39.36 w/m ²
9:22 AM	73.9 °F	71.6 °F	92%	NE	19.9 mph	22.4 mph	-- in	0 in	0.07 in	1	51.96 w/m ²
9:27 AM	73.8 °F	71.4 °F	92%	NNE	18.6 mph	24.8 mph	-- in	0 in	0.07 in	1	72.61 w/m ²
9:32 AM	73.8 °F	71.4 °F	92%	NNE	19.2 mph	22.4 mph	-- in	0 in	0.07 in	1	60.64 w/m ²
9:37 AM	73.8 °F	71.4 °F	92%	NE	13.9 mph	27.5 mph	-- in	0 in	0.07 in	1	55.46 w/m ²
9:42 AM	73.8 °F	71.4 °F	92%	NNE	18.6 mph	19.9 mph	-- in	0 in	0.07 in	1	56.23 w/m ²
9:47 AM	73.8 °F	71.4 °F	92%	NNE	16.8 mph	19.9 mph	-- in	0 in	0.07 in	1	58.12 w/m ²
9:52 AM	73.8 °F	71.4 °F	92%	NE	12.1 mph	15 mph	-- in	0 in	0.07 in	1	65.54 w/m ²
9:58 AM	73.8 °F	71.4 °F	92%	NE	23.3 mph	27.5 mph	-- in	0 in	0.07 in	1	80.05 w/m ²
10:03 AM	73.8 °F	71.1 °F	91%	NE	13.4 mph	19.9 mph	-- in	0 in	0.07 in	1	65.68 w/m ²
10:08 AM	73.8 °F	71.1 °F	91%	NE	15 mph	17.5 mph	-- in	0 in	0.07 in	1	65.41 w/m ²
10:13 AM	73.8 °F	71.1 °F	91%	NE	23 mph	27.5 mph	-- in	0 in	0.07 in	1	48.94 w/m ²
10:18 AM	73.8 °F	71.1 °F	91%	NE	16.8 mph	19.9 mph	-- in	0 in	0.07 in	0	41.88 w/m ²
10:23 AM	73.8 °F	71.1 °F	91%	NNE	23.9 mph	27.5 mph	-- in	0 in	0.07 in	1	60.59 w/m ²
10:28 AM	73.8 °F	71.4 °F	92%	NE	13.6 mph	17.5 mph	-- in	0 in	0.07 in	1	56.77 w/m ²
10:33 AM	73.8 °F	71.4 °F	92%	NE	25.3 mph	30 mph	-- in	0 in	0.07 in	1	75.62 w/m ²
10:37 AM	73.6 °F	71.2 °F	92%	NE	20.1 mph	24.8 mph	-- in	0 in	0.07 in	1	97.84 w/m ²
10:42 AM	73.6 °F	71.2 °F	92%	NE	13 mph	17.5 mph	-- in	0 in	0.07 in	0	37.83 w/m ²
10:46 AM	73.6 °F	71.2 °F	92%	NE	17 mph	19.9 mph	-- in	0 in	0.07 in	1	89.71 w/m ²
10:51 AM	73.6 °F	71.2 °F	92%	NE	23 mph	27.5 mph	-- in	0 in	0.07 in	1	66.26 w/m ²
10:56 AM	73.4 °F	71.1 °F	92%	ENE	21.5 mph	27.5 mph	-- in	0 in	0.07 in	1	80.23 w/m ²
11:02 AM	73.4 °F	71.1 °F	92%	NE	21.2 mph	24.8 mph	-- in	0 in	0.07 in	1	98.1 w/m ²
11:07 AM	73.4 °F	71.1 °F	92%	NE	18.3 mph	19.9 mph	-- in	0 in	0.07 in	1	109.1 w/m ²
11:12 AM	73.4 °F	71.1 °F	92%	NNE	22.1 mph	27.5 mph	-- in	0 in	0.07 in	1	81.07 w/m ²
11:17 AM	73.4 °F	71.1 °F	92%	NNE	24.4 mph	32.4 mph	-- in	0 in	0.07 in	1	110.08 w/m ²
11:22 AM	73.4 °F	70 °F	89%	NE	24.6 mph	27.5 mph	-- in	0 in	0.07 in	1	99.33 w/m ²
11:27 AM	73.4 °F	70 °F	89%	NE	19 mph	22.4 mph	-- in	0 in	0.07 in	1	78.32 w/m ²
11:32 AM	73.6 °F	69.8 °F	88%	NE	20.8 mph	22.4 mph	-- in	0 in	0.07 in	1	144.28 w/m ²
11:37 AM	73.6 °F	69.3 °F	86%	NE	16.8 mph	17.5 mph	-- in	0 in	0.07 in	1	138.47 w/m ²
11:42 AM	73.8 °F	69.1 °F	85%	NE	23.9 mph	27.5 mph	-- in	0 in	0.07 in	1	91.16 w/m ²
11:47 AM	73.9 °F	69.8 °F	87%	NNE	17 mph	19.9 mph	-- in	0 in	0.07 in	1	122.2 w/m ²
11:52 AM	74.1 °F	70.3 °F	88%	NE	13.9 mph	15 mph	-- in	0 in	0.07 in	1	57.13 w/m ²

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
11:57 AM	74.1 °F	70.3 °F	88%	NE	17 mph	19.9 mph	-- in	0 in	0.07 in	1	117.05 w/m ²
12:02 PM	74.1 °F	70.7 °F	89%	NE	14.5 mph	17.5 mph	-- in	0 in	0.07 in	1	126.92 w/m ²
12:07 PM	74.1 °F	70.7 °F	89%	North	19.9 mph	24.8 mph	-- in	0 in	0.07 in	1	142.9 w/m ²
12:12 PM	73.9 °F	70.9 °F	90%	NNE	15.2 mph	17.5 mph	-- in	0 in	0.07 in	1	98.02 w/m ²
12:18 PM	73.9 °F	70.9 °F	90%	NE	17 mph	19.9 mph	-- in	0 in	0.07 in	1	119.59 w/m ²
12:23 PM	73.9 °F	70.9 °F	90%	NE	24.4 mph	32.4 mph	-- in	0 in	0.07 in	2	156.62 w/m ²
12:28 PM	73.9 °F	71.2 °F	91%	NE	20.8 mph	24.8 mph	-- in	0 in	0.07 in	2	170.31 w/m ²
12:33 PM	74.1 °F	71.4 °F	91%	NNE	22.8 mph	30 mph	-- in	0 in	0.07 in	2	166.39 w/m ²
12:38 PM	74.1 °F	71.1 °F	90%	NNE	18.3 mph	19.9 mph	-- in	0 in	0.07 in	2	163.27 w/m ²
12:43 PM	74.1 °F	71.1 °F	90%	NNE	15.9 mph	17.5 mph	-- in	0 in	0.07 in	1	144.39 w/m ²
12:48 PM	74.3 °F	70.9 °F	89%	NNE	25.5 mph	30 mph	-- in	0 in	0.07 in	2	168.09 w/m ²
12:53 PM	74.3 °F	70.9 °F	89%	North	18.1 mph	19.9 mph	-- in	0 in	0.07 in	2	182.94 w/m ²
12:58 PM	74.3 °F	70.5 °F	88%	North	22.1 mph	24.8 mph	-- in	0 in	0.07 in	1	122.89 w/m ²
1:03 PM	74.3 °F	70.9 °F	89%	NNE	15.9 mph	17.5 mph	-- in	0 in	0.07 in	1	82.01 w/m ²
1:08 PM	74.3 °F	71.2 °F	90%	NNE	19 mph	22.4 mph	-- in	0 in	0.07 in	1	129.72 w/m ²
1:13 PM	74.3 °F	71.2 °F	90%	NNE	26.2 mph	30 mph	-- in	0 in	0.07 in	1	121.33 w/m ²
1:18 PM	74.5 °F	71.4 °F	90%	NNE	19 mph	22.4 mph	-- in	0 in	0.07 in	1	101.84 w/m ²
1:23 PM	74.5 °F	72.1 °F	92%	NE	24.4 mph	32.4 mph	-- in	0 in	0.07 in	1	68.51 w/m ²
1:28 PM	74.5 °F	72.1 °F	92%	NNE	18.1 mph	22.4 mph	-- in	0 in	0.07 in	1	65.77 w/m ²
1:34 PM	74.5 °F	72.1 °F	92%	North	24.4 mph	27.5 mph	-- in	0 in	0.07 in	1	123.07 w/m ²
1:39 PM	74.5 °F	72.3 °F	93%	NNE	17 mph	17.5 mph	-- in	0 in	0.07 in	1	89.16 w/m ²
1:44 PM	74.5 °F	72.3 °F	93%	NNE	20.1 mph	24.8 mph	-- in	0 in	0.07 in	1	72.61 w/m ²
1:49 PM	74.5 °F	72.3 °F	93%	North	18.6 mph	19.9 mph	-- in	0 in	0.07 in	1	93.34 w/m ²
1:54 PM	74.5 °F	72.3 °F	93%	NE	15 mph	17.5 mph	-- in	0 in	0.07 in	1	86.37 w/m ²
1:59 PM	74.3 °F	72 °F	92%	NNE	17.5 mph	19.9 mph	-- in	0 in	0.07 in	1	61.81 w/m ²
2:04 PM	74.3 °F	72 °F	92%	North	30.9 mph	37.4 mph	-- in	0 in	0.07 in	1	62.66 w/m ²
2:09 PM	74.3 °F	72 °F	92%	North	29.5 mph	34.9 mph	-- in	0 in	0.07 in	1	103.98 w/m ²
2:14 PM	74.1 °F	71.4 °F	91%	NNE	21.2 mph	27.5 mph	-- in	0 in	0.07 in	1	91.49 w/m ²
2:19 PM	74.1 °F	71.4 °F	91%	NNE	27.7 mph	34.9 mph	-- in	0 in	0.07 in	1	55.6 w/m ²
2:24 PM	74.1 °F	71.8 °F	92%	North	19 mph	22.4 mph	-- in	0 in	0.07 in	0	41.11 w/m ²
2:29 PM	74.1 °F	71.8 °F	92%	North	27.1 mph	30 mph	-- in	0 in	0.07 in	1	87.1 w/m ²
2:34 PM	74.1 °F	71.8 °F	92%	North	21.7 mph	27.5 mph	-- in	0 in	0.07 in	1	52 w/m ²
2:39 PM	74.1 °F	71.8 °F	92%	NNE	30 mph	32.4 mph	-- in	0 in	0.07 in	0	16.24 w/m ²
2:44 PM	74.1 °F	71.8 °F	92%	NE	21.5 mph	24.8 mph	-- in	0 in	0.07 in	0	19.07 w/m ²
2:50 PM	74.1 °F	72 °F	93%	NNE	15.2 mph	17.5 mph	-- in	0 in	0.07 in	0	25.77 w/m ²
2:55 PM	74.3 °F	72.1 °F	93%	North	23 mph	30 mph	-- in	0 in	0.07 in	0	38.73 w/m ²
3:00 PM	74.5 °F	72.3 °F	93%	NNE	19.7 mph	22.4 mph	-- in	0 in	0.07 in	0	23.93 w/m ²
3:05 PM	74.7 °F	72.5 °F	93%	NNE	28 mph	30 mph	-- in	0 in	0.07 in	0	33.74 w/m ²
3:10 PM	74.7 °F	72.5 °F	93%	NNE	23.3 mph	24.8 mph	-- in	0 in	0.07 in	0	32.34 w/m ²
3:15 PM	74.8 °F	72.7 °F	93%	North	24.6 mph	27.5 mph	-- in	0 in	0.07 in	0	27.08 w/m ²
3:20 PM	75 °F	72.9 °F	93%	NNW	18.3 mph	19.9 mph	-- in	0 in	0.07 in	1	46.78 w/m ²
3:25 PM	75.2 °F	73 °F	93%	NNE	22.8 mph	24.8 mph	-- in	0 in	0.07 in	1	70.04 w/m ²
3:30 PM	75.2 °F	73 °F	93%	North	14.5 mph	15 mph	-- in	0 in	0.07 in	0	16.28 w/m ²
3:35 PM	75.2 °F	73 °F	93%	NNE	29.1 mph	34.9 mph	-- in	0 in	0.07 in	0	23.34 w/m ²
3:40 PM	75.2 °F	73 °F	93%	NNE	31.5 mph	40 mph	-- in	0 in	0.07 in	1	50.7 w/m ²

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
3:45 PM	75.4 °F	73.2 °F	93%	NNE	24.6 mph	30 mph	-- in	0 in	0.07 in	1	56.41 w/m ²
3:50 PM	75.4 °F	73.2 °F	93%	NNE	16.8 mph	22.4 mph	-- in	0 in	0.07 in	0	9.21 w/m ²
3:55 PM	75.4 °F	73.2 °F	93%	NNE	21.5 mph	27.5 mph	-- in	0 in	0.07 in	1	43.5 w/m ²
4:00 PM	75.4 °F	73.2 °F	93%	NNE	19 mph	24.8 mph	-- in	0 in	0.07 in	0	30.5 w/m ²
4:06 PM	75.4 °F	73.2 °F	93%	NNE	17.5 mph	19.9 mph	-- in	0 in	0.07 in	0	29.6 w/m ²
4:08 PM	75.4 °F	73.6 °F	94%	North	22.1 mph	24.8 mph	-- in	0 in	0.07 in	0	23.61 w/m ²
4:13 PM	75.4 °F	72.9 °F	92%	NNE	30 mph	34.9 mph	-- in	0 in	0.07 in	0	22.62 w/m ²
4:18 PM	75.2 °F	72.7 °F	92%	NNE	19.9 mph	22.4 mph	-- in	0 in	0.07 in	0	34.19 w/m ²
4:23 PM	75.2 °F	72.7 °F	92%	North	23.9 mph	30 mph	-- in	0 in	0.07 in	0	18.8 w/m ²
4:28 PM	75.2 °F	72.7 °F	92%	NNE	26.8 mph	34.9 mph	-- in	0 in	0.07 in	0	20.78 w/m ²
4:33 PM	75.4 °F	72.9 °F	92%	NNE	23 mph	27.5 mph	-- in	0 in	0.07 in	0	29.69 w/m ²
4:38 PM	75.4 °F	72.9 °F	92%	NNE	21.7 mph	24.8 mph	-- in	0 in	0.07 in	0	5.42 w/m ²
4:43 PM	75.6 °F	73 °F	92%	North	17.7 mph	24.8 mph	-- in	0.14 in	0.09 in	0	15.88 w/m ²
4:48 PM	75.7 °F	73.2 °F	92%	NNE	28.6 mph	32.4 mph	-- in	0.14 in	0.09 in	0	18.62 w/m ²
4:53 PM	75.7 °F	73.2 °F	92%	NNE	24.6 mph	27.5 mph	-- in	0 in	0.09 in	0	16.46 w/m ²
4:58 PM	75.7 °F	73 °F	91%	NNE	31.1 mph	37.4 mph	-- in	0 in	0.09 in	0	25.14 w/m ²
5:03 PM	75.7 °F	73 °F	91%	NNE	26.8 mph	30 mph	-- in	0 in	0.09 in	0	28.79 w/m ²
5:08 PM	75.7 °F	73 °F	91%	NNE	31.8 mph	37.4 mph	-- in	0 in	0.09 in	0	23.25 w/m ²
5:14 PM	75.7 °F	73 °F	91%	NNE	33.1 mph	40 mph	-- in	0 in	0.09 in	0	18.8 w/m ²
5:19 PM	75.7 °F	73 °F	91%	NNE	23.7 mph	30 mph	-- in	0 in	0.09 in	0	17.94 w/m ²
5:24 PM	75.7 °F	73 °F	91%	ENE	37.1 mph	45 mph	-- in	0 in	0.09 in	0	17.67 w/m ²
5:29 PM	75.7 °F	73 °F	91%	NNE	31.8 mph	37.4 mph	-- in	0 in	0.09 in	0	6.12 w/m ²
5:34 PM	75.7 °F	73 °F	91%	NNE	21.5 mph	22.4 mph	-- in	0 in	0.09 in	0	16.1 w/m ²
5:39 PM	75.7 °F	73 °F	91%	NNE	34.7 mph	47.4 mph	-- in	0 in	0.09 in	0	3.15 w/m ²
5:44 PM	75.7 °F	73 °F	91%	NE	23.7 mph	30 mph	-- in	0 in	0.09 in	0	8.2 w/m ²
5:47 PM	75.7 °F	73 °F	91%	NNE	35.6 mph	40 mph	-- in	0 in	0.09 in	0	6.98 w/m ²
5:52 PM	75.7 °F	73 °F	91%	NE	34 mph	45 mph	-- in	0 in	0.09 in	0	9.67 w/m ²
5:57 PM	75.9 °F	73.2 °F	91%	NE	30.2 mph	37.4 mph	-- in	0 in	0.09 in	0	3.54 w/m ²
6:02 PM	75.9 °F	73.2 °F	91%	NE	38.5 mph	45 mph	-- in	0 in	0.09 in	0	3.43 w/m ²
6:07 PM	76.1 °F	73.4 °F	91%	NNE	28.6 mph	32.4 mph	-- in	0 in	0.09 in	0	2.14 w/m ²
6:12 PM	76.3 °F	73.6 °F	91%	NE	22.8 mph	27.5 mph	-- in	0 in	0.09 in	0	0.34 w/m ²
6:17 PM	76.3 °F	73.6 °F	91%	NE	22.8 mph	32.4 mph	-- in	0 in	0.09 in	0	3.04 w/m ²
6:22 PM	76.3 °F	73.6 °F	91%	NE	26.2 mph	34.9 mph	-- in	0 in	0.09 in	0	0.51 w/m ²
6:27 PM	76.5 °F	73.4 °F	90%	ENE	27.1 mph	34.9 mph	-- in	0 in	0.09 in	0	0.51 w/m ²
6:32 PM	76.5 °F	73.8 °F	91%	NE	33.3 mph	40 mph	-- in	0 in	0.09 in	0	1.35 w/m ²
6:38 PM	76.5 °F	73.4 °F	90%	NE	30.9 mph	37.4 mph	-- in	0 in	0.09 in	0	1.8 w/m ²
6:43 PM	76.3 °F	73.2 °F	90%	NE	30.2 mph	34.9 mph	-- in	0 in	0.09 in	0	1.74 w/m ²
6:48 PM	76.1 °F	73 °F	90%	ENE	31.1 mph	34.9 mph	-- in	0 in	0.09 in	0	0 w/m ²
6:53 PM	75.9 °F	72.9 °F	90%	NE	28.6 mph	37.4 mph	-- in	0 in	0.09 in	0	0 w/m ²
6:58 PM	75.7 °F	72.7 °F	90%	NE	30.6 mph	37.4 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:03 PM	75.6 °F	72.5 °F	90%	NE	35.6 mph	42.5 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:08 PM	75.6 °F	72.5 °F	90%	ENE	35.6 mph	45 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:13 PM	75.7 °F	72.7 °F	90%	NE	20.1 mph	27.5 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:18 PM	75.7 °F	72.7 °F	90%	ENE	24.8 mph	27.5 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:23 PM	75.9 °F	72.9 °F	90%	ENE	26.8 mph	30 mph	-- in	0 in	0.09 in	0	0 w/m ²

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.	UV	Solar
7:28 PM	76.1 °F	72.7 °F	89%	ENE	24.4 mph	27.5 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:33 PM	76.3 °F	72.9 °F	89%	ENE	19.2 mph	22.4 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:38 PM	76.5 °F	72.7 °F	88%	East	35.3 mph	40 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:43 PM	76.6 °F	72.9 °F	88%	East	38.9 mph	47.4 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:48 PM	76.8 °F	73 °F	88%	ESE	35.3 mph	42.5 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:54 PM	76.8 °F	73 °F	88%	ENE	29.3 mph	40 mph	-- in	0 in	0.09 in	0	0 w/m ²
7:59 PM	77 °F	73.2 °F	88%	East	25.3 mph	32.4 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:04 PM	77 °F	72.9 °F	87%	East	39.4 mph	47.4 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:09 PM	77 °F	72.9 °F	87%	East	34.9 mph	42.5 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:14 PM	77 °F	72.9 °F	87%	East	43.4 mph	52.6 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:19 PM	77 °F	72.9 °F	87%	East	30.2 mph	45 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:24 PM	77.2 °F	73 °F	87%	East	43.2 mph	47.4 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:29 PM	77.2 °F	72.7 °F	86%	ESE	38.9 mph	45 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:34 PM	77.2 °F	72.7 °F	86%	East	45.6 mph	52.6 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:39 PM	77.2 °F	72.7 °F	86%	ESE	41.8 mph	52.6 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:44 PM	77 °F	72.5 °F	86%	East	45.6 mph	52.6 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:49 PM	77 °F	72.5 °F	86%	ESE	38.5 mph	45 mph	-- in	0 in	0.09 in	0	0 w/m ²
8:54 PM	77 °F	72.5 °F	86%	ESE	49.7 mph	60 mph	-- in	0 in	0.09 in	0	0 w/m ²
9:00 PM	77.2 °F	72.7 °F	86%	ESE	30.6 mph	40 mph	-- in	0 in	0.09 in	0	0 w/m ²
9:05 PM	77.2 °F	72.7 °F	86%	WSW	49.4 mph	57.5 mph	-- in	0 in	0.09 in	0	0 w/m ²



