Rhode Island Airport Corporation

Data Report for the T.F. Green Air Monitoring Program

Reporting Period: January 2020 – March 2020

Rhode Island Airport Corporation

April 2020

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Section 1: Introduction

Under Section 1-7-1 of the State of Rhode Island General Law (The Permanent Air Quality Monitoring Act, or "the Act"), RIAC is required to "design, acquire, install, operate, and maintain a long-term air monitoring program in the vicinity of T.F. Green Airport". This report summarizes the monitoring activities and results of the RIAC Air Monitoring Program for the First Quarter of 2020 (January 1, 2020 to March 31, 2020).

The RIAC Air Monitoring Program includes ambient air monitoring for black carbon and particulate matter ($PM_{0.1}$) at four stations around T.F. Green Airport. In addition, select meteorological parameters (wind speed and direction, ambient temperature, and relative humidity) measured at the airport are summarized in this report. Flight operations are also summarized in this report.

Monitoring for this period began January 1, 2020 at 0000 hours and was completed on March 31, 2020 at 2359 hours.

Section 2: Sampling Program

2.1 Station Locations

The four Warwick, RI monitoring sites are described below:

1. Fieldview (former location of 138 Fieldview Drive) – Located south---southwest of the airfield approximately 500 feet from Taxiway M and 2,200 feet from the end of Runway 5. Adjoining land uses include single-family residential to the west and south, long-term parking for airport patrons to the north, and the taxiway/runway system to the east.
2. Lydick (western end of Lydick Avenue) – Located adjacent to the Spring Green neighborhood and the airport's northeastern property line, approximately 3,500 feet from the end of Runway 23. Adjoining land uses include single-family residential to the north, east, and south. To the west is the runway protection zone (RPZ).
3. Fire Station (behind Fire Station No. 8, on California Avenue off Post Road) – Located west-northwest of the airport approximately 2,250 feet from the end of Runway 16. Adjoining land uses include an open field and single family residential to the north and west, commercial development to the south and the fire station, and Post Road to the east.
4. Pembroke (adjacent to Winslow Park athletic facility) – Located due east of the airport approximately 2,150 feet from the intersection of Runways 5/23 and 16/34. Adjoining land uses are the airport to the west, and residential or recreational fields to the north, east, and south.

The locations of the monitoring sites are shown on Figure 2.1.