Forensic Analysis of Country Oaks to Dundee 69kV Structures DCO-72 and DCO-76 to
DCO-80

Hurricane Irma

November 30, 2017



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1.0 Executive Summary

Structures: Country Oaks to Dundee 69kV transmission line structures DCO-72 and DCO-76 to DCO-80

Location – Central Polk County, FL (27°58'5.02"N; 81°34'42.13"W to 27°57'44.15"N; 81°34'41.94"W)

Date of Outage – 09-10-17

Time of Outage – 21:41 EST

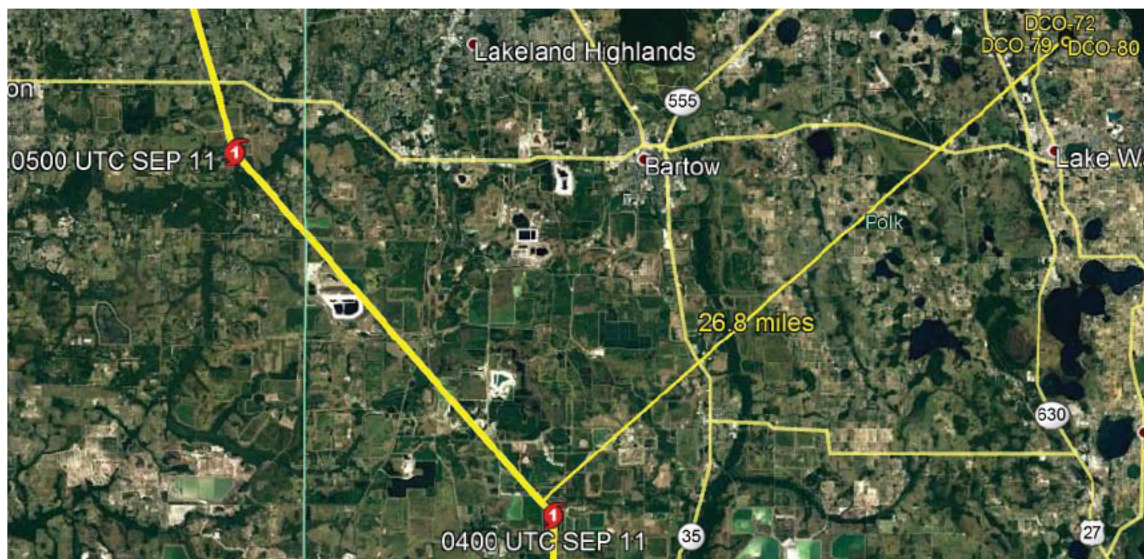
Inspection Date – 09-17-17

At 9:41 pm, on Sunday, September 10th, an outage was reported on Country Oaks to Dundee 69kV transmission line. The outage was a result of wood pole failures.

At the time of the outage, 75 mph wind velocities were reported in the vicinity of structures DCO-72 and DCO-76 to DCO-80 by the National Oceanic and Atmospheric Administration (NOAA). The outage occurred approximately 80 minutes in advance of the hurricane being at a location nearest to the poles. Hurricane Irma's eye passed approximately 26.8 miles southwest of DCO-72 and DCO-76 to DCO-80 at 11:00 pm EST Sunday, September 10, 2017.

The wood poles failures most likely occurred due to high wind velocities as a result of Hurricane Irma's landfall. Wood rot additionally aided in the following pole failures: DCO-72, DCO-78 and DCO-79; the same poles were replaced in 2012 per maintenance reports. Poles DCO-76, DCO-77 and DCO-80 failed as a result of adjacent poles collapsing.

Also, the open landscape increases wind exposure which in turn increases the risk of pole failure due to wind damage.



Distance from Hurricane Irma's path to structure DCO-77.



Steel poles DCO-80 to DCO-76 replacement in progress. Looking north.



Replaced pole DCO-72. Looking south.



Country Oaks to Dundee 69kV transmission line wind exposure.



Country Oaks to Dundee 69kV transmission line wind exposure.

2.0 Maintenance Data

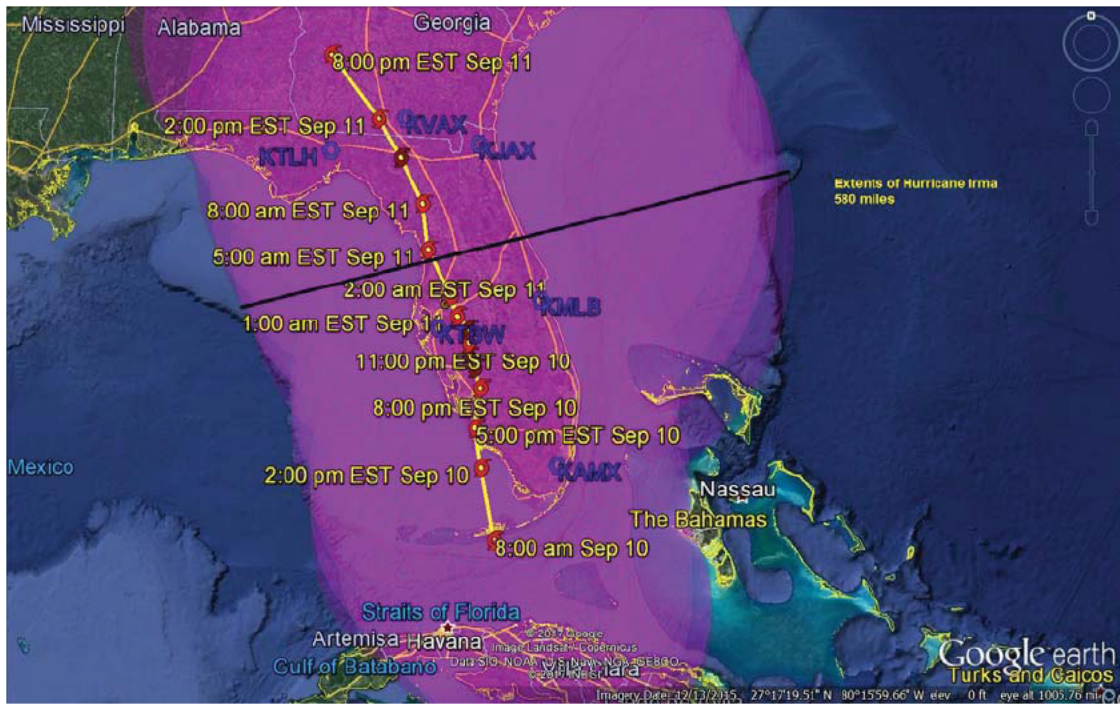
According to maintenance records, poles DCO-72, DCO-78 and DCO-79 were replaced with wood poles on 10/13/2012 per MX orders: 2012-3004168825, 2012-3004168826 and 2012-3004168827, respectively. Pole DCO-77 was replaced with a wood pole on 3/1/2017 per MX order 2017-3006322298.

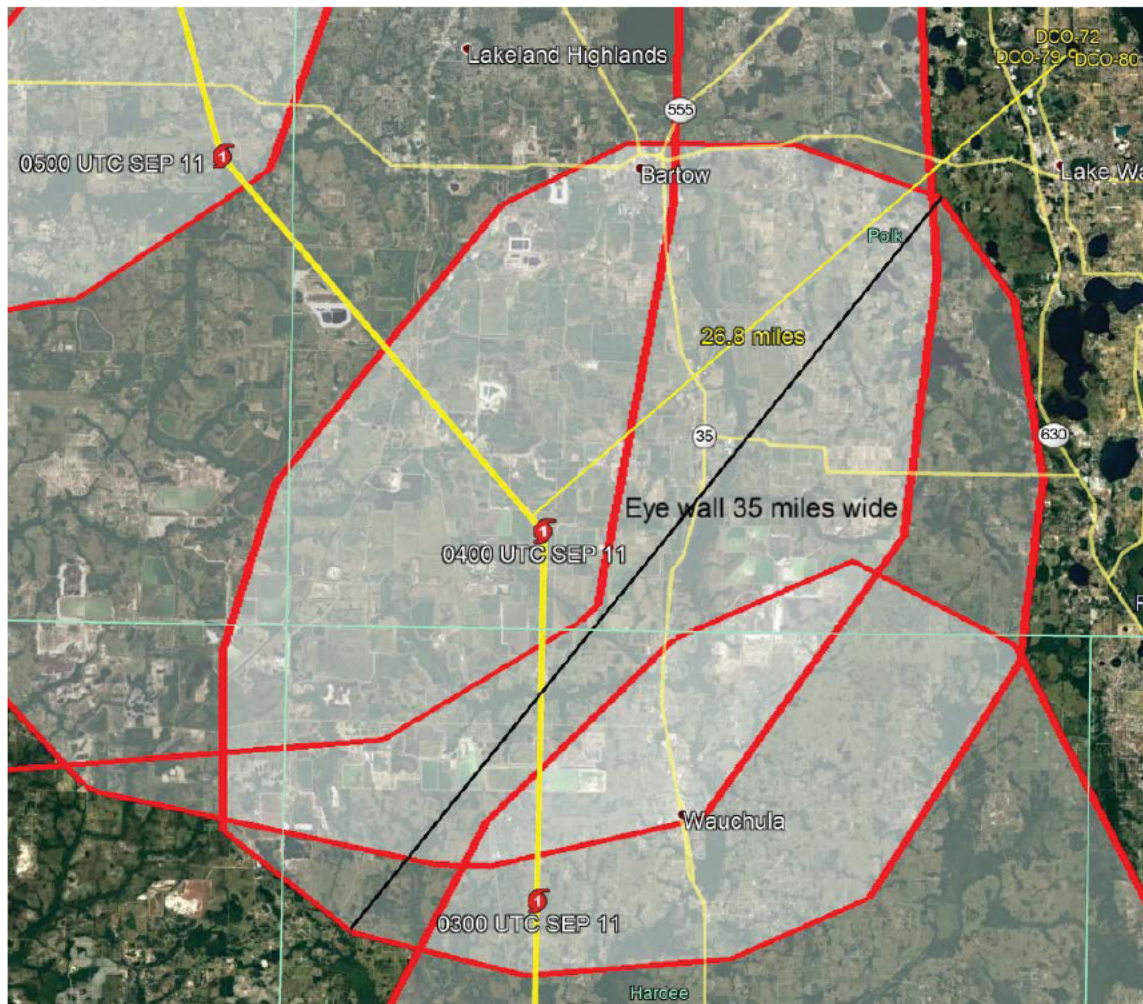
3.0 Weather Data

Hurricane Irma made continental landfall in Naples, Florida at 4:00 pm EST on Sunday, September 10, 2017 as a category 2 hurricane and weakened to a tropical depression over the Georgia - Alabama border 12 hours later.

At the time of the Country Oaks to Dundee 69kV transmission line outage, approximately at 9:41 pm EST, September 10, 2017, the hurricane was designated as a category 1 hurricane and the eye of the hurricane was located approximately 42 miles southwest of pole DCO-77. 75 mph wind velocity was reported near poles DCO-72 and DCO-76 to DCO-80 at the time of the outage.

The hurricane was nearest to wood poles DCO-72 and DCO-76 to DCO-80 at approximately 11:00 pm EST on Sunday, September 10, 2017 as a category 1 hurricane with recorded 100 mph wind velocities. The hurricane eye at that time was 35 miles wide and located 26.8 miles southwest of DCO-77.

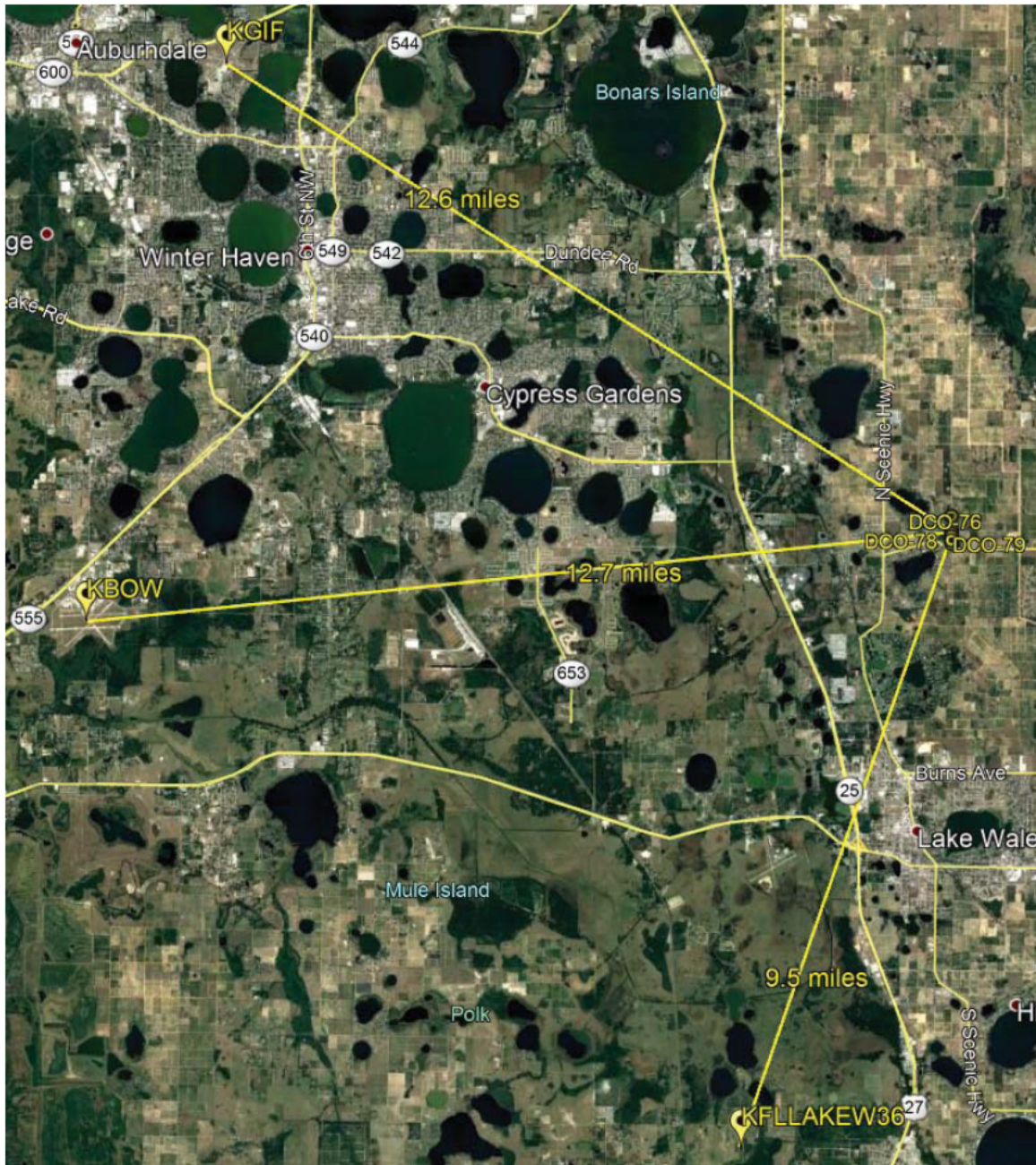




Hurricane Irma eye wall in vicinity of DCO-72 and DCO-76 to DCO-80.

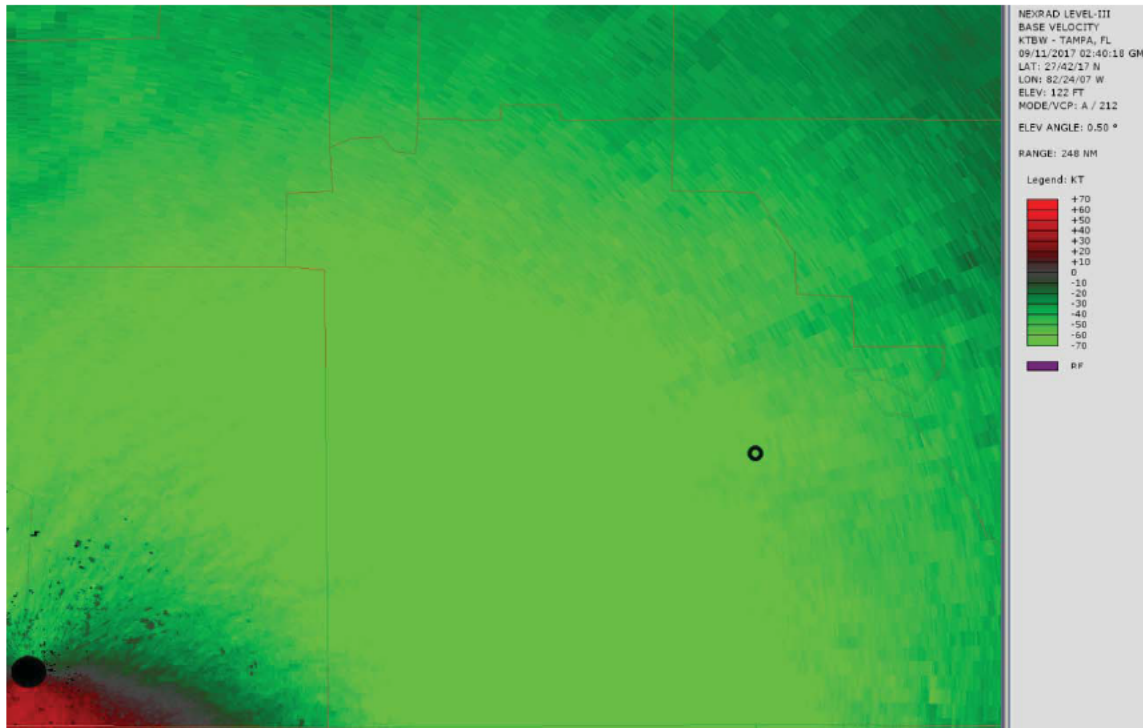
Three local weather stations: KBOW, KGIF and KFLLAKEW36 show wind velocities in range of 24 to 44 mph and wind gusts in range of 47 to 62 mph. According to the NOAA site specific maps, the wind speeds have reached 75 mph at time of the outage.

Station Name & Location	Time	Temp.	Wind Dir	Wind Vel.	Wind Gust.	Distance from DCO-77
KBOW, Bartow Municipal Airport	9:35:00 PM	75.2 °F	NE	42.6 mph	62.1 mph	12.7 mi
KFLLAKEW36, Lake Wales, FL	10:11:00 PM	75.9 °F	E	24 mph	47 mph	9.5 mi
KGIF, Winter Haven, FL	9:36:00 PM	77.0 °F	ENE	43.7 mph	59.8 mph	12.6 mi



Weather stations and distances from AL-14-1 to AL-14-13.

The following map shows NOAA wind velocities at the time of failure. The light green shading indicates 65 knot wind speed which equates to 75 mph.



NOAA base velocities at the approximate time of Country Oaks to Dundee 69kV transmission line outage.

NOAA cyclone activity at the time of the outage was also reviewed and found no evidence of any cyclones near the Country Oaks to Dundee 69kV transmission line.

4.0 Conclusion

The wood poles failures most likely occurred due to high wind velocities as a result of Hurricane Irma's landfall. The wood poles snapped at various locations. Wood rot additionally aided in the pole failures. Because of construction in progress not all the poles could be safely inspected. However, an assessment of the structures was provided by the contract inspector on 9/19/17.

According to Darrell Williamson, Contract Inspector, Utility Oversight Services, Inc., poles DCO-72, DCO-78 and DCO-79 contained wood rot at the base. Poles DCO-76, DCO-77 and DCO-80 failed as a result of adjacent poles collapsing.

Poles DCO-72, DCO-78 and DCO-79 containing wood rot were poles replaced on 10/13/2012 per MX orders: 2012-3004168825, 2012-3004168826 and 2012-3004168827 respectively.

The failed portion of the transmission line is located in an open landscape without tall vegetation or manmade cover. The open landscape increases wind exposure which in turn increases the risk of pole failure due to wind damage.



5.0 Restoration

During the field visit, all new poles were set and wire installation was in progress. All structures were replaced with 95' LD-6 steel poles except for DCO-78 which was replaced with an 85' LD-6 steel pole.

Appendix A: Weather Data

KBOW Weather data for September 10 2017												
Time (EDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:15 AM	80.6 °F	85.4 °F	73.4 °F	79%	29.82 in	10.0 mi	ENE	17.3 mph	31.1 mph	N/A		Overcast
12:35 AM	80.6 °F	85.4 °F	73.4 °F	79%	29.81 in	10.0 mi	ENE	16.1 mph	24.2 mph	N/A		Overcast
12:55 AM	78.8 °F	-	73.4 °F	83%	29.80 in	10.0 mi	East	13.8 mph	24.2 mph	N/A		Overcast
1:15 AM	78.8 °F	-	75.2 °F	89%	29.80 in	10.0 mi	ENE	15.0 mph	21.9 mph	N/A		Overcast
1:35 AM	78.8 °F	-	75.2 °F	89%	29.80 in	10.0 mi	East	13.8 mph	23.0 mph	N/A		Overcast
1:55 AM	78.8 °F	-	77.0 °F	94%	29.80 in	10.0 mi	East	13.8 mph	26.5 mph	N/A		Overcast
2:15 AM	77.0 °F	-	77.0 °F	100%	29.80 in	4.0 mi	East	20.7 mph	26.5 mph	N/A	Rain	Light Rain
2:35 AM	75.2 °F	-	-	N/A%	29.79 in	4.0 mi	ENE	17.3 mph	24.2 mph	N/A	Rain	Light Rain
2:55 AM	75.2 °F	-	-	N/A%	29.78 in	5.0 mi	ENE	15.0 mph	-	N/A	Rain	Light Rain
3:15 AM	75.2 °F	-	-	N/A%	29.77 in	7.0 mi	NE	13.8 mph	-	N/A	Rain	Light Rain
3:35 AM	75.2 °F	-	-	N/A%	29.75 in	8.0 mi	ENE	12.7 mph	20.7 mph	N/A	Rain	Light Rain
3:55 AM	75.2 °F	-	-	N/A%	29.75 in	10.0 mi	ENE	12.7 mph	-	N/A		Mostly Cloudy
4:15 AM	75.2 °F	-	-	N/A%	29.76 in	10.0 mi	ENE	12.7 mph	-	N/A		Mostly Cloudy
4:35 AM	75.2 °F	-	-	N/A%	29.75 in	10.0 mi	ENE	13.8 mph	-	N/A	Rain	Light Rain
4:55 AM	75.2 °F	-	75.2 °F	100%	29.75 in	10.0 mi	ENE	12.7 mph	18.4 mph	N/A		Overcast
5:15 AM	75.2 °F	-	-	N/A%	29.75 in	10.0 mi	NE	9.2 mph	15.0 mph	N/A		Light Drizzle
5:35 AM	75.2 °F	-	-	N/A%	29.76 in	9.0 mi	ENE	10.4 mph	21.9 mph	N/A	Rain	Light Rain
5:55 AM	75.2 °F	-	-	N/A%	29.76 in	5.0 mi	ENE	13.8 mph	25.3 mph	N/A	Rain	Light Rain
6:15 AM	73.4 °F	-	-	N/A%	29.75 in	7.0 mi	ENE	15.0 mph	21.9 mph	N/A	Rain	Light Rain
6:35 AM	73.4 °F	-	-	N/A%	29.74 in	10.0 mi	NE	11.5 mph	18.4 mph	N/A		Light Drizzle
6:55 AM	75.2 °F	-	-	N/A%	29.73 in	10.0 mi	NE	12.7 mph	18.4 mph	N/A		Mostly Cloudy
7:15 AM	73.4 °F	-	-	N/A%	29.74 in	4.0 mi	NNE	10.4 mph	18.4 mph	N/A	Rain	Rain
5:35 PM	73.4 °F	-	-	N/A%	29.42 in	0.8 mi	NNE	25.3 mph	41.4 mph	N/A	Rain	Heavy Rain
5:55 PM	73.4 °F	-	-	N/A%	29.39 in	0.8 mi	NE	31.1 mph	49.5 mph	N/A	Rain	Heavy Rain
6:15 PM	73.4 °F	-	-	N/A%	29.36 in	-	NNE	27.6 mph	46.0 mph	N/A	Rain	Heavy Rain
6:35 PM	71.6 °F	-	-	N/A%	29.32 in	0.2 mi	NE	38.0 mph	49.5 mph	N/A	Rain	Heavy Rain
6:55 PM	71.6 °F	-	-	N/A%	29.32 in	0.2 mi	NNE	26.5 mph	47.2 mph	N/A	Rain	Heavy Rain
7:15 PM	73.4 °F	-	-	N/A%	29.27 in	0.2 mi	NE	27.6 mph	47.2 mph	N/A	Rain	Heavy Rain
7:35 PM	73.4 °F	-	-	N/A%	29.23 in	0.2 mi	NE	35.7 mph	46.0 mph	N/A	Rain	Heavy Rain
7:55 PM	73.4 °F	-	-	N/A%	29.18 in	0.5 mi	NE	32.2 mph	48.3 mph	N/A	Rain	Heavy Rain
8:15 PM	75.2 °F	-	-	N/A%	29.15 in	0.2 mi	NE	35.7 mph	55.2 mph	N/A	Rain	Heavy Rain
8:35 PM	75.2 °F	-	-	N/A%	29.11 in	1.2 mi	ENE	38.0 mph	44.9 mph	N/A	Rain	Heavy Rain
8:55 PM	75.2 °F	-	-	N/A%	29.07 in	2.0 mi	NE	33.4 mph	50.6 mph	N/A	Rain	Rain
9:15 PM	75.2 °F	-	-	N/A%	29.03 in	0.8 mi	NE	38.0 mph	49.5 mph	N/A	Rain	Heavy Rain
9:35 PM	75.2 °F	-	-	N/A%	28.97 in	0.8 mi	NE	42.6 mph	62.1 mph	N/A	Rain	Heavy Rain
9:55 PM	75.2 °F	-	-	N/A%	28.94 in	1.0 mi	ENE	36.8 mph	56.4 mph	N/A	Rain	Heavy Rain
10:15 PM	75.2 °F	-	-	N/A%	28.89 in	-	ENE	41.4 mph	57.5 mph	N/A	Rain	Heavy Rain
10:35 PM	75.2 °F	-	-	N/A%	28.84 in	0.5 mi	ENE	38.0 mph	61.0 mph	N/A	Rain	Heavy Rain
10:55 PM	75.2 °F	-	-	N/A%	28.79 in	0.5 mi	ENE	38.0 mph	64.4 mph	N/A	Rain	Heavy Rain
11:15 PM	-	-	-	N/A%	-	-	North	-	-	N/A		Unknown
11:35 PM	-	-	-	N/A%	-	-	North	-	-	N/A		Unknown
11:55 PM	-	-	-	N/A%	-	-	North	-	-	N/A		Unknown

KFLLAKEW36 Weather data for September 10 2017									
Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
12:10 AM	80.2 °F	75 °F	86%	ENE	11 mph	20 mph	29.84 in	0 in	0 in
12:26 AM	79.9 °F	75 °F	87%	ESE	10 mph	21 mph	29.83 in	0 in	0 in
12:41 AM	79.2 °F	74 °F	85%	ENE	9 mph	19 mph	29.83 in	0 in	0 in
1:01 AM	78.5 °F	74 °F	86%	East	7 mph	18 mph	29.82 in	0 in	0 in
1:20 AM	76.2 °F	73 °F	92%	East	6 mph	13 mph	29.82 in	0.01 in	0.01 in
1:40 AM	76.7 °F	75 °F	95%	NE	8 mph	17 mph	29.82 in	0.03 in	0.03 in
2:00 AM	76.6 °F	75 °F	95%	ESE	6 mph	15 mph	29.82 in	0.07 in	0.07 in
2:21 AM	76.2 °F	74 °F	95%	East	7 mph	14 mph	29.82 in	0.09 in	0.1 in
2:40 AM	75.8 °F	74 °F	96%	East	6 mph	11 mph	29.81 in	0.12 in	0.15 in
2:55 AM	75.6 °F	74 °F	96%	ENE	5 mph	10 mph	29.8 in	0.1 in	0.16 in
3:15 AM	75.5 °F	74 °F	96%	ENE	5 mph	13 mph	29.78 in	0.07 in	0.16 in
3:35 AM	75.7 °F	74 °F	96%	ENE	7 mph	13 mph	29.78 in	0.02 in	0.16 in
3:50 AM	75.7 °F	74 °F	96%	ENE	5 mph	12 mph	29.77 in	0 in	0.16 in
4:10 AM	75.8 °F	74 °F	96%	ESE	6 mph	15 mph	29.78 in	0 in	0.16 in
4:25 AM	75.7 °F	74 °F	96%	ENE	4 mph	10 mph	29.77 in	0 in	0.16 in
4:45 AM	75.5 °F	74 °F	96%	ENE	5 mph	10 mph	29.77 in	0.02 in	0.18 in
5:00 AM	75.4 °F	74 °F	96%	NNE	4 mph	11 mph	29.77 in	0.03 in	0.19 in
5:20 AM	75.5 °F	74 °F	96%	ENE	7 mph	17 mph	29.78 in	0.06 in	0.22 in
5:40 AM	75.3 °F	74 °F	96%	ENE	8 mph	16 mph	29.77 in	0.13 in	0.31 in
5:55 AM	75.1 °F	73 °F	96%	ENE	9 mph	17 mph	29.77 in	0.19 in	0.38 in
6:10 AM	74.7 °F	73 °F	96%	East	6 mph	14 mph	29.77 in	0.23 in	0.42 in
6:30 AM	74.8 °F	73 °F	96%	ENE	5 mph	12 mph	29.76 in	0.2 in	0.46 in
6:50 AM	74.7 °F	73 °F	97%	East	6 mph	12 mph	29.75 in	0.13 in	0.48 in
7:10 AM	74.9 °F	73 °F	97%	NNE	10 mph	20 mph	29.74 in	0.28 in	0.7 in
7:30 AM	74.9 °F	73 °F	97%	East	7 mph	14 mph	29.74 in	0.37 in	0.83 in
7:50 AM	73.7 °F	72 °F	97%	NE	6 mph	13 mph	29.74 in	0.86 in	1.34 in
8:06 AM	75.2 °F	74 °F	97%	NNE	6 mph	13 mph	29.74 in	0.71 in	1.38 in
8:26 AM	76 °F	75 °F	97%	ENE	7 mph	17 mph	29.75 in	0.62 in	1.44 in
8:47 AM	76.5 °F	75 °F	97%	ENE	8 mph	19 mph	29.75 in	0.22 in	1.52 in
9:05 AM	76.5 °F	75 °F	97%	ENE	8 mph	14 mph	29.75 in	0.32 in	1.7 in
9:25 AM	76.2 °F	75 °F	97%	ENE	10 mph	18 mph	29.75 in	0.45 in	1.89 in
9:45 AM	75.7 °F	74 °F	97%	ENE	11 mph	19 mph	29.76 in	0.58 in	2.11 in
10:00 AM	75.6 °F	74 °F	97%	NE	8 mph	18 mph	29.76 in	0.68 in	2.3 in
10:16 AM	75.2 °F	74 °F	97%	ENE	9 mph	17 mph	29.77 in	0.68 in	2.52 in
10:35 AM	74.3 °F	73 °F	96%	ENE	9 mph	18 mph	29.75 in	0.64 in	2.68 in
10:50 AM	73.2 °F	71 °F	96%	NE	11 mph	21 mph	29.79 in	0.67 in	2.84 in
11:05 AM	72.6 °F	71 °F	97%	ENE	7 mph	14 mph	29.75 in	0.54 in	2.94 in
11:25 AM	71.2 °F	70 °F	96%	ENE	9 mph	17 mph	29.75 in	0.37 in	3.01 in
11:40 AM	72.5 °F	71 °F	97%	NE	9 mph	20 mph	29.74 in	0.36 in	3.05 in
12:05 PM	73.5 °F	72 °F	96%	NE	11 mph	21 mph	29.72 in	0.18 in	3.12 in
12:20 PM	73.8 °F	72 °F	97%	NE	11 mph	23 mph	29.71 in	0.14 in	3.13 in
12:40 PM	73.5 °F	72 °F	96%	East	12 mph	23 mph	29.7 in	0.16 in	3.21 in
1:00 PM	73.7 °F	72 °F	97%	NNE	11 mph	20 mph	29.68 in	0.2 in	3.31 in
1:15 PM	73.1 °F	71 °F	96%	NE	13 mph	24 mph	29.68 in	0.42 in	3.54 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
1:35 PM	73.4 °F	72 °F	97%	ENE	12 mph	21 mph	29.65 in	0.38 in	3.59 in
1:56 PM	74 °F	73 °F	97%	NNE	12 mph	23 mph	29.63 in	0.36 in	3.63 in
2:11 PM	73.9 °F	72 °F	96%	ENE	14 mph	26 mph	29.61 in	0.18 in	3.71 in
2:31 PM	74.2 °F	72 °F	96%	NE	13 mph	30 mph	29.59 in	0.17 in	3.76 in
2:51 PM	74.1 °F	72 °F	96%	North	13 mph	23 mph	29.57 in	0.19 in	3.81 in
3:05 PM	73.9 °F	72 °F	96%	NNE	14 mph	28 mph	29.55 in	0.21 in	3.87 in
3:21 PM	73.9 °F	72 °F	96%	NE	13 mph	26 mph	29.53 in	0.22 in	3.97 in
3:40 PM	73.7 °F	72 °F	97%	ENE	14 mph	23 mph	29.52 in	0.42 in	4.2 in
4:00 PM	73.6 °F	72 °F	97%	NE	13 mph	26 mph	29.52 in	0.63 in	4.46 in
4:21 PM	73.6 °F	72 °F	97%	NNE	14 mph	28 mph	29.49 in	0.68 in	4.66 in
4:36 PM	73.4 °F	72 °F	97%	ENE	15 mph	31 mph	29.46 in	0.6 in	4.76 in
4:56 PM	73.7 °F	72 °F	97%	ENE	14 mph	41 mph	29.45 in	0.53 in	4.92 in
5:18 PM	74 °F	73 °F	97%	ENE	14 mph	31 mph	29.43 in	0.43 in	5.06 in
5:35 PM	74.3 °F	73 °F	97%	East	17 mph	38 mph	29.4 in	0.53 in	5.29 in
5:55 PM	74.2 °F	73 °F	97%	NNE	18 mph	34 mph	29.36 in	0.72 in	5.64 in
6:10 PM	74.3 °F	73 °F	97%	North	17 mph	29 mph	29.34 in	0.89 in	5.88 in
6:30 PM	73.9 °F	72 °F	97%	NE	20 mph	40 mph	29.31 in	1.11 in	6.35 in
6:51 PM	73.9 °F	72 °F	97%	NNE	17 mph	39 mph	29.28 in	1.3 in	6.87 in
7:10 PM	74.1 °F	73 °F	97%	NE	20 mph	37 mph	29.25 in	1.25 in	7.14 in
7:28 PM	75.1 °F	74 °F	98%	ENE	17 mph	34 mph	29.23 in	1.06 in	7.28 in
7:45 PM	75 °F	74 °F	98%	ENE	20 mph	37 mph	29.18 in	0.75 in	7.52 in
8:05 PM	75.6 °F	74 °F	98%	NE	19 mph	43 mph	29.13 in	0.68 in	7.79 in
8:26 PM	75.6 °F	74 °F	97%	NE	20 mph	37 mph	29.1 in	0.65 in	7.96 in
8:50 PM	75.9 °F	74 °F	97%	ENE	22 mph	46 mph	29.05 in	0.45 in	8.07 in
9:05 PM	75.9 °F	74 °F	97%	NNE	22 mph	40 mph	29 in	0.48 in	8.28 in
10:11 PM	75.9 °F	74 °F	97%	East	24 mph	47 mph	28.88 in	0.95 in	9.29 in
10:35 PM	75.8 °F	74 °F	97%	East	22 mph	47 mph	28.83 in	1.17 in	9.82 in
10:56 PM	75.9 °F	74 °F	97%	SSE	24 mph	53 mph	28.78 in	1.2 in	10.24 in
11:40 PM	76 °F	75 °F	97%	East	25 mph	47 mph	28.7 in	1.27 in	10.87 in
11:55 PM	75.7 °F	75 °F	98%	ESE	28 mph	49 mph	28.69 in	1.37 in	11.62 in

KFLWINT771 Weather data for September 10 2017									
Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
12:02 AM	80.8 °F	79.5 °F	96%	ENE	16.1 mph	19.9 mph	29.78 in	0 in	0 in
12:07 AM	80.8 °F	79.5 °F	96%	NE	13 mph	19.9 mph	29.78 in	0 in	0 in
12:12 AM	80.8 °F	79.5 °F	96%	ENE	13 mph	19.9 mph	29.76 in	0 in	0 in
12:17 AM	80.8 °F	79.5 °F	96%	NE	16.1 mph	19.9 mph	29.77 in	0 in	0 in
12:22 AM	80.8 °F	79.5 °F	96%	East	11.9 mph	18.1 mph	29.76 in	0 in	0 in
12:27 AM	80.8 °F	79.5 °F	96%	East	15 mph	18.1 mph	29.77 in	0 in	0 in
12:32 AM	80.8 °F	79.5 °F	96%	NE	8.1 mph	18.1 mph	29.77 in	0 in	0 in
12:37 AM	80.8 °F	79.5 °F	96%	NE	16.8 mph	19.9 mph	29.77 in	0 in	0 in
12:42 AM	80.6 °F	79 °F	95%	East	18.6 mph	19.9 mph	29.76 in	0 in	0 in
12:47 AM	80.6 °F	79 °F	95%	SSE	15.4 mph	19.9 mph	29.76 in	0 in	0 in
12:52 AM	80.4 °F	78.4 °F	94%	ENE	11.2 mph	19.9 mph	29.76 in	0 in	0 in
12:57 AM	80.4 °F	78.4 °F	94%	ENE	9.4 mph	19.9 mph	29.76 in	0 in	0 in
1:02 AM	80.4 °F	78.8 °F	95%	NE	15 mph	19.9 mph	29.75 in	0 in	0 in
1:07 AM	80.2 °F	79 °F	96%	ENE	13.6 mph	19.9 mph	29.76 in	0 in	0 in
1:12 AM	80.2 °F	79 °F	96%	ENE	16.8 mph	19.9 mph	29.76 in	0 in	0 in
1:17 AM	80.2 °F	79.5 °F	97%	NE	9.8 mph	19.9 mph	29.76 in	0 in	0 in
1:22 AM	80.1 °F	79.5 °F	98%	East	8.1 mph	19.9 mph	29.75 in	0 in	0 in
1:27 AM	80.1 °F	79.5 °F	98%	ENE	10.5 mph	19.9 mph	29.76 in	0 in	0 in
1:32 AM	79.9 °F	79.5 °F	99%	ENE	16.1 mph	19.9 mph	29.76 in	0 in	0 in
1:37 AM	79.9 °F	79.5 °F	99%	NE	11.9 mph	19.9 mph	29.75 in	0 in	0 in
1:42 AM	79.9 °F	79.5 °F	99%	NE	8.7 mph	18.1 mph	29.76 in	0 in	0 in
1:47 AM	79.9 °F	79.5 °F	99%	NE	13 mph	18.1 mph	29.75 in	0 in	0 in
1:52 AM	79.7 °F	79.3 °F	99%	NNE	18.1 mph	18.1 mph	29.75 in	0 in	0 in
1:57 AM	79.7 °F	79.3 °F	99%	ENE	9.8 mph	18.1 mph	29.76 in	0.06 in	0.01 in
2:02 AM	79.5 °F	79.2 °F	99%	NE	8.7 mph	18.1 mph	29.76 in	0.12 in	0.02 in
2:07 AM	79.5 °F	79.2 °F	99%	ENE	6.9 mph	18.1 mph	29.75 in	0.12 in	0.03 in
2:12 AM	79.5 °F	79.2 °F	99%	East	14.3 mph	18.1 mph	29.76 in	0.12 in	0.04 in
2:17 AM	79.3 °F	79 °F	99%	ENE	13.6 mph	18.1 mph	29.75 in	0.12 in	0.05 in
2:22 AM	79.3 °F	79 °F	99%	NE	10.5 mph	18.1 mph	29.75 in	0.06 in	0.05 in
2:27 AM	79.2 °F	78.8 °F	99%	NE	7.4 mph	18.1 mph	29.75 in	0.12 in	0.06 in
2:32 AM	79 °F	78.6 °F	99%	NE	8.7 mph	18.1 mph	29.75 in	0.12 in	0.07 in
2:37 AM	78.8 °F	78.4 °F	99%	NE	6.3 mph	18.1 mph	29.75 in	0.12 in	0.08 in
2:42 AM	78.8 °F	78.4 °F	99%	NE	6.9 mph	18.1 mph	29.75 in	0.12 in	0.09 in
2:47 AM	78.8 °F	78.4 °F	99%	NE	5.6 mph	18.1 mph	29.74 in	0.12 in	0.1 in
2:52 AM	78.8 °F	78.4 °F	99%	ENE	5.6 mph	18.1 mph	29.74 in	0.12 in	0.11 in
2:56 AM	78.6 °F	78.3 °F	99%	NNE	6.9 mph	18.1 mph	29.73 in	0.12 in	0.11 in
3:01 AM	78.6 °F	78.3 °F	99%	ENE	11.9 mph	18.1 mph	29.73 in	0.06 in	0.12 in
3:06 AM	78.4 °F	78.1 °F	99%	NE	11.2 mph	18.1 mph	29.73 in	0.12 in	0.13 in
3:11 AM	78.4 °F	78.1 °F	99%	ENE	8.1 mph	18.1 mph	29.72 in	0.06 in	0.13 in
3:16 AM	78.3 °F	77.9 °F	99%	NNE	4.3 mph	18.1 mph	29.71 in	0 in	0.13 in
3:21 AM	78.3 °F	77.9 °F	99%	ENE	6.3 mph	15 mph	29.71 in	0.06 in	0.14 in
3:26 AM	78.3 °F	77.9 °F	99%	ENE	7.4 mph	15 mph	29.71 in	0.06 in	0.14 in
3:31 AM	78.3 °F	77.9 °F	99%	NE	8.7 mph	15.4 mph	29.71 in	0 in	0.14 in
3:36 AM	78.3 °F	77.9 °F	99%	ENE	8.7 mph	15.4 mph	29.71 in	0 in	0.14 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
3:41 AM	78.3 °F	77.9 °F	99%	ENE	10.5 mph	15.4 mph	29.7 in	0 in	0.14 in
3:46 AM	78.3 °F	77.9 °F	99%	East	8.1 mph	15.4 mph	29.71 in	0 in	0.14 in
3:51 AM	78.3 °F	77.9 °F	99%	ENE	9.8 mph	15.4 mph	29.7 in	0 in	0.14 in
3:56 AM	78.3 °F	77.9 °F	99%	ENE	11.2 mph	15.4 mph	29.71 in	0 in	0.14 in
4:01 AM	78.3 °F	77.9 °F	99%	East	8.7 mph	15.4 mph	29.71 in	0 in	0.14 in
4:06 AM	78.3 °F	77.9 °F	99%	ENE	8.1 mph	15.4 mph	29.72 in	0 in	0.14 in
4:11 AM	78.3 °F	77.9 °F	99%	East	9.8 mph	15.4 mph	29.72 in	0 in	0.14 in
4:16 AM	78.3 °F	77.9 °F	99%	NNE	11.2 mph	18.1 mph	29.71 in	0 in	0.14 in
4:21 AM	78.3 °F	77.9 °F	99%	NE	11.2 mph	18.1 mph	29.71 in	0 in	0.14 in
4:26 AM	78.3 °F	77.9 °F	99%	NE	10.5 mph	18.1 mph	29.7 in	0 in	0.14 in
4:31 AM	78.3 °F	77.9 °F	99%	NE	5.6 mph	18.1 mph	29.7 in	0 in	0.14 in
4:36 AM	78.3 °F	77.9 °F	99%	ENE	6.9 mph	18.1 mph	29.71 in	0 in	0.14 in
4:41 AM	78.1 °F	77.7 °F	99%	East	6.3 mph	18.1 mph	29.7 in	0 in	0.14 in
4:46 AM	78.3 °F	77.9 °F	99%	ENE	6.3 mph	18.1 mph	29.71 in	0 in	0.14 in
4:56 AM	78.1 °F	77.7 °F	99%	NE	7.4 mph	18.1 mph	29.7 in	0 in	0.14 in
5:01 AM	77.9 °F	77.5 °F	99%	NNE	3.8 mph	18.1 mph	29.71 in	0 in	0.14 in
5:06 AM	77.9 °F	77.5 °F	99%	NE	9.4 mph	18.1 mph	29.71 in	0 in	0.14 in
5:11 AM	77.9 °F	77.5 °F	99%	ENE	6.9 mph	13 mph	29.7 in	0 in	0.14 in
5:16 AM	77.9 °F	77.5 °F	99%	NE	10.5 mph	13 mph	29.71 in	0 in	0.14 in
5:21 AM	77.9 °F	77.5 °F	99%	ENE	9.4 mph	11.9 mph	29.71 in	0 in	0.14 in
5:26 AM	77.9 °F	77.5 °F	99%	NE	8.1 mph	13 mph	29.72 in	0.06 in	0.15 in
5:31 AM	77.9 °F	77.5 °F	99%	East	13 mph	13 mph	29.71 in	0.18 in	0.17 in
5:36 AM	77.9 °F	77.5 °F	99%	NE	10.5 mph	13 mph	29.71 in	0.18 in	0.18 in
5:41 AM	77.7 °F	77.4 °F	99%	NE	9.4 mph	13.6 mph	29.71 in	0.24 in	0.2 in
5:46 AM	77.7 °F	77.4 °F	99%	ENE	9.8 mph	15.4 mph	29.71 in	0.18 in	0.21 in
5:51 AM	77.7 °F	77.4 °F	99%	NE	11.9 mph	15.4 mph	29.71 in	0.3 in	0.24 in
5:56 AM	77.7 °F	77.4 °F	99%	NNE	12.5 mph	15.4 mph	29.71 in	0.3 in	0.26 in
6:01 AM	77.5 °F	77.2 °F	99%	NE	9.4 mph	15.4 mph	29.71 in	0.24 in	0.27 in
6:06 AM	77.5 °F	77.2 °F	99%	NE	7.4 mph	15.4 mph	29.71 in	0.12 in	0.28 in
6:11 AM	77.4 °F	77 °F	99%	NNE	11.2 mph	15.4 mph	29.7 in	0.06 in	0.28 in
6:16 AM	77.4 °F	77 °F	99%	North	10.5 mph	15.4 mph	29.7 in	0 in	0.28 in
6:21 AM	77.4 °F	77 °F	99%	ENE	5.6 mph	15.4 mph	29.7 in	0 in	0.28 in
6:26 AM	77.2 °F	76.8 °F	99%	NNE	6.3 mph	15.4 mph	29.7 in	0 in	0.28 in
6:31 AM	77.2 °F	76.8 °F	99%	NE	6.9 mph	15.4 mph	29.69 in	0.06 in	0.29 in
6:36 AM	77.2 °F	76.8 °F	99%	NE	6.9 mph	15.4 mph	29.7 in	0.06 in	0.29 in
6:41 AM	77.2 °F	76.8 °F	99%	NE	5.6 mph	14.3 mph	29.69 in	0 in	0.29 in
6:47 AM	77.2 °F	76.8 °F	99%	NNE	9.8 mph	14.3 mph	29.69 in	0 in	0.29 in
6:52 AM	77.2 °F	76.8 °F	99%	North	7.4 mph	14.3 mph	29.69 in	0.06 in	0.3 in
6:57 AM	77.2 °F	76.8 °F	99%	NNE	4.9 mph	14.3 mph	29.69 in	0.12 in	0.31 in
7:02 AM	77.2 °F	76.8 °F	99%	NE	6.9 mph	13 mph	29.69 in	0.12 in	0.32 in
7:07 AM	77.2 °F	76.8 °F	99%	NNE	6.9 mph	13 mph	29.69 in	0.06 in	0.32 in
7:12 AM	77.2 °F	76.8 °F	99%	North	7.4 mph	13 mph	29.69 in	0.06 in	0.33 in
7:17 AM	77 °F	76.6 °F	99%	NNE	8.7 mph	13 mph	29.69 in	0.12 in	0.34 in
7:22 AM	77 °F	76.6 °F	99%	NNE	7.4 mph	13 mph	29.69 in	0.24 in	0.37 in
7:27 AM	77 °F	76.6 °F	99%	NNE	3.8 mph	13 mph	29.68 in	0.54 in	0.43 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
7:32 AM	77 °F	76.6 °F	99%	NNE	7.4 mph	13 mph	29.67 in	0.48 in	0.44 in
7:37 AM	77 °F	76.6 °F	99%	NNE	11.9 mph	13 mph	29.67 in	0.18 in	0.46 in
7:42 AM	77 °F	76.6 °F	99%	NNE	8.1 mph	13 mph	29.67 in	0.18 in	0.47 in
7:47 AM	77 °F	76.6 °F	99%	NNE	8.1 mph	15 mph	29.67 in	0.12 in	0.48 in
7:52 AM	77 °F	76.6 °F	99%	North	9.4 mph	15 mph	29.67 in	0.18 in	0.5 in
7:57 AM	77 °F	76.6 °F	99%	NNE	11.9 mph	15 mph	29.67 in	0.18 in	0.51 in
8:02 AM	77.2 °F	76.8 °F	99%	NE	8.7 mph	16.8 mph	29.67 in	0.12 in	0.52 in
8:07 AM	77.2 °F	76.8 °F	99%	NE	7.4 mph	16.8 mph	29.68 in	0.12 in	0.53 in
8:12 AM	77.4 °F	77 °F	99%	SW	9.8 mph	16.8 mph	29.68 in	0.12 in	0.54 in
8:17 AM	77.4 °F	77 °F	99%	NNE	14.3 mph	16.8 mph	29.68 in	0.12 in	0.55 in
8:22 AM	77.5 °F	77.2 °F	99%	East	9.8 mph	16.8 mph	29.69 in	0.18 in	0.57 in
8:27 AM	77.5 °F	77.2 °F	99%	NNE	10.5 mph	16.8 mph	29.68 in	0.18 in	0.58 in
8:32 AM	77.7 °F	77.4 °F	99%	North	9.4 mph	16.8 mph	29.68 in	0.18 in	0.59 in
8:37 AM	77.9 °F	77.5 °F	99%	North	9.8 mph	16.8 mph	29.69 in	0.18 in	0.61 in
8:42 AM	77.9 °F	77.5 °F	99%	ENE	13.6 mph	16.8 mph	29.69 in	0.18 in	0.62 in
8:45 AM	77.9 °F	77.5 °F	99%	NE	9.4 mph	18.6 mph	29.69 in	0.24 in	0.64 in
8:50 AM	78.1 °F	77.7 °F	99%	NNE	8.7 mph	18.6 mph	29.69 in	0.3 in	0.66 in
8:51 AM	78.1 °F	77.7 °F	99%	NE	15 mph	18.6 mph	29.69 in	0.24 in	0.66 in
8:56 AM	78.1 °F	77.7 °F	99%	NE	9.8 mph	18.6 mph	29.7 in	0.24 in	0.68 in
9:01 AM	78.1 °F	77.7 °F	99%	NNE	9.8 mph	19.2 mph	29.69 in	0.24 in	0.7 in
9:06 AM	78.1 °F	77.7 °F	99%	NNE	8.7 mph	19.2 mph	29.69 in	0.24 in	0.72 in
9:11 AM	78.3 °F	77.9 °F	99%	NNE	12.5 mph	19.2 mph	29.69 in	0.24 in	0.74 in
9:16 AM	78.1 °F	77.7 °F	99%	NE	9.8 mph	19.2 mph	29.69 in	0.3 in	0.77 in
9:21 AM	78.1 °F	77.7 °F	99%	NE	13 mph	19.2 mph	29.69 in	0.42 in	0.8 in
9:26 AM	78.1 °F	77.7 °F	99%	NE	11.2 mph	19.2 mph	29.69 in	0.3 in	0.81 in
9:31 AM	78.1 °F	77.7 °F	99%	NE	14.3 mph	19.2 mph	29.68 in	0.12 in	0.82 in
9:36 AM	78.1 °F	77.7 °F	99%	ENE	12.5 mph	19.9 mph	29.7 in	0.24 in	0.85 in
9:41 AM	78.1 °F	77.7 °F	99%	NW	11.9 mph	19.9 mph	29.69 in	0.3 in	0.87 in
9:46 AM	78.1 °F	77.7 °F	99%	East	8.7 mph	19.9 mph	29.69 in	0.24 in	0.88 in
9:51 AM	78.1 °F	77.7 °F	99%	NNE	6.9 mph	19.9 mph	29.69 in	0.18 in	0.89 in
9:56 AM	78.1 °F	77.7 °F	99%	ENE	15 mph	19.9 mph	29.7 in	0.12 in	0.9 in
10:01 AM	77.9 °F	77.5 °F	99%	NNE	9.8 mph	19.9 mph	29.71 in	0.24 in	0.93 in
10:06 AM	77.9 °F	77.5 °F	99%	East	6.9 mph	19.9 mph	29.7 in	0.3 in	0.95 in
10:11 AM	77.9 °F	77.5 °F	99%	ESE	13.6 mph	19.9 mph	29.71 in	0.24 in	0.97 in
10:16 AM	77.7 °F	77.4 °F	99%	East	9.8 mph	23 mph	29.71 in	0.36 in	1.01 in
10:21 AM	77.7 °F	77.4 °F	99%	NE	10.5 mph	23 mph	29.7 in	0.3 in	1.01 in
10:26 AM	77.5 °F	77.2 °F	99%	ENE	11.2 mph	23 mph	29.7 in	0.18 in	1.03 in
10:31 AM	77.4 °F	77 °F	99%	NE	10.5 mph	23 mph	29.71 in	0.24 in	1.05 in
10:36 AM	77.2 °F	76.8 °F	99%	ENE	16.8 mph	23 mph	29.7 in	0.6 in	1.12 in
10:41 AM	77 °F	76.6 °F	99%	East	9.8 mph	23 mph	29.69 in	0.72 in	1.16 in
10:46 AM	76.8 °F	76.5 °F	99%	NE	7.4 mph	23 mph	29.71 in	0.42 in	1.19 in
10:51 AM	76.6 °F	76.3 °F	99%	ENE	6.9 mph	23 mph	29.73 in	0.72 in	1.28 in
10:56 AM	76.5 °F	76.1 °F	99%	East	13 mph	23 mph	29.74 in	2.16 in	1.55 in
11:01 AM	76.1 °F	75.7 °F	99%	NE	23 mph	23 mph	29.7 in	2.7 in	1.71 in
11:03 AM	75.9 °F	75.6 °F	99%	NE	13.6 mph	23 mph	29.7 in	2.46 in	1.74 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
11:08 AM	75.6 °F	75.2 °F	99%	NE	18.6 mph	23 mph	29.7 in	0.84 in	1.77 in
11:13 AM	75.2 °F	74.8 °F	99%	NE	8.1 mph	23 mph	29.7 in	0.36 in	1.79 in
11:18 AM	75 °F	74.7 °F	99%	NE	11.9 mph	23 mph	29.69 in	0.18 in	1.8 in
11:23 AM	75 °F	74.7 °F	99%	NNE	14.3 mph	23 mph	29.69 in	0.12 in	1.81 in
11:28 AM	74.8 °F	74.5 °F	99%	ENE	11.9 mph	23 mph	29.7 in	0.12 in	1.82 in
11:33 AM	75 °F	74.7 °F	99%	ENE	9.4 mph	23 mph	29.69 in	0.18 in	1.84 in
11:38 AM	75 °F	74.7 °F	99%	East	8.1 mph	23 mph	29.7 in	0.18 in	1.85 in
11:43 AM	75.2 °F	74.8 °F	99%	NNE	11.2 mph	23 mph	29.69 in	0.12 in	1.86 in
11:48 AM	75.4 °F	75 °F	99%	ENE	16.1 mph	23 mph	29.69 in	0.12 in	1.87 in
11:53 AM	75.4 °F	75 °F	99%	East	11.2 mph	23 mph	29.7 in	0.18 in	1.89 in
11:58 AM	75.4 °F	75 °F	99%	ENE	8.7 mph	22.4 mph	29.68 in	0.3 in	1.92 in
12:03 PM	75.4 °F	75 °F	99%	North	15.4 mph	22.4 mph	29.66 in	0.36 in	1.95 in
12:08 PM	75.4 °F	75 °F	99%	NE	16.8 mph	22.4 mph	29.66 in	0.24 in	1.96 in
12:13 PM	75.6 °F	75.2 °F	99%	NE	20.6 mph	22.4 mph	29.65 in	0.12 in	1.96 in
12:18 PM	75.6 °F	75.2 °F	99%	NNE	16.1 mph	22.4 mph	29.65 in	0.06 in	1.96 in
12:23 PM	75.6 °F	75.2 °F	99%	ENE	13 mph	22.4 mph	29.65 in	0 in	1.96 in
12:28 PM	75.6 °F	75.2 °F	99%	NE	21 mph	22.4 mph	29.65 in	0.06 in	1.97 in
12:33 PM	75.6 °F	75.2 °F	99%	NE	15.4 mph	22.4 mph	29.64 in	0.06 in	1.97 in
12:38 PM	75.7 °F	75.4 °F	99%	NE	15.4 mph	22.4 mph	29.65 in	0 in	1.97 in
12:43 PM	75.7 °F	75.4 °F	99%	NNE	18.6 mph	22.4 mph	29.64 in	0.06 in	1.98 in
12:48 PM	75.7 °F	75.4 °F	99%	NE	15.4 mph	21.7 mph	29.64 in	0.12 in	1.99 in
12:53 PM	75.7 °F	75.4 °F	99%	NE	20.6 mph	21.7 mph	29.63 in	0.18 in	2.01 in
12:58 PM	75.6 °F	75.2 °F	99%	NNE	12.5 mph	21.7 mph	29.63 in	0.12 in	2.01 in
1:03 PM	75.4 °F	75 °F	99%	NE	16.1 mph	21.7 mph	29.64 in	0.3 in	2.05 in
1:08 PM	75.2 °F	74.8 °F	99%	NE	9.4 mph	21.7 mph	29.63 in	0.48 in	2.09 in
1:13 PM	75.2 °F	74.8 °F	99%	NE	20.6 mph	21.7 mph	29.63 in	0.48 in	2.12 in
1:18 PM	75 °F	74.7 °F	99%	ESE	16.8 mph	21.7 mph	29.62 in	0.48 in	2.16 in
1:23 PM	75 °F	74.7 °F	99%	NE	15 mph	21.7 mph	29.63 in	0.36 in	2.18 in
1:28 PM	75 °F	74.7 °F	99%	NNE	14.3 mph	24.2 mph	29.61 in	0.36 in	2.22 in
1:33 PM	75 °F	74.7 °F	99%	NNE	29.3 mph	29.3 mph	29.6 in	0.42 in	2.25 in
1:38 PM	75.2 °F	74.8 °F	99%	NNE	24.8 mph	29.3 mph	29.6 in	0.18 in	2.25 in
1:43 PM	75.4 °F	75 °F	99%	NNE	13 mph	29.3 mph	29.58 in	0.06 in	2.25 in
1:48 PM	75.6 °F	75.2 °F	99%	NE	21.7 mph	29.3 mph	29.58 in	0 in	2.25 in
1:53 PM	75.6 °F	75.2 °F	99%	ENE	16.8 mph	29.3 mph	29.58 in	0.06 in	2.26 in
1:58 PM	75.6 °F	75.2 °F	99%	NE	6.9 mph	29.3 mph	29.58 in	0.06 in	2.26 in
2:03 PM	75.7 °F	75.4 °F	99%	North	13 mph	29.3 mph	29.58 in	0.06 in	2.27 in
2:08 PM	75.7 °F	75.4 °F	99%	NNE	19.9 mph	29.3 mph	29.57 in	0.12 in	2.28 in
2:13 PM	75.7 °F	75.4 °F	99%	West	14.3 mph	29.3 mph	29.57 in	0.18 in	2.29 in
2:18 PM	75.6 °F	75.2 °F	99%	North	22.4 mph	29.3 mph	29.55 in	0.18 in	2.3 in
2:19 PM	75.6 °F	75.2 °F	99%	NE	16.8 mph	29.3 mph	29.55 in	0.12 in	2.3 in
2:24 PM	75.7 °F	75.4 °F	99%	ENE	19.9 mph	29.3 mph	29.55 in	0.12 in	2.31 in
2:29 PM	75.7 °F	75.4 °F	99%	NE	13 mph	27.3 mph	29.54 in	0.12 in	2.32 in
2:34 PM	75.7 °F	75.4 °F	99%	NNE	13 mph	27.3 mph	29.54 in	0.06 in	2.32 in
2:39 PM	75.7 °F	75.4 °F	99%	North	11.2 mph	27.3 mph	29.54 in	0.06 in	2.33 in
2:44 PM	75.7 °F	75.4 °F	99%	SE	18.6 mph	27.3 mph	29.54 in	0.12 in	2.34 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
2:49 PM	75.7 °F	75.4 °F	99%	North	14.3 mph	27.3 mph	29.53 in	0.06 in	2.34 in
2:54 PM	75.7 °F	75.4 °F	99%	NNE	19.2 mph	27.3 mph	29.53 in	0.06 in	2.35 in
2:59 PM	75.7 °F	75.4 °F	99%	NNE	11.9 mph	27.3 mph	29.52 in	0.06 in	2.35 in
3:04 PM	75.7 °F	75.4 °F	99%	NNE	15.4 mph	27.3 mph	29.51 in	0.06 in	2.36 in
3:09 PM	75.6 °F	75.2 °F	99%	NNE	27.3 mph	27.3 mph	29.5 in	0.3 in	2.4 in
3:14 PM	75.6 °F	75.2 °F	99%	NE	24.2 mph	27.3 mph	29.5 in	0.36 in	2.42 in
3:19 PM	75.7 °F	75.4 °F	99%	North	20.6 mph	27.3 mph	29.49 in	0.18 in	2.43 in
3:24 PM	75.6 °F	75.2 °F	99%	NNE	19.2 mph	27.3 mph	29.5 in	0.3 in	2.47 in
3:29 PM	75.6 °F	75.2 °F	99%	ENE	23.7 mph	27.3 mph	29.49 in	0.66 in	2.54 in
3:34 PM	75.4 °F	75 °F	99%	NNE	21 mph	27.3 mph	29.48 in	0.78 in	2.59 in
3:39 PM	75.4 °F	75 °F	99%	NE	19.9 mph	27.3 mph	29.48 in	0.72 in	2.65 in
3:44 PM	75.4 °F	75 °F	99%	NNE	16.1 mph	27.3 mph	29.47 in	0.78 in	2.72 in
3:49 PM	75.2 °F	74.8 °F	99%	NNE	12.5 mph	27.3 mph	29.47 in	0.66 in	2.75 in
3:54 PM	75.4 °F	75 °F	99%	NE	23 mph	27.3 mph	29.46 in	0.3 in	2.77 in
3:59 PM	75.4 °F	75 °F	99%	NNE	19.9 mph	27.3 mph	29.47 in	0.24 in	2.79 in
4:04 PM	75.2 °F	74.8 °F	99%	NNE	18.6 mph	27.3 mph	29.46 in	0.18 in	2.8 in
4:09 PM	75.2 °F	74.8 °F	99%	ENE	15.4 mph	26.6 mph	29.46 in	0.24 in	2.82 in
4:14 PM	75.2 °F	74.8 °F	99%	NE	17.4 mph	26.6 mph	29.45 in	0.24 in	2.84 in
4:19 PM	75.2 °F	74.8 °F	99%	NE	15.4 mph	26.6 mph	29.44 in	0.42 in	2.89 in
4:24 PM	75 °F	74.7 °F	99%	NE	24.2 mph	26.6 mph	29.44 in	0.66 in	2.95 in
4:29 PM	75 °F	74.7 °F	99%	NNE	16.8 mph	29.3 mph	29.44 in	0.84 in	3.01 in
4:34 PM	75 °F	74.7 °F	99%	NNE	19.2 mph	29.3 mph	29.43 in	0.72 in	3.06 in
4:39 PM	74.8 °F	74.5 °F	99%	NNE	15 mph	29.3 mph	29.42 in	0.54 in	3.09 in
4:44 PM	74.8 °F	74.5 °F	99%	NNE	25.5 mph	34.2 mph	29.41 in	0.54 in	3.14 in
4:49 PM	75 °F	74.7 °F	99%	NE	21.7 mph	34.2 mph	29.4 in	0.54 in	3.18 in
4:54 PM	74.8 °F	74.5 °F	99%	North	22.4 mph	34.2 mph	29.39 in	0.66 in	3.24 in
4:59 PM	74.8 °F	74.5 °F	99%	NNE	19.9 mph	34.2 mph	29.4 in	0.72 in	3.29 in
5:04 PM	74.8 °F	74.5 °F	99%	NE	19.9 mph	34.2 mph	29.4 in	0.6 in	3.32 in
5:09 PM	75 °F	74.7 °F	99%	NE	18.6 mph	34.2 mph	29.39 in	0.36 in	3.34 in
5:14 PM	75.2 °F	74.8 °F	99%	North	13 mph	34.2 mph	29.39 in	0.24 in	3.35 in
5:19 PM	75.4 °F	75 °F	99%	ENE	21.7 mph	34.2 mph	29.39 in	0.3 in	3.39 in
5:24 PM	75.4 °F	75 °F	99%	NNE	15 mph	34.2 mph	29.37 in	0.66 in	3.46 in
5:29 PM	75.4 °F	75 °F	99%	North	22.4 mph	34.2 mph	29.38 in	0.66 in	3.49 in
5:34 PM	75.4 °F	75 °F	99%	NNE	18.1 mph	34.2 mph	29.35 in	0.48 in	3.53 in
5:39 PM	75.6 °F	75.2 °F	99%	NE	18.1 mph	29.8 mph	29.34 in	0.6 in	3.58 in
5:44 PM	75.4 °F	75 °F	99%	SE	34.2 mph	34.2 mph	29.34 in	0.72 in	3.63 in
5:49 PM	75.4 °F	75 °F	99%	North	21.7 mph	34.2 mph	29.34 in	0.66 in	3.68 in
5:54 PM	75.2 °F	74.8 °F	99%	NNW	26.6 mph	34.2 mph	29.33 in	0.6 in	3.72 in
5:59 PM	75.4 °F	75 °F	99%	NE	26.2 mph	34.2 mph	29.32 in	0.54 in	3.76 in
6:04 PM	75.2 °F	74.8 °F	99%	ENE	31.8 mph	34.2 mph	29.31 in	0.78 in	3.84 in
6:09 PM	75.2 °F	74.8 °F	99%	WNW	19.9 mph	34.2 mph	29.31 in	1.08 in	3.93 in
6:10 PM	75 °F	74.7 °F	99%	ENE	28.6 mph	34.2 mph	29.31 in	1.08 in	3.94 in
6:16 PM	74.8 °F	74.5 °F	99%	SE	19.9 mph	34.2 mph	29.3 in	0.96 in	4.01 in
6:21 PM	74.7 °F	74.3 °F	99%	NNE	31.8 mph	34.2 mph	29.29 in	0.9 in	4.09 in
6:26 PM	74.5 °F	74.1 °F	99%	NNE	24.8 mph	34.2 mph	29.28 in	1.02 in	4.18 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
6:31 PM	74.5 °F	74.1 °F	99%	ENE	20.6 mph	36 mph	29.28 in	0.96 in	4.25 in
6:36 PM	74.3 °F	73.9 °F	99%	North	26.2 mph	36 mph	29.26 in	0.96 in	4.34 in
6:41 PM	74.3 °F	73.9 °F	99%	East	16.8 mph	36 mph	29.25 in	0.96 in	4.41 in
6:46 PM	74.3 °F	73.9 °F	99%	NNE	29.3 mph	36 mph	29.26 in	0.9 in	4.49 in
6:51 PM	74.5 °F	74.1 °F	99%	NNE	23.7 mph	36 mph	29.26 in	0.84 in	4.55 in
6:56 PM	74.5 °F	74.1 °F	99%	ENE	29.3 mph	36 mph	29.25 in	0.9 in	4.64 in
7:01 PM	74.5 °F	74.1 °F	99%	East	23 mph	36 mph	29.24 in	0.9 in	4.7 in
7:06 PM	74.5 °F	74.1 °F	99%	NNE	26.6 mph	36 mph	29.23 in	1.02 in	4.81 in
7:11 PM	74.7 °F	74.3 °F	99%	NNE	28 mph	36 mph	29.21 in	1.14 in	4.89 in
7:16 PM	74.7 °F	74.3 °F	99%	NE	19.9 mph	36 mph	29.21 in	1.02 in	4.98 in
7:21 PM	74.8 °F	74.5 °F	99%	NE	21 mph	36 mph	29.2 in	1.02 in	5.06 in
7:26 PM	74.8 °F	74.5 °F	99%	NE	26.6 mph	36 mph	29.18 in	1.02 in	5.15 in
7:31 PM	75 °F	74.7 °F	99%	NNE	23 mph	46.1 mph	29.19 in	0.84 in	5.2 in
7:36 PM	75 °F	74.7 °F	99%	East	21.7 mph	46.1 mph	29.17 in	0.66 in	5.26 in
7:41 PM	75.2 °F	74.8 °F	99%	NE	30.4 mph	46.1 mph	29.16 in	0.84 in	5.34 in
7:46 PM	75.4 °F	75 °F	99%	NE	22.4 mph	46.1 mph	29.15 in	1.02 in	5.43 in
7:47 PM	75.4 °F	75 °F	99%	NNW	21 mph	46.1 mph	29.14 in	1.14 in	5.46 in
7:52 PM	75.4 °F	75 °F	99%	ENE	18.1 mph	46.1 mph	29.15 in	1.2 in	5.55 in
7:57 PM	75.4 °F	75 °F	99%	NW	23.7 mph	46.1 mph	29.13 in	1.14 in	5.64 in
8:02 PM	75.4 °F	75 °F	99%	NE	24.2 mph	46.1 mph	29.13 in	1.32 in	5.76 in
8:07 PM	75.6 °F	75.2 °F	99%	NE	33.6 mph	46.1 mph	29.11 in	1.38 in	5.86 in
8:12 PM	75.7 °F	75.4 °F	99%	NNE	29.3 mph	46.1 mph	29.1 in	1.08 in	5.92 in
8:17 PM	75.7 °F	75.4 °F	99%	North	28 mph	46.1 mph	29.09 in	0.66 in	5.96 in
8:22 PM	75.7 °F	75.4 °F	99%	NE	31.8 mph	46.1 mph	29.08 in	0.42 in	5.99 in
8:27 PM	75.9 °F	75.6 °F	99%	NE	28 mph	46.1 mph	29.08 in	0.42 in	6.02 in
8:32 PM	76.1 °F	75.7 °F	99%	ENE	34.9 mph	39.8 mph	29.06 in	0.54 in	6.07 in
8:37 PM	76.1 °F	75.7 °F	99%	North	19.9 mph	39.8 mph	29.05 in	0.42 in	6.09 in
8:42 PM	76.1 °F	75.7 °F	99%	NE	24.2 mph	44.1 mph	29.05 in	0.24 in	6.11 in
8:47 PM	76.3 °F	75.9 °F	99%	NNE	33.6 mph	44.1 mph	29.04 in	0.24 in	6.13 in
8:52 PM	76.3 °F	75.9 °F	99%	NE	26.6 mph	44.1 mph	29.03 in	0.24 in	6.15 in
8:57 PM	76.5 °F	76.1 °F	99%	NE	28 mph	44.1 mph	29.02 in	0.3 in	6.18 in
9:02 PM	76.5 °F	76.1 °F	99%	NNE	29.8 mph	44.1 mph	29.01 in	0.36 in	6.2 in
9:07 PM	76.5 °F	76.1 °F	99%	ENE	28 mph	44.1 mph	29 in	0.54 in	6.26 in
9:12 PM	76.5 °F	76.1 °F	99%	ENE	31.1 mph	44.1 mph	28.98 in	0.6 in	6.29 in
9:17 PM	76.6 °F	76.3 °F	99%	NNE	23.7 mph	44.1 mph	28.98 in	0.48 in	6.32 in
9:22 PM	76.6 °F	76.3 °F	99%	NE	34.9 mph	44.1 mph	28.97 in	0.6 in	6.38 in
9:27 PM	76.6 °F	76.3 °F	99%	ENE	29.8 mph	44.1 mph	28.94 in	0.78 in	6.44 in
9:32 PM	76.6 °F	76.3 °F	99%	East	32.9 mph	44.1 mph	28.94 in	0.84 in	6.5 in
9:37 PM	76.6 °F	76.3 °F	99%	East	34.2 mph	44.1 mph	28.94 in	0.72 in	6.55 in
9:42 PM	76.6 °F	76.3 °F	99%	ENE	32.9 mph	44.1 mph	28.93 in	0.72 in	6.61 in
9:47 PM	76.6 °F	76.3 °F	99%	ENE	27.3 mph	44.1 mph	28.91 in	0.66 in	6.66 in
9:52 PM	76.6 °F	76.3 °F	99%	ENE	31.1 mph	44.1 mph	28.9 in	0.66 in	6.71 in
9:57 PM	76.8 °F	76.5 °F	99%	NE	29.8 mph	44.1 mph	28.88 in	0.72 in	6.77 in
10:02 PM	76.6 °F	76.3 °F	99%	ENE	30.4 mph	47.2 mph	28.88 in	1.02 in	6.87 in
10:07 PM	76.6 °F	76.3 °F	99%	NNE	29.3 mph	47.2 mph	28.87 in	1.02 in	6.93 in

Time	Temp.	Dew Point	Humidity	Wind	Speed	Gust	Pressure	Precip. Rate.	Precip. Accum.
10:12 PM	76.5 °F	76.1 °F	99%	NE	32.2 mph	47.2 mph	28.86 in	1.02 in	7.03 in
10:17 PM	76.5 °F	76.1 °F	99%	NE	31.8 mph	47.2 mph	28.84 in	1.38 in	7.15 in
10:23 PM	76.5 °F	76.1 °F	99%	NE	32.9 mph	47.2 mph	28.83 in	1.2 in	7.23 in
10:28 PM	76.5 °F	76.1 °F	99%	East	26.6 mph	47.2 mph	28.81 in	1.02 in	7.32 in
10:33 PM	76.5 °F	76.1 °F	99%	ENE	37.8 mph	47.2 mph	28.81 in	1.02 in	7.4 in
10:38 PM	76.3 °F	75.9 °F	99%	ENE	36.7 mph	47.2 mph	28.8 in	1.02 in	7.49 in
10:43 PM	76.3 °F	75.9 °F	99%	ENE	31.1 mph	47.2 mph	28.8 in	1.08 in	7.58 in
10:48 PM	76.3 °F	75.9 °F	99%	ENE	37.4 mph	47.2 mph	28.78 in	1.38 in	7.71 in
10:53 PM	76.3 °F	75.9 °F	99%	ENE	41.6 mph	47.2 mph	28.76 in	1.44 in	7.8 in
10:58 PM	76.3 °F	75.9 °F	99%	East	40.9 mph	47.2 mph	28.76 in	0.9 in	7.85 in
11:03 PM	76.3 °F	75.9 °F	99%	ENE	37.8 mph	47.2 mph	28.77 in	0.9 in	7.94 in
11:08 PM	76.3 °F	75.9 °F	99%	ENE	47.2 mph	47.9 mph	28.74 in	1.2 in	8.05 in
11:22 PM	76.3 °F	75.9 °F	99%	East	42.9 mph	61.5 mph	28.72 in	1.26 in	8.31 in
11:24 PM	76.3 °F	75.9 °F	99%	NNE	39.1 mph	61.5 mph	28.72 in	1.2 in	8.35 in
11:29 PM	76.3 °F	75.9 °F	99%	East	39.8 mph	61.5 mph	28.7 in	1.08 in	8.42 in
11:31 PM	76.3 °F	75.9 °F	99%	ESE	37.8 mph	61.5 mph	28.71 in	0.96 in	8.44 in
11:35 PM	76.3 °F	75.9 °F	99%	NE	47.2 mph	61.5 mph	28.7 in	0.96 in	8.5 in
11:36 PM	76.3 °F	75.9 °F	99%	NE	46.5 mph	61.5 mph	28.71 in	0.96 in	8.53 in
11:37 PM	76.3 °F	75.9 °F	99%	ENE	40.9 mph	61.5 mph	28.68 in	0.9 in	8.54 in
11:42 PM	76.3 °F	75.9 °F	99%	ENE	39.1 mph	61.5 mph	28.69 in	1.02 in	8.62 in
11:47 PM	76.3 °F	75.9 °F	99%	ENE	47.2 mph	61.5 mph	28.69 in	1.32 in	8.75 in
11:52 PM	76.1 °F	75.7 °F	99%	NE	34.9 mph	61.5 mph	28.69 in	1.92 in	8.93 in
11:57 PM	76.1 °F	75.7 °F	99%	East	34.9 mph	61.5 mph	28.67 in	2.58 in	9.17 in



Forensic Analysis of 115kV Higgins to Griffin Transmission Line Structure HG-160
Hurricane Irma

October 31, 2017



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1.0 **Executive Summary**

Structure: 115kV Higgins to Griffin Transmission Line Structure HG-160
Location: Northeast Hillsborough County, FL (28° 4'41.10"N; 82°16'34.63"W)
Date of Failure – 09-10-17
Time of Failure – 19:53 EST

HG-160 is a 123 foot above ground 115kV double circuit tangent suspension lattice tower. HG-160 is located in the middle of the deadend section between towers HG-157 and HG-163. At 7:53 pm, on Sunday, September 10th, 2017, the lattice tower suffered a structural failure resulting in a collapse, which consequently caused a power delivery outage during Hurricane Irma landfall.

Exact tower installation date is unknown; however, Blaw-Knox Division Co. Pittsburgh Erection Diagram drawing No. P-66282 and Duke Energy Plan & Profile HG1018 drawing show dates between March and June 1951.

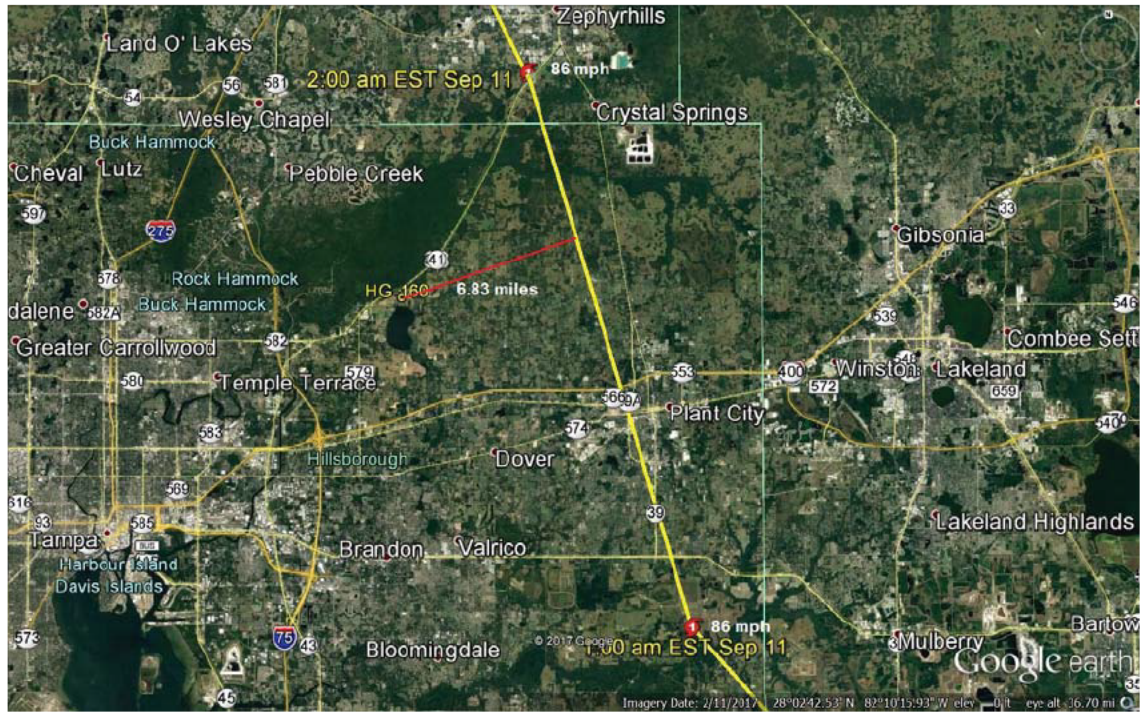
A power outage on the Higgins – Griffin line occurred at 7:53 pm EST on Sunday, September 10, 2017. The power outage most likely coincides with the HG-160 tower's collapse. At the time of the collapse, 74 mph wind velocities were reported in the area by the National Oceanic and Atmospheric Administration (NOAA). The collapse occurred approximately 5.5 hours in advance of the hurricane being at a location nearest to the tower. Hurricane Irma's eye passed approximately 7 miles east of HG-160 at 1:30 am EST Monday, September 11, 2017.

Tower HG-160 was laid down on the ground to the south; no torqueing or twisting of the tower was evident. The tower fall direction is consistent with the location of the hurricane relative to the tower at the time of collapse and the counter clockwise winds which would have been blowing primarily south / south west. Conversely, if the tower had held long enough for the storm to pass to the north it would be expected for the tower to fall to the north.

As reported by the inspection crews, it appeared as the tower may have been restrained by the wires as it laid down until both optical ground wires (OPGW) and one conductor wire broke. Upon inspection of the tower by Pickett on September 13, 2017, it was evident that the cause of failure was corroded stub angles at the tower foundation and high wind velocities.

In addition to HG-160, additional towers within the deadend section (HG-157 to HG-163) were identified with corroded stub angles and an assessment of the entire 115kV Higgins to Griffin Transmission Line stub angles should be performed.

In 2016, Pickett and Associates Inc. developed a tower leg remediation procedure for tower HG-99. Tower HG-99 suffered from similar cross section deterioration at the stub angle and foundation interface as tower HG-160.



HG-160 location relative to hurricane path.



Tower HG-160 failure – Looking Northwest.



Tower HG-160 northeast leg corrosion.

2.0 Maintenance Data

Maintenance data is not available at this time for tower HG-160.

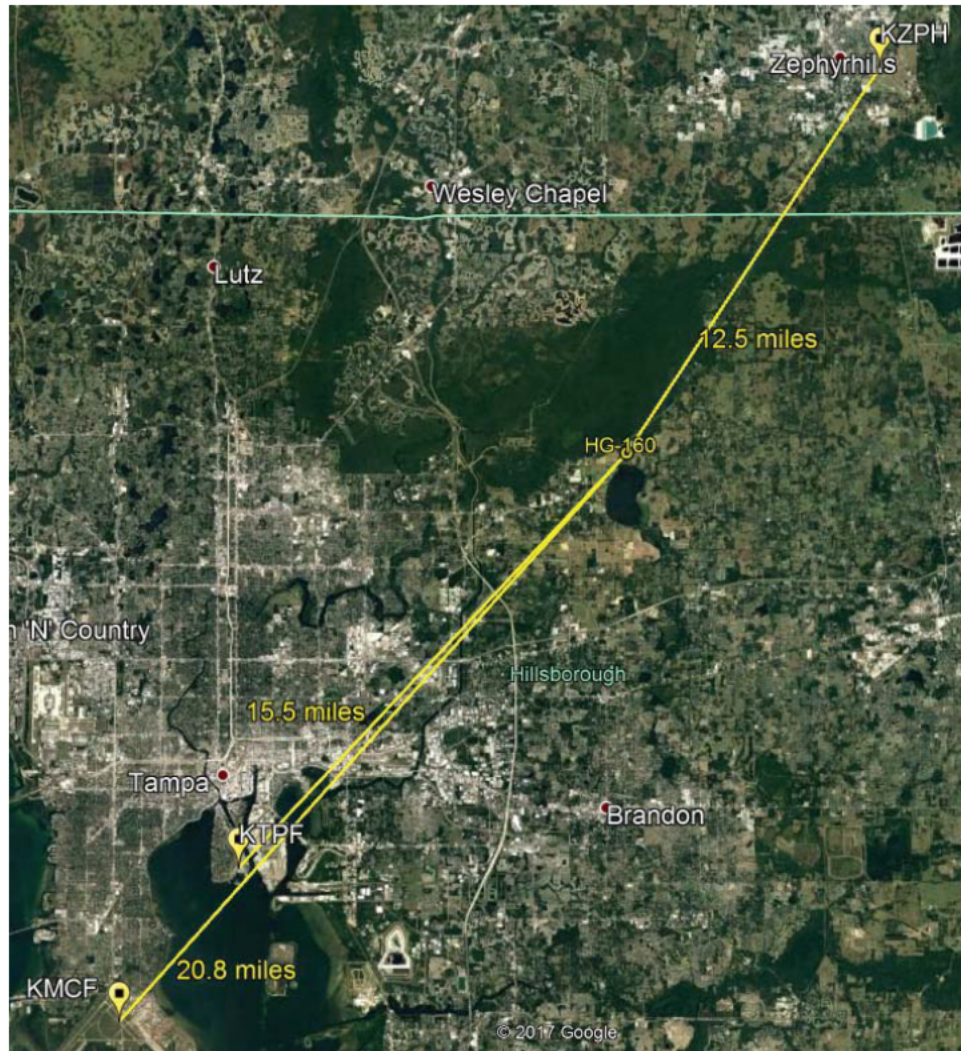
3.0 Weather Data

Hurricane Irma made continental landfall in Naples, Florida at 4:00 pm EST on Sunday, September 10, 2017 as a category 2 hurricane and weakened to a tropical depression over the Georgia - Alabama border 12 hours later. At the time of tower HG-160's collapse, approximately at 7:58 pm EST September 10, 2017, the hurricane was still designated as a category 2 hurricane and the eye of the hurricane was located approximately 95 miles south of tower HG-160.

The hurricane was adjacent to HG-160 at approximately 1:30 am EST on Monday, September 11, 2017 as a category 1 hurricane. The hurricane eye at that time was 55 miles wide and located 7 miles east of HG-160. The recorded wind velocities were 86 mph.

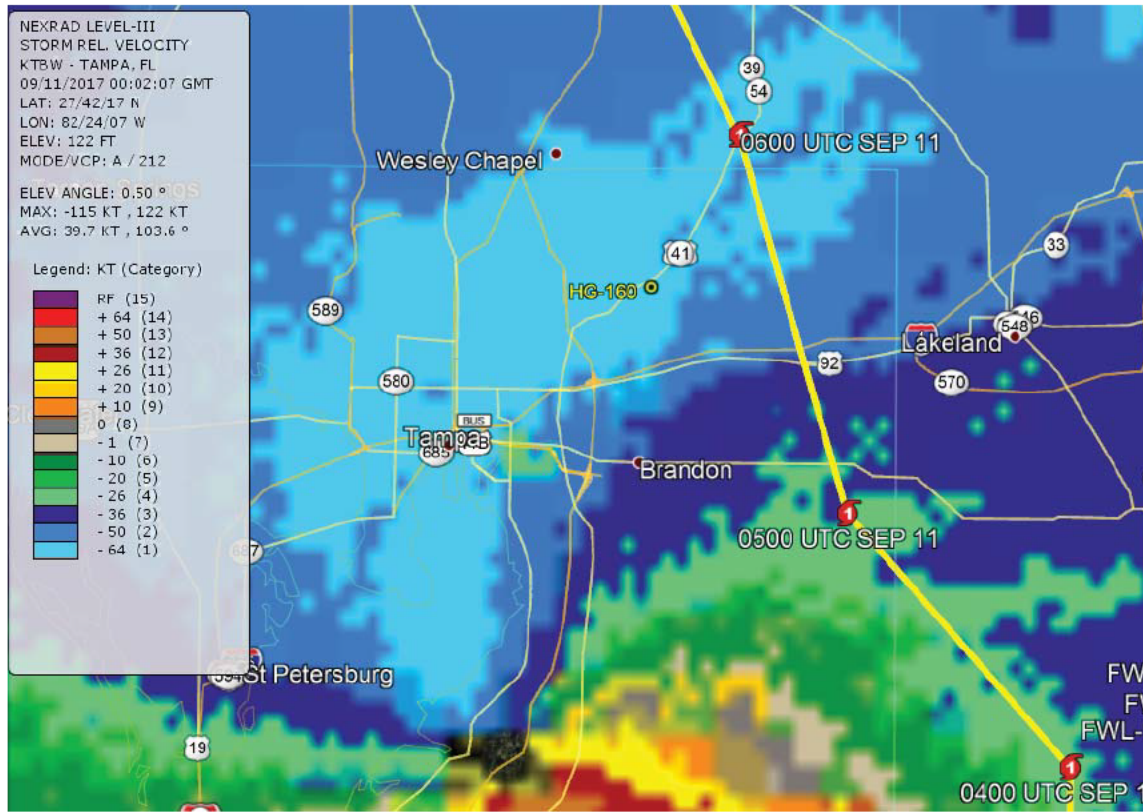


Station Name & Location	Time	Temp	Wind Dir	Wind Vel.	Wing Gust.	Distance from HG-160
KMCF, Tampa Macdill AFB, FL	7:58:00 PM	72.9 °F	NE	28.8 mph	52.9 mph	20.8 mi
KTPF, Tampa Knight Airport, FL	7:55:00 PM	N/A	NNE	29.9 mph	46.0 mph	15.5 mi
KZPH, Zephyrhills, FL	7:55:00 PM	73.6 °F	NNE	32.2 mph	42.6 mph	12.5 mi



Weather stations and distances from HG-160.

The following map shows NOAA wind velocities at the time of collapse. The light blue shading indicates 64 knot wind which equates to 74 mph.



NOAA cyclone activity at the time of collapse was also reviewed and found no evidence of any cyclones near tower HG-160.

4.0 Conclusion

HG-160 tower failure is a result of high winds and severe corrosion of the embedded stub angles projecting directly from the top of the concrete foundations. Failure mode was likely a combination of a tension/shear failure of the stub angles due to significant loss of cross sectional area. The diagonal bracing members near the ground line were also corroded however most likely did not contribute to the tower's collapse.

Although the reported 74 mph wind velocity did not exceed the tower's 134 mph design wind velocity, Hurricane Irma's wind in combination with the corroded stub angles caused the tower's collapse. The 134-mph design wind velocity was determined from drawing's P-8-1544-1: 2200 lb. conductor transverse load, 1100' wind span and 0.522" 4/0 copper conductor diameter.

Tower HG-160 damage assessment showed both OPGWs and top phase of the north set of wires broken, the remainder of the conductors remained intact. Although the tower fell to the south, landing on top of the south set of wires, the wires laying on the ground were determined to be intact by adjacent tower's insulator swing. The intact conductor

insulators were swinging towards the fallen tower and the broken conductor's insulator remained plumb.



HG-160 NW foundation, corroded-sheared stub angle.



HG-160 SW foundation, corroded-sheared stub angle.



Corroded stub angle cross section.

HG-160 NE foundation, corroded-sheared stub angle.



Corroded stub angle cross section.

HG-160 SE foundation, corroded-sheared stub angle.

Some of the tower foundation/stub angle connections appeared to have been maintained by installing an epoxy coating over the stub angle interface with the concrete. HG-160 did not appear to have any epoxy coating on it. It is unknown when the epoxy was applied or why only some of the towers stub angles were epoxied and others were not.



Tower HG-157 epoxy treatment.

In addition to HG-160, additional towers within the deadend section (HG-157 to HG-163) were inspected for stub angle corrosion. Tower HG-162 was also found to exhibiting significant section loss on the foundation stub angle of the SW leg; other three tower legs could not be safely accessed but likely have similar corrosion.



HG-162 Major Section Loss on Stub Angle at Foundation SW Leg



HG-162 SW Leg Corrosion on Stub Angle at Foundation

Deadend towers HG-157 and HG-163 did not appear to have any damaged members and their foundations did not exhibit any noticeable corrosion.

Due to HG-160 tower falling to the south, adjacent towers HG-159 and HG-161 suffered steel arm member failures at the overhead ground wire and top conductor phase on the north side of the towers.



Tower HG-159 damage.



Tower HG-161 damage.

5.0 Remediation

In 2016, Pickett and Associates Inc. was tasked with developing a tower leg remediation for tower HG-99. Tower HG-99 suffered from similar cross section deterioration as tower HG-160.

Pickett proposed to replace the corroded L4x5x5/16 stub angle with one of the same size. The replacement procedure consisted of:

1. Temporarily lifting the working corner of the tower utilizing a lifting bracket.
2. Removing top 1'-0" of concrete from the existing foundation.
3. Unbolting the top portion of the L4x5x5/16 stub angle and cutting at the bottom the corroded angle.
4. Welding and bolting a new L4x5x5/16 stub angle.
5. Casting the foundation top with newly added steel reinforcement.

The same procedure could be utilized for mitigating the remainder of the corroded tower stub angles on the Higgins to Griffin 115kV transmission line.

Contributing to the corrosion is the shallow reveal of the foundation. Because the top of concrete is flush with the soil, the stub angle is exposed to the surrounding soil.

Additional tests and monitoring should be performed to better understand the steel deterioration. Steel deterioration can be attributed to surrounding soil's high pH &

chloride levels, high ground water level, flooding, or loss of cathodic protection due to a current leak.

Few of the suggested tests are:

- Soil pH test.
- Soil chlorides levels.
- Groundwater levels.
- Historical flood data.
- Grounding study.
- Current leakage assessment.

Due to the severity of towers HG-160 and HG-162 stub angle corrosion, previous epoxy remediation and tower HG-99 stub angle remediation; an assessment of entire 115kV Higgins to Griffin Transmission Line stub angles is encouraged.

6.0 Restoration

Duke Energy transmission line crews responded to the tower HG-160 collapse and towers HG-159 & HG-161 arm failures by replacing the three towers with three double circuit tangent concrete poles utilizing post insulators. See images below.



Tower HG-159 replacement.

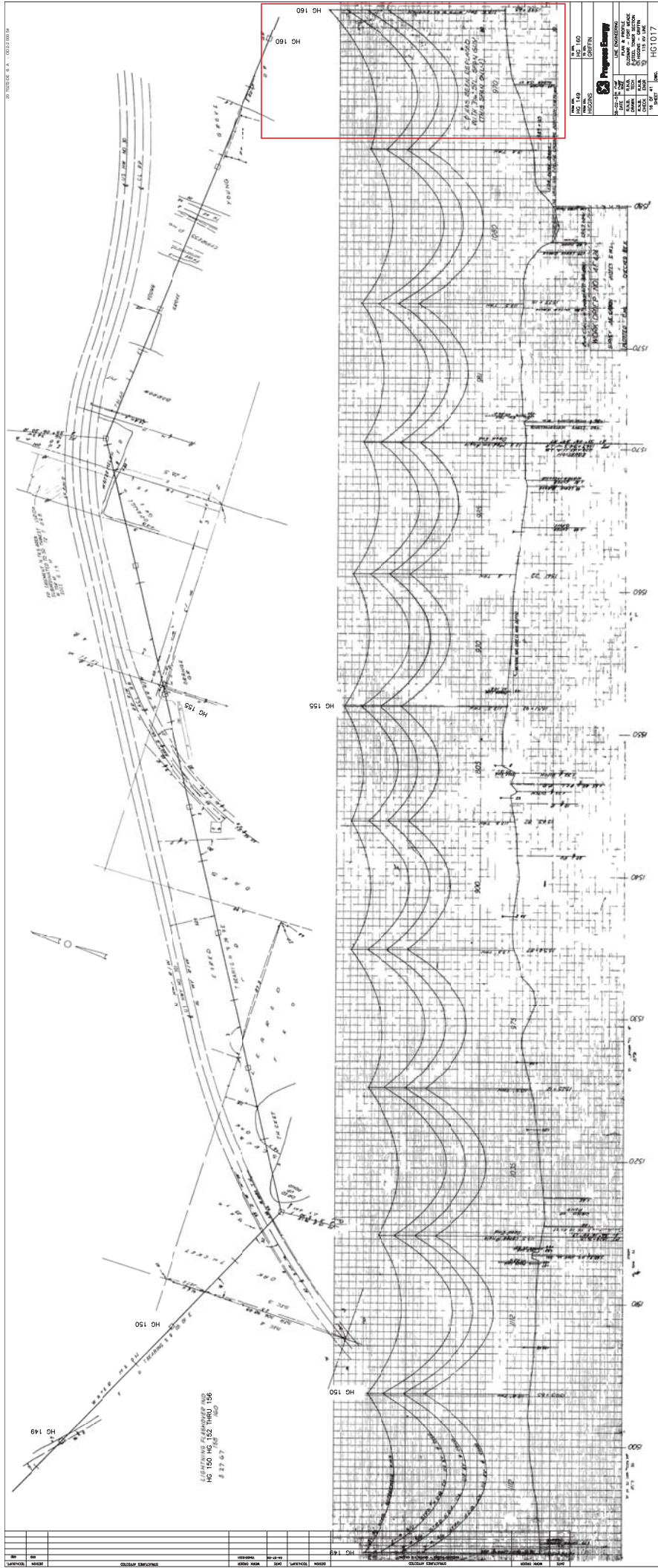


Tower HG-160 replacement.



Tower HG-161 replacement.

Appendix A: HG-160 Plan & Profile Drawings



Appendix B: HG-160 Erection Diagram and Design Loads

A B C D E F G H I J K L M N O P

BILL OF MATERIAL FOR ONE SUSPENSION

NO.	MARK	QTY.	NO.	MARK	QTY.	NO.	MARK	QTY.	NO.	MARK	QTY.
1	518	1	518	1	518	1	518	1	518	1	518
2	519	1	519	1	519	1	519	1	519	1	519
3	520	1	520	1	520	1	520	1	520	1	520
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7	524	1	524	1	524	1	524	1	524	1	524
8	525	1	525	1	525	1	525	1	525	1	525
9	526	1	526	1	526	1	526	1	526	1	526
10	527	1	527	1	527	1	527	1	527	1	527
11	528	1	528	1	528	1	528	1	528	1	528
12	529	1	529	1	529	1	529	1	529	1	529
13	530	1	530	1	530	1	530	1	530	1	530
14	531	1	531	1	531	1	531	1	531	1	531
15	532	1	532	1	532	1	532	1	532	1	532
16	533	1	533	1	533	1	533	1	533	1	533
17	534	1	534	1	534	1	534	1	534	1	534
18	535	1	535	1	535	1	535	1	535	1	535
19	536	1	536	1	536	1	536	1	536	1	536
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21	538	1	538	1	538	1	538	1	538	1	538
22	539	1	539	1	539	1	539	1	539	1	539
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24	541	1	541	1	541	1	541	1	541	1	541
25	542	1	542	1	542	1	542	1	542	1	542
26	543	1	543	1	543	1	543	1	543	1	543
27	544	1	544	1	544	1	544	1	544	1	544
28	545	1	545	1	545	1	545	1	545	1	545
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38	555	1	555	1	555	1	555	1	555	1	555
39	556	1	556	1	556	1	556	1	556	1	556
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45	562	1	562	1	562	1	562	1	562	1	562
46	563	1	563	1	563	1	563	1	563	1	563
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55	572	1	572	1	572	1	572	1	572	1	572
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57	574	1	574	1	574	1	574	1	574	1	574
58	575	1	575	1	575	1	575	1	575	1	575
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115	632	1	632	1	632	1	632	1	632	1	632
116	633	1	633	1	633	1	633	1	633	1	633
117	634	1	634	1	634	1	634	1	634	1	634
118	635	1	635	1	635	1	635	1	635	1	635
119	636	1	636	1	636	1	636	1	636	1	636
120	637	1	637	1	637	1	637	1	637	1	637
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123	640	1	640	1	640	1	640	1	640	1	640
124	641	1	641	1	641	1	641	1	641	1	641
125	642	1	642	1	642	1	642	1	642	1	642
126	643	1	643	1	643	1	643	1	643	1	643
127	644	1	644	1	644	1	644	1	644	1	644
128	645	1	645	1	645	1	645	1	645	1	645
129	646	1	646	1	646	1	646	1	646	1	646
130	647	1	647	1	647	1	647	1	647	1	647
131	648	1	648	1	648	1	648	1	648	1	648
132	649	1	649	1	649	1	649	1	649	1	649
133	650	1	650	1	650	1	650	1	650	1	650
134	651	1	651	1	651	1	651	1	651	1	651
135	652	1	652	1	652	1	652	1	652	1	652
136	653	1	653	1	653	1	653	1	653	1	653

Appendix C: Weather Data

KMCF Weather data for September 10 2017											
Time (EDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:13 AM	78.8 °F	78.8 °F	100%	29.80 in	10.0 mi	ENE	16.1 mph	21.9 mph	N/A		Mostly Cloudy
12:58 AM	78.6 °F	78.6 °F	100%	29.79 in	10.0 mi	ENE	16.1 mph	-	N/A		Mostly Cloudy
1:09 AM	78.8 °F	78.8 °F	100%	29.79 in	6.0 mi	ENE	17.3 mph	21.9 mph	N/A	Rain	Light Rain
1:10 AM	78.8 °F	78.8 °F	100%	29.79 in	6.0 mi	ENE	16.1 mph	21.9 mph	N/A	Rain	Heavy Rain
1:30 AM	77.0 °F	77.0 °F	100%	29.78 in	10.0 mi	ENE	16.1 mph	19.6 mph	N/A		Mostly Cloudy
1:58 AM	77.0 °F	77.0 °F	100%	29.78 in	10.0 mi	NE	13.8 mph	-	0.04 in		Mostly Cloudy
2:28 AM	77.0 °F	77.0 °F	100%	29.77 in	10.0 mi	ENE	13.8 mph	-	N/A		Mostly Cloudy
2:53 AM	77.0 °F	77.0 °F	100%	29.76 in	10.0 mi	ENE	10.4 mph	-	N/A		Overcast
2:58 AM	77.7 °F	77.7 °F	100%	29.76 in	10.0 mi	ENE	12.7 mph	-	N/A		Overcast
3:33 AM	78.8 °F	78.8 °F	100%	29.74 in	10.0 mi	East	20.7 mph	26.5 mph	N/A		Mostly Cloudy
3:38 AM	78.8 °F	78.8 °F	100%	29.74 in	10.0 mi	East	20.7 mph	26.5 mph	N/A		Mostly Cloudy
3:58 AM	78.6 °F	78.1 °F	98%	29.73 in	10.0 mi	East	21.9 mph	27.6 mph	N/A		Mostly Cloudy
4:36 AM	78.8 °F	78.8 °F	100%	29.73 in	10.0 mi	East	23.0 mph	28.8 mph	N/A	Rain	Light Rain
4:58 AM	77.7 °F	77.7 °F	100%	29.73 in	10.0 mi	East	20.7 mph	26.5 mph	0.00 in		Light Drizzle
4:59 AM	77.0 °F	77.0 °F	100%	29.73 in	10.0 mi	East	19.6 mph	26.5 mph	N/A		Clear
5:07 AM	77.0 °F	77.0 °F	100%	29.73 in	10.0 mi	East	21.9 mph	28.8 mph	N/A	Rain	Light Rain
5:32 AM	77.0 °F	77.0 °F	100%	29.73 in	10.0 mi	East	20.7 mph	28.8 mph	N/A		Partly Cloudy
5:33 AM	77.0 °F	77.0 °F	100%	29.73 in	10.0 mi	East	20.7 mph	-	N/A		Light Drizzle
5:58 AM	77.2 °F	77.2 °F	100%	29.73 in	10.0 mi	East	23.0 mph	-	0.00 in	Rain	Light Rain
6:58 AM	76.6 °F	76.6 °F	100%	29.71 in	10.0 mi	ENE	23.0 mph	29.9 mph	0.01 in	Rain	Light Rain
7:03 AM	77.0 °F	77.0 °F	100%	29.71 in	10.0 mi	East	23.0 mph	29.9 mph	N/A		Partly Cloudy
7:58 AM	76.5 °F	76.5 °F	100%	29.71 in	10.0 mi	ENE	21.9 mph	27.6 mph	0.00 in		Clear
8:09 AM	77.0 °F	77.0 °F	100%	29.72 in	10.0 mi	ENE	18.4 mph	29.9 mph	N/A	Rain	Light Rain
8:58 AM	75.7 °F	75.7 °F	100%	29.72 in	5.0 mi	ENE	19.6 mph	27.6 mph	0.06 in	Rain	Rain
9:26 AM	75.2 °F	75.2 °F	100%	29.73 in	5.0 mi	ENE	18.4 mph	26.5 mph	N/A	Rain	Rain
9:36 AM	77.0 °F	77.0 °F	100%	29.73 in	6.0 mi	ENE	19.6 mph	26.5 mph	N/A	Rain	Rain
9:41 AM	77.0 °F	77.0 °F	100%	29.73 in	5.0 mi	ENE	17.3 mph	26.5 mph	N/A	Rain	Rain
9:51 AM	77.0 °F	77.0 °F	100%	29.73 in	5.0 mi	ENE	18.4 mph	24.2 mph	N/A	Rain	Light Rain
9:56 AM	77.0 °F	77.0 °F	100%	29.73 in	5.0 mi	ENE	18.4 mph	24.2 mph	N/A	Rain	Light Rain
9:58 AM	76.5 °F	76.5 °F	100%	29.73 in	5.0 mi	ENE	17.3 mph	24.2 mph	0.14 in	Rain	Light Rain
10:08 AM	77.0 °F	77.0 °F	100%	29.73 in	4.0 mi	ENE	17.3 mph	26.5 mph	N/A	Rain	Rain
10:13 AM	77.0 °F	77.0 °F	100%	29.73 in	3.0 mi	ENE	19.6 mph	25.3 mph	N/A	Rain	Rain
10:18 AM	77.0 °F	77.0 °F	100%	29.73 in	3.0 mi	ENE	19.6 mph	27.6 mph	N/A	Rain	Heavy Rain
10:23 AM	77.0 °F	77.0 °F	100%	29.73 in	3.0 mi	ENE	23.0 mph	28.8 mph	N/A	Rain	Rain
10:48 AM	77.0 °F	77.0 °F	100%	29.72 in	0.5 mi	East	26.5 mph	33.4 mph	N/A	Fog , Rain	Heavy Rain
10:53 AM	77.0 °F	77.0 °F	100%	29.72 in	0.5 mi	East	18.4 mph	33.4 mph	N/A	Fog , Rain	Heavy Rain
10:58 AM	77.0 °F	77.0 °F	100%	29.72 in	1.2 mi	East	25.3 mph	33.4 mph	0.37 in	Rain	Rain
11:03 AM	77.0 °F	77.0 °F	100%	29.72 in	6.0 mi	East	23.0 mph	32.2 mph	N/A	Rain	Light Rain
11:08 AM	77.0 °F	77.0 °F	100%	29.72 in	7.0 mi	East	24.2 mph	29.9 mph	N/A	Rain	Light Rain
11:13 AM	77.0 °F	77.0 °F	100%	29.71 in	8.0 mi	East	26.5 mph	35.7 mph	N/A	Rain	Light Rain
11:58 AM	76.6 °F	76.6 °F	100%	29.70 in	3.0 mi	ENE	27.6 mph	38.0 mph	0.07 in	Rain	Rain
12:03 PM	75.2 °F	75.2 °F	100%	29.70 in	2.0 mi	East	32.2 mph	38.0 mph	N/A	Rain	Heavy Rain
12:13 PM	75.2 °F	75.2 °F	100%	29.69 in	4.0 mi	East	25.3 mph	38.0 mph	N/A	Rain	Light Rain
12:58 PM	74.3 °F	74.3 °F	100%	29.66 in	10.0 mi	ENE	26.5 mph	38.0 mph	0.09 in	Rain	Light Rain

KMCF Weather data for September 10 2017											
Time (EDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
1:17 PM	73.4 °F	73.4 °F	100%	29.65 in	7.0 mi	ENE	25.3 mph	39.1 mph	N/A		Mostly Cloudy
1:24 PM	73.4 °F	73.4 °F	100%	29.64 in	8.0 mi	ENE	25.3 mph	39.1 mph	N/A	Rain	Light Rain
1:56 PM	73.4 °F	73.4 °F	100%	29.63 in	8.0 mi	ENE	32.2 mph	43.7 mph	N/A		Mostly Cloudy
1:58 PM	73.4 °F	73.4 °F	100%	29.62 in	8.0 mi	ENE	32.2 mph	43.7 mph	0.03 in		Overcast
2:04 PM	73.4 °F	73.4 °F	100%	29.61 in	7.0 mi	ENE	27.6 mph	42.6 mph	N/A	Rain	Light Rain
2:15 PM	73.4 °F	73.4 °F	100%	29.60 in	10.0 mi	ENE	28.8 mph	38.0 mph	N/A		Overcast
2:19 PM	73.4 °F	73.4 °F	100%	29.60 in	10.0 mi	NE	25.3 mph	38.0 mph	N/A	Rain	Light Rain
2:58 PM	73.2 °F	73.2 °F	100%	29.57 in	3.0 mi	NE	20.7 mph	40.3 mph	0.09 in	Rain	Heavy Rain
3:14 PM	73.4 °F	73.4 °F	100%	29.54 in	10.0 mi	NE	26.5 mph	34.5 mph	N/A		Overcast
3:16 PM	73.4 °F	73.4 °F	100%	29.53 in	9.0 mi	NE	20.7 mph	34.5 mph	N/A	Rain	Rain
3:52 PM	73.4 °F	73.4 °F	100%	29.51 in	3.0 mi	NE	24.2 mph	38.0 mph	N/A	Rain	Heavy Rain
3:58 PM	73.2 °F	73.2 °F	100%	29.50 in	4.0 mi	NE	25.3 mph	36.8 mph	0.05 in	Rain	Rain
4:03 PM	73.4 °F	73.4 °F	100%	29.50 in	5.0 mi	NE	24.2 mph	36.8 mph	N/A	Rain	Rain
4:07 PM	73.4 °F	73.4 °F	100%	29.50 in	2.5 mi	NE	29.9 mph	47.2 mph	N/A	Rain	Heavy Rain
4:12 PM	73.4 °F	73.4 °F	100%	29.50 in	2.0 mi	NE	29.9 mph	47.2 mph	N/A	Rain	Rain
4:17 PM	73.4 °F	73.4 °F	100%	29.49 in	3.0 mi	NE	25.3 mph	43.7 mph	N/A	Rain	Heavy Rain
4:22 PM	73.4 °F	73.4 °F	100%	29.48 in	2.5 mi	NE	21.9 mph	42.6 mph	N/A	Rain	Heavy Rain
4:32 PM	73.4 °F	73.4 °F	100%	29.47 in	3.0 mi	NE	25.3 mph	38.0 mph	N/A	Rain	Heavy Rain
4:57 PM	73.4 °F	73.4 °F	100%	29.45 in	7.0 mi	NE	20.7 mph	40.3 mph	N/A	Rain	Light Rain
4:58 PM	73.4 °F	73.4 °F	100%	29.45 in	7.0 mi	NE	21.9 mph	40.3 mph	0.20 in	Rain	Light Rain
5:13 PM	73.4 °F	73.4 °F	100%	29.44 in	5.0 mi	NE	26.5 mph	42.6 mph	N/A	Rain	Heavy Rain
5:28 PM	73.4 °F	73.4 °F	100%	29.42 in	2.5 mi	NE	21.9 mph	35.7 mph	N/A	Rain	Heavy Rain
5:38 PM	73.4 °F	73.4 °F	100%	29.41 in	4.0 mi	NNE	25.3 mph	40.3 mph	N/A	Rain	Rain
5:48 PM	73.4 °F	73.4 °F	100%	29.41 in	2.5 mi	NE	25.3 mph	43.7 mph	N/A	Rain	Heavy Rain
5:53 PM	73.4 °F	73.4 °F	100%	29.40 in	2.5 mi	NE	26.5 mph	40.3 mph	N/A	Rain	Heavy Rain
5:58 PM	73.4 °F	73.4 °F	100%	29.39 in	3.0 mi	NE	19.6 mph	40.3 mph	0.19 in	Rain	Heavy Rain
6:11 PM	73.4 °F	73.4 °F	100%	29.37 in	3.0 mi	NE	25.3 mph	39.1 mph	N/A	Rain	Heavy Rain
6:21 PM	73.4 °F	73.4 °F	100%	29.37 in	1.8 mi	NE	24.2 mph	44.9 mph	N/A	Rain	Heavy Rain
6:41 PM	73.4 °F	73.4 °F	100%	29.32 in	1.5 mi	NE	27.6 mph	42.6 mph	N/A	Rain	Heavy Rain
6:44 PM	73.4 °F	73.4 °F	100%	29.32 in	1.5 mi	NE	23.0 mph	42.6 mph	N/A	Rain	Heavy Rain
6:49 PM	73.4 °F	73.4 °F	100%	29.31 in	2.0 mi	NE	27.6 mph	40.3 mph	N/A	Rain	Heavy Rain
6:54 PM	73.4 °F	73.4 °F	100%	29.31 in	1.5 mi	NE	26.5 mph	39.1 mph	N/A	Rain	Heavy Rain
6:58 PM	73.4 °F	73.4 °F	100%	29.30 in	1.2 mi	NE	29.9 mph	42.6 mph	0.38 in	Rain	Heavy Rain
7:03 PM	73.4 °F	73.4 °F	100%	29.30 in	1.2 mi	NE	26.5 mph	44.9 mph	N/A	Rain	Heavy Rain
7:13 PM	73.4 °F	73.4 °F	100%	29.28 in	1.0 mi	NE	27.6 mph	46.0 mph	N/A	Rain	Heavy Rain
7:23 PM	73.4 °F	73.4 °F	100%	29.28 in	1.5 mi	NE	28.8 mph	40.3 mph	N/A	Rain	Heavy Rain
7:28 PM	73.4 °F	73.4 °F	100%	29.27 in	1.5 mi	NE	32.2 mph	48.3 mph	N/A	Rain	Heavy Rain
7:33 PM	73.4 °F	73.4 °F	100%	29.26 in	1.2 mi	NE	29.9 mph	48.3 mph	N/A	Rain	Heavy Rain
7:38 PM	73.4 °F	73.4 °F	100%	29.26 in	1.5 mi	NE	27.6 mph	48.3 mph	N/A	Rain	Heavy Rain
7:46 PM	73.4 °F	73.4 °F	100%	29.24 in	1.5 mi	NNE	26.5 mph	44.9 mph	N/A	Rain	Heavy Rain
7:58 PM	72.9 °F	72.9 °F	100%	29.22 in	1.8 mi	NE	28.8 mph	52.9 mph	0.60 in	Rain	Heavy Rain
8:00 PM	73.4 °F	73.4 °F	100%	29.21 in	2.0 mi	NE	33.4 mph	52.9 mph	N/A	Rain	Heavy Rain
8:01 PM	73.4 °F	73.4 °F	100%	29.21 in	2.0 mi	NNE	34.5 mph	52.9 mph	N/A	Rain	Heavy Rain
8:05 PM	73.4 °F	73.4 °F	100%	29.20 in	2.0 mi	NNE	26.5 mph	51.8 mph	N/A	Rain	Heavy Rain

KMCF Weather data for September 10 2017											
Time (EDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
8:10 PM	73.4 °F	73.4 °F	100%	29.19 in	1.8 mi	NE	32.2 mph	51.8 mph	N/A	Rain	Heavy Rain
8:25 PM	73.4 °F	73.4 °F	100%	29.15 in	2.5 mi	NNE	35.7 mph	52.9 mph	N/A	Rain	Heavy Rain
8:35 PM	73.4 °F	73.4 °F	100%	29.15 in	1.5 mi	NE	28.8 mph	44.9 mph	N/A	Rain	Heavy Rain
8:39 PM	73.4 °F	73.4 °F	100%	29.14 in	1.5 mi	NE	26.5 mph	43.7 mph	N/A	Rain	Heavy Rain
8:44 PM	73.4 °F	73.4 °F	100%	29.13 in	1.2 mi	NNE	28.8 mph	43.7 mph	N/A	Rain	Heavy Rain
8:47 PM	73.4 °F	73.4 °F	100%	29.13 in	1.0 mi	NNE	31.1 mph	48.3 mph	N/A	Rain	Heavy Rain
8:52 PM	73.4 °F	73.4 °F	100%	29.13 in	1.0 mi	NE	33.4 mph	54.1 mph	N/A	Rain	Heavy Rain
8:57 PM	73.4 °F	73.4 °F	100%	29.12 in	1.2 mi	NE	28.8 mph	54.1 mph	N/A	Rain	Heavy Rain
8:58 PM	73.2 °F	73.2 °F	100%	29.11 in	1.2 mi	NE	32.2 mph	54.1 mph	0.80 in	Rain	Heavy Rain
9:03 PM	73.4 °F	73.4 °F	100%	29.10 in	1.0 mi	NNE	26.5 mph	50.6 mph	N/A	Rain	Heavy Rain
9:08 PM	73.4 °F	73.4 °F	100%	29.10 in	1.0 mi	NNE	29.9 mph	50.6 mph	N/A	Rain	Heavy Rain
9:09 PM	73.4 °F	73.4 °F	100%	29.10 in	1.0 mi	NNE	36.8 mph	51.8 mph	N/A	Rain	Heavy Rain
9:14 PM	73.4 °F	73.4 °F	100%	29.09 in	1.5 mi	NNE	27.6 mph	51.8 mph	N/A	Rain	Heavy Rain
9:19 PM	73.4 °F	73.4 °F	100%	29.08 in	1.8 mi	NNE	27.6 mph	51.8 mph	N/A	Rain	Heavy Rain
9:21 PM	73.4 °F	73.4 °F	100%	29.08 in	2.0 mi	NNE	29.9 mph	48.3 mph	N/A	Rain	Heavy Rain
9:37 PM	71.6 °F	71.6 °F	100%	29.06 in	3.0 mi	NNE	29.9 mph	48.3 mph	N/A	Rain	Heavy Rain
9:47 PM	73.4 °F	73.4 °F	100%	29.05 in	2.5 mi	NE	26.5 mph	44.9 mph	N/A	Rain	Heavy Rain
9:52 PM	73.4 °F	73.4 °F	100%	29.03 in	1.5 mi	NNE	26.5 mph	46.0 mph	N/A	Rain	Heavy Rain
9:58 PM	72.9 °F	72.9 °F	100%	29.02 in	1.2 mi	NNE	28.8 mph	46.0 mph	0.76 in	Rain	Heavy Rain
10:03 PM	73.4 °F	73.4 °F	100%	29.00 in	2.0 mi	NNE	29.9 mph	50.6 mph	N/A	Rain	Heavy Rain
10:08 PM	73.4 °F	73.4 °F	100%	28.99 in	2.5 mi	NNE	28.8 mph	50.6 mph	N/A	Rain	Heavy Rain
10:23 PM	73.4 °F	73.4 °F	100%	28.97 in	3.0 mi	NNE	27.6 mph	46.0 mph	N/A	Rain	Heavy Rain
10:28 PM	73.4 °F	73.4 °F	100%	28.96 in	4.0 mi	NNE	27.6 mph	46.0 mph	N/A	Rain	Heavy Rain
10:36 PM	73.4 °F	73.4 °F	100%	28.95 in	4.0 mi	North	-	-	N/A		Overcast
10:41 PM	73.4 °F	73.4 °F	100%	-	-	North	-	-	N/A		Unknown
10:58 PM	-	-	N/A%	-	-	North	-	-	N/A		Unknown

KTPF Weather data for September 10 2017												
Time (EDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
12:15 AM	80.6 °F	87.1 °F	77.0 °F	89%	29.80 in	10.0 mi	NE	17.3 mph	-	N/A		Scattered Clouds
12:35 AM	80.6 °F	87.1 °F	77.0 °F	89%	29.80 in	10.0 mi	NE	16.1 mph	20.7 mph	N/A		Mostly Cloudy
12:55 AM	80.6 °F	88.1 °F	78.8 °F	94%	29.79 in	10.0 mi	NE	15.0 mph	21.9 mph	N/A		Mostly Cloudy
1:15 AM	80.6 °F	88.1 °F	78.8 °F	94%	29.79 in	10.0 mi	NE	16.1 mph	20.7 mph	N/A		Mostly Cloudy
1:35 AM	80.6 °F	88.1 °F	78.8 °F	94%	29.78 in	10.0 mi	NE	16.1 mph	20.7 mph	N/A		Scattered Clouds
1:55 AM	80.6 °F	88.1 °F	78.8 °F	94%	29.78 in	10.0 mi	NE	9.2 mph	13.8 mph	N/A		Overcast
2:15 AM	80.6 °F	89.3 °F	80.6 °F	100%	29.78 in	10.0 mi	NE	11.5 mph	-	N/A		Overcast
2:35 AM	80.6 °F	89.3 °F	80.6 °F	100%	29.77 in	10.0 mi	NE	10.4 mph	18.4 mph	N/A		Overcast
2:55 AM	80.6 °F	89.3 °F	80.6 °F	100%	29.76 in	10.0 mi	ENE	10.4 mph	-	N/A		Overcast
3:15 AM	80.6 °F	89.3 °F	80.6 °F	100%	29.75 in	10.0 mi	ENE	10.4 mph	-	N/A		Overcast
3:35 AM	82.4 °F	90.9 °F	77.0 °F	84%	29.74 in	10.0 mi	East	21.9 mph	27.6 mph	N/A		Scattered Clouds
3:55 AM	80.6 °F	87.1 °F	77.0 °F	89%	29.73 in	10.0 mi	ENE	17.3 mph	24.2 mph	N/A		Clear
4:15 AM	80.6 °F	87.1 °F	77.0 °F	89%	29.73 in	10.0 mi	ENE	20.7 mph	26.5 mph	N/A		Scattered Clouds
4:35 AM	80.6 °F	87.1 °F	77.0 °F	89%	29.73 in	10.0 mi	ENE	16.1 mph	-	N/A	Rain	Light Rain
4:55 AM	78.8 °F	-	78.8 °F	100%	29.73 in	10.0 mi	ENE	19.6 mph	25.3 mph	N/A		Light Drizzle
5:15 AM	80.6 °F	89.3 °F	80.6 °F	100%	29.73 in	10.0 mi	ENE	15.0 mph	26.5 mph	N/A		Light Drizzle
5:35 AM	80.6 °F	89.3 °F	80.6 °F	100%	29.74 in	10.0 mi	ENE	17.3 mph	21.9 mph	N/A	Rain	Light Rain
5:55 AM	80.6 °F	89.3 °F	80.6 °F	100%	29.74 in	7.0 mi	ENE	19.6 mph	26.5 mph	N/A	Rain	Light Rain
6:15 AM	78.8 °F	-	78.8 °F	100%	29.74 in	10.0 mi	NE	18.4 mph	26.5 mph	N/A	Rain	Light Rain
6:35 AM	-	-	-	N/A%	29.73 in	10.0 mi	ENE	15.0 mph	25.3 mph	0.01 in	Rain	Light Rain
6:55 AM	-	-	-	N/A%	29.72 in	10.0 mi	ENE	13.8 mph	26.5 mph	0.01 in	Rain	Light Rain
7:15 AM	-	-	-	N/A%	29.71 in	10.0 mi	NE	16.1 mph	21.9 mph	N/A		Scattered Clouds
7:35 AM	78.8 °F	-	78.8 °F	100%	29.71 in	10.0 mi	NE	17.3 mph	24.2 mph	N/A		Clear
8:15 AM	-	-	-	N/A%	29.72 in	10.0 mi	NE	17.3 mph	24.2 mph	0.01 in	Rain	Light Rain
8:35 AM	-	-	-	N/A%	29.73 in	7.0 mi	NE	19.6 mph	25.3 mph	0.02 in	Rain	Light Rain
8:55 AM	-	-	-	N/A%	29.73 in	7.0 mi	NE	21.9 mph	25.3 mph	0.06 in	Rain	Rain
9:15 AM	-	-	-	N/A%	29.73 in	7.0 mi	NE	15.0 mph	26.5 mph	0.03 in	Rain	Light Rain
9:35 AM	-	-	-	N/A%	29.73 in	7.0 mi	NE	17.3 mph	23.0 mph	0.07 in	Rain	Light Rain
9:55 AM	-	-	-	N/A%	29.73 in	10.0 mi	NE	20.7 mph	26.5 mph	0.08 in	Rain	Light Rain
10:15 AM	-	-	-	N/A%	29.73 in	7.0 mi	NE	19.6 mph	23.0 mph	0.01 in	Rain	Light Rain
10:35 AM	-	-	-	N/A%	29.73 in	7.0 mi	NE	17.3 mph	27.6 mph	0.03 in	Rain	Rain
10:55 AM	-	-	-	N/A%	29.72 in	10.0 mi	ENE	16.1 mph	29.9 mph	0.05 in	Rain	Light Rain
11:15 AM	80.6 °F	89.3 °F	80.6 °F	100%	29.73 in	7.0 mi	ENE	16.1 mph	29.9 mph	N/A	Rain	Light Rain
11:35 AM	-	-	-	N/A%	29.73 in	5.0 mi	ENE	16.1 mph	25.3 mph	0.03 in	Rain	Light Rain
11:55 AM	-	-	-	N/A%	29.72 in	1.5 mi	ENE	21.9 mph	31.1 mph	0.18 in	Rain	Light Rain
12:15 PM	77.0 °F	-	77.0 °F	100%	29.70 in	3.0 mi	ENE	21.9 mph	31.1 mph	0.03 in	Rain	Light Rain
12:35 PM	77.0 °F	-	77.0 °F	100%	29.69 in	7.0 mi	NE	21.9 mph	33.4 mph	0.03 in	Rain	Light Rain
12:55 PM	-	-	-	N/A%	29.67 in	7.0 mi	NE	29.9 mph	40.3 mph	0.05 in	Rain	Light Rain
1:15 PM	77.0 °F	-	77.0 °F	100%	29.66 in	4.0 mi	NE	25.3 mph	32.2 mph	0.02 in	Rain	Light Rain
1:35 PM	-	-	-	N/A%	29.65 in	10.0 mi	NE	24.2 mph	32.2 mph	0.05 in	Rain	Light Rain
1:55 PM	-	-	-	N/A%	29.63 in	3.0 mi	NE	25.3 mph	36.8 mph	0.09 in	Rain	Light Rain
2:15 PM	-	-	-	N/A%	29.61 in	10.0 mi	NE	25.3 mph	35.7 mph	N/A		Light Drizzle
2:35 PM	-	-	-	N/A%	29.60 in	7.0 mi	NE	24.2 mph	32.2 mph	0.01 in		Light Drizzle
2:55 PM	-	-	-	N/A%	29.57 in	4.0 mi	NNE	24.2 mph	35.7 mph	0.07 in	Rain	Rain
3:15 PM	-	-	-	N/A%	29.54 in	10.0 mi	NNE	23.0 mph	35.7 mph	0.01 in	Rain	Light Rain
3:35 PM	-	-	-	N/A%	29.53 in	7.0 mi	NNE	25.3 mph	36.8 mph	0.02 in	Rain	Light Rain
3:55 PM	-	-	-	N/A%	29.52 in	4.0 mi	NE	27.6 mph	38.0 mph	0.06 in	Rain	Light Rain

KTPF Weather data for September 10 2017												
Time (EDT)	Temp.	Heat Index	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
4:15 PM	-	-	-	N/A%	29.49 in	3.0 mi	NNE	23.0 mph	39.1 mph	0.08 in	Rain	Rain
4:35 PM	-	-	-	N/A%	29.47 in	5.0 mi	NNE	21.9 mph	38.0 mph	0.15 in	Rain	Light Rain
4:55 PM	-	-	-	N/A%	29.46 in	7.0 mi	NNE	20.7 mph	36.8 mph	0.18 in	Rain	Light Rain
5:15 PM	-	-	-	N/A%	29.45 in	5.0 mi	NNE	28.8 mph	41.4 mph	0.04 in	Rain	Rain
5:35 PM	-	-	-	N/A%	29.42 in	5.0 mi	NNE	26.5 mph	46.0 mph	0.10 in	Rain	Rain
5:55 PM	-	-	-	N/A%	29.39 in	4.0 mi	NNE	25.3 mph	39.1 mph	0.18 in	Rain	Heavy Rain
6:15 PM	-	-	-	N/A%	29.38 in	3.0 mi	NNE	27.6 mph	43.7 mph	0.07 in	Rain	Rain
6:35 PM	-	-	-	N/A%	29.34 in	2.5 mi	NNE	27.6 mph	41.4 mph	0.21 in	Rain	Heavy Rain
6:55 PM	-	-	-	N/A%	29.30 in	2.5 mi	NNE	29.9 mph	42.6 mph	0.34 in	Rain	Rain
7:15 PM	-	-	-	N/A%	29.29 in	2.0 mi	NNE	28.8 mph	47.2 mph	0.17 in	Rain	Heavy Rain
7:35 PM	-	-	-	N/A%	29.26 in	1.8 mi	NNE	29.9 mph	47.2 mph	0.38 in	Rain	Heavy Rain
7:55 PM	-	-	-	N/A%	29.22 in	1.8 mi	NNE	29.9 mph	46.0 mph	0.62 in	Rain	Heavy Rain
8:15 PM	-	-	-	N/A%	29.16 in	2.0 mi	NNE	32.2 mph	47.2 mph	0.13 in	Rain	Heavy Rain
8:35 PM	-	-	-	N/A%	29.15 in	1.8 mi	NNE	27.6 mph	47.2 mph	0.32 in	Rain	Heavy Rain
8:55 PM	-	-	-	N/A%	29.12 in	1.5 mi	NNE	33.4 mph	50.6 mph	0.70 in	Rain	Heavy Rain
9:15 PM	-	-	-	N/A%	29.09 in	1.8 mi	NNE	33.4 mph	43.7 mph	0.22 in	Rain	Heavy Rain
9:35 PM	-	-	-	N/A%	29.06 in	2.5 mi	NNE	28.8 mph	40.3 mph	0.35 in	Rain	Heavy Rain
9:55 PM	-	-	-	N/A%	29.02 in	1.5 mi	North	28.8 mph	50.6 mph	0.59 in	Rain	Rain
10:15 PM	-	-	-	N/A%	28.96 in	2.0 mi	NNE	29.9 mph	40.3 mph	0.14 in	Rain	Rain
10:35 PM	-	-	-	N/A%	-	-	North	29.9 mph	50.6 mph	0.26 in	Rain	Rain
10:55 PM	-	-	-	N/A%	28.91 in	2.0 mi	North	26.5 mph	49.5 mph	0.44 in	Rain	Heavy Rain
11:15 PM	-	-	-	N/A%	28.85 in	2.0 mi	North	28.8 mph	55.2 mph	0.13 in	Rain	Heavy Rain
11:35 PM	-	-	-	N/A%	28.82 in	1.8 mi	North	24.2 mph	42.6 mph	0.37 in	Rain	Heavy Rain
11:55 PM	-	-	-	N/A%	28.77 in	2.5 mi	North	25.3 mph	40.3 mph	0.51 in	Rain	Heavy Rain

KZPH Weather data for September 10 2017												
Time (EDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions	
12:15 AM	77.9 °F	73.4 °F	86%	29.83 in	10.0 mi	NNE	12.7 mph	17.3 mph	N/A		Scattered Clouds	
12:35 AM	77.9 °F	73.4 °F	86%	29.83 in	10.0 mi	NNE	11.5 mph	-	N/A		Scattered Clouds	
12:55 AM	78.1 °F	73.6 °F	86%	29.83 in	10.0 mi	NNE	9.2 mph	-	N/A		Mostly Cloudy	
1:15 AM	76.6 °F	74.5 °F	93%	29.82 in	7.0 mi	ENE	5.8 mph	-	0.02 in	Rain	Light Rain	
1:35 AM	76.5 °F	74.5 °F	94%	29.82 in	10.0 mi	NNE	6.9 mph	-	0.02 in	Rain	Light Rain	
1:55 AM	76.5 °F	74.7 °F	94%	29.81 in	10.0 mi	NNE	8.1 mph	-	0.02 in		Overcast	
2:15 AM	76.5 °F	74.7 °F	94%	29.80 in	10.0 mi	NNE	11.5 mph	-	N/A		Overcast	
2:35 AM	76.5 °F	75.0 °F	95%	29.80 in	10.0 mi	NNE	8.1 mph	-	N/A	Rain	Rain	
2:55 AM	76.5 °F	75.2 °F	96%	29.80 in	10.0 mi	NE	5.8 mph	-	0.01 in		Mostly Cloudy	
3:15 AM	77.9 °F	73.9 °F	88%	29.79 in	10.0 mi	ENE	15.0 mph	21.9 mph	N/A		Mostly Cloudy	
3:35 AM	77.9 °F	73.4 °F	86%	29.79 in	10.0 mi	ENE	9.2 mph	20.7 mph	N/A		Scattered Clouds	
3:55 AM	77.4 °F	73.4 °F	88%	29.77 in	10.0 mi	ENE	6.9 mph	-	N/A		Mostly Cloudy	
4:15 AM	77.5 °F	73.8 °F	88%	29.76 in	10.0 mi	ENE	12.7 mph	17.3 mph	N/A		Scattered Clouds	
4:35 AM	77.7 °F	73.4 °F	86%	29.76 in	10.0 mi	ENE	9.2 mph	-	N/A		Clear	
4:55 AM	77.9 °F	74.1 °F	88%	29.76 in	10.0 mi	East	12.7 mph	18.4 mph	N/A		Scattered Clouds	
5:15 AM	77.9 °F	74.3 °F	89%	29.76 in	10.0 mi	ENE	13.8 mph	21.9 mph	N/A		Light Drizzle	
5:35 AM	77.9 °F	74.5 °F	89%	29.77 in	10.0 mi	ENE	13.8 mph	19.6 mph	N/A		Scattered Clouds	
5:55 AM	77.5 °F	74.7 °F	91%	29.77 in	10.0 mi	NE	10.4 mph	20.7 mph	N/A	Rain	Light Rain	
6:15 AM	77.0 °F	75.2 °F	94%	29.77 in	7.0 mi	NE	12.7 mph	-	0.02 in	Rain	Rain	
6:35 AM	76.5 °F	75.2 °F	96%	29.78 in	7.0 mi	ENE	8.1 mph	17.3 mph	0.03 in	Rain	Rain	
6:55 AM	75.9 °F	74.1 °F	94%	29.77 in	10.0 mi	ENE	9.2 mph	-	0.03 in	Rain	Light Rain	
7:15 AM	75.4 °F	73.8 °F	95%	29.75 in	10.0 mi	NE	9.2 mph	-	N/A		Light Drizzle	
7:35 AM	75.4 °F	74.3 °F	96%	29.75 in	10.0 mi	NE	9.2 mph	-	0.01 in		Light Drizzle	
7:55 AM	75.6 °F	74.3 °F	96%	29.76 in	10.0 mi	NE	11.5 mph	-	0.01 in		Scattered Clouds	
8:15 AM	75.7 °F	74.3 °F	95%	29.75 in	7.0 mi	NE	10.4 mph	16.1 mph	N/A	Rain	Light Rain	
8:35 AM	76.1 °F	75.0 °F	96%	29.76 in	10.0 mi	NE	11.5 mph	18.4 mph	0.01 in	Rain	Rain	
8:55 AM	76.6 °F	75.6 °F	96%	29.77 in	7.0 mi	NNE	12.7 mph	19.6 mph	0.01 in	Rain	Light Rain	
9:15 AM	77.0 °F	75.6 °F	95%	29.77 in	5.0 mi	NNE	12.7 mph	20.7 mph	0.02 in	Rain	Light Rain	
9:35 AM	77.0 °F	76.1 °F	97%	29.77 in	5.0 mi	NE	15.0 mph	20.7 mph	0.04 in	Rain	Light Rain	
9:55 AM	77.0 °F	75.9 °F	96%	29.76 in	10.0 mi	NNE	13.8 mph	23.0 mph	0.04 in	Rain	Light Rain	
10:15 AM	77.4 °F	76.1 °F	96%	29.77 in	7.0 mi	NE	15.0 mph	20.7 mph	0.01 in	Rain	Light Rain	
10:35 AM	77.7 °F	76.3 °F	95%	29.76 in	7.0 mi	NE	15.0 mph	21.9 mph	0.02 in	Rain	Light Rain	
10:55 AM	77.9 °F	76.5 °F	95%	29.76 in	10.0 mi	NNE	13.8 mph	19.6 mph	0.03 in	Rain	Light Rain	
11:15 AM	78.1 °F	76.6 °F	95%	29.76 in	10.0 mi	NE	12.7 mph	17.3 mph	N/A	Rain	Light Rain	
11:35 AM	77.9 °F	77.0 °F	97%	29.76 in	2.5 mi	East	9.2 mph	16.1 mph	0.11 in	Rain	Heavy Rain	
11:55 AM	76.3 °F	74.8 °F	95%	29.76 in	1.2 mi	East	12.7 mph	17.3 mph	0.50 in	Rain	Heavy Rain	
12:35 PM	73.0 °F	71.8 °F	96%	29.77 in	0.2 mi	ENE	18.4 mph	34.5 mph	1.23 in	Rain	Heavy Rain	
12:55 PM	72.9 °F	71.6 °F	96%	29.75 in	3.0 mi	East	10.4 mph	25.3 mph	1.33 in	Rain	Rain	
1:15 PM	73.8 °F	72.0 °F	94%	29.73 in	4.0 mi	ENE	19.6 mph	31.1 mph	0.05 in	Rain	Rain	
1:35 PM	75.0 °F	72.9 °F	93%	29.71 in	7.0 mi	ENE	19.6 mph	31.1 mph	0.08 in	Rain	Light Rain	
1:55 PM	74.7 °F	72.5 °F	93%	29.72 in	4.0 mi	ENE	18.4 mph	26.5 mph	0.11 in	Rain	Light Rain	
2:15 PM	74.3 °F	71.8 °F	92%	29.69 in	5.0 mi	NE	15.0 mph	27.6 mph	0.02 in	Rain	Light Rain	
2:35 PM	73.9 °F	71.6 °F	92%	29.68 in	7.0 mi	NE	18.4 mph	29.9 mph	0.03 in	Rain	Light Rain	
2:55 PM	73.6 °F	71.8 °F	94%	29.66 in	7.0 mi	NE	19.6 mph	29.9 mph	0.05 in	Rain	Light Rain	
3:15 PM	74.1 °F	72.3 °F	94%	29.64 in	10.0 mi	NNE	19.6 mph	28.8 mph	N/A	Rain	Light Rain	
3:35 PM	74.3 °F	72.5 °F	94%	29.62 in	10.0 mi	NNE	19.6 mph	34.5 mph	N/A	Rain	Light Rain	
3:55 PM	74.3 °F	72.9 °F	95%	29.60 in	7.0 mi	NNE	19.6 mph	31.1 mph	0.01 in	Rain	Light Rain	

KZPH Weather data for September 10 2017											
Time (EDT)	Temp.	Dew Point	Humidity	Pressure	Visibility	Wind Dir	Wind Speed	Gust Speed	Precip	Events	Conditions
4:15 PM	74.3 °F	72.7 °F	95%	29.59 in	5.0 mi	NNE	20.7 mph	31.1 mph	0.02 in	Rain	Light Rain
4:35 PM	74.1 °F	72.9 °F	96%	29.56 in	5.0 mi	NNE	26.5 mph	34.5 mph	0.06 in	Rain	Light Rain
4:55 PM	73.9 °F	72.7 °F	96%	29.55 in	5.0 mi	NNE	24.2 mph	38.0 mph	0.08 in	Rain	Light Rain
5:15 PM	73.9 °F	72.9 °F	96%	29.52 in	4.0 mi	NNE	26.5 mph	34.5 mph	0.04 in	Rain	Rain
5:35 PM	74.3 °F	72.9 °F	95%	29.51 in	3.0 mi	NNE	24.2 mph	39.1 mph	0.07 in	Rain	Rain
5:55 PM	74.3 °F	73.0 °F	96%	29.50 in	4.0 mi	NNE	23.0 mph	31.1 mph	0.09 in	Rain	Rain
6:15 PM	74.3 °F	72.9 °F	95%	29.48 in	2.5 mi	NNE	28.8 mph	39.1 mph	0.02 in	Rain	Rain
6:35 PM	74.3 °F	73.2 °F	96%	29.46 in	3.0 mi	NNE	26.5 mph	38.0 mph	0.04 in	Rain	Rain
6:55 PM	74.3 °F	73.0 °F	96%	29.43 in	1.5 mi	NNE	26.5 mph	44.9 mph	0.06 in	Rain	Rain
7:15 PM	74.5 °F	73.2 °F	96%	29.39 in	1.8 mi	NNE	29.9 mph	41.4 mph	0.02 in	Rain	Rain
7:35 PM	73.9 °F	72.7 °F	96%	29.37 in	2.0 mi	NNE	29.9 mph	48.3 mph	0.04 in	Rain	Heavy Rain
7:55 PM	73.6 °F	72.5 °F	96%	29.34 in	1.8 mi	NNE	32.2 mph	42.6 mph	0.06 in	Rain	Rain
8:15 PM	73.9 °F	73.0 °F	97%	29.28 in	2.0 mi	NNE	31.1 mph	44.9 mph	0.02 in	Rain	Rain
8:35 PM	74.3 °F	73.6 °F	98%	29.25 in	1.5 mi	NNE	34.5 mph	48.3 mph	0.04 in	Rain	Rain
8:55 PM	73.4 °F	72.7 °F	98%	29.22 in	0.8 mi	NNE	42.6 mph	63.3 mph	0.06 in		Unknown
9:15 PM	73.4 °F	72.9 °F	98%	29.20 in	1.8 mi	NNE	33.4 mph	46.0 mph	0.02 in	Rain	Rain
9:35 PM	73.9 °F	73.6 °F	99%	29.18 in	2.0 mi	NNE	26.5 mph	40.3 mph	0.04 in	Rain	Rain
9:55 PM	75.2 °F	74.5 °F	98%	29.15 in	3.0 mi	NE	25.3 mph	48.3 mph	0.07 in	Rain	Light Rain
10:15 PM	75.6 °F	75.2 °F	99%	29.10 in	2.0 mi	NNE	40.3 mph	55.2 mph	0.02 in	Rain	Rain
10:35 PM	75.2 °F	74.5 °F	98%	29.07 in	3.0 mi	NNE	34.5 mph	49.5 mph	0.04 in	Rain	Light Rain
10:55 PM	-	-	N/A%	-	-	North	-	-	N/A		Overcast
11:15 PM	-	-	N/A%	-	-	North	-	-	N/A		Unknown
11:35 PM	-	-	N/A%	-	-	North	-	-	0.05 in		Unknown
11:55 PM	-	-	N/A%	-	-	North	-	-	N/A		Unknown

Appendix D: HG-160 Leg and Stub Angles







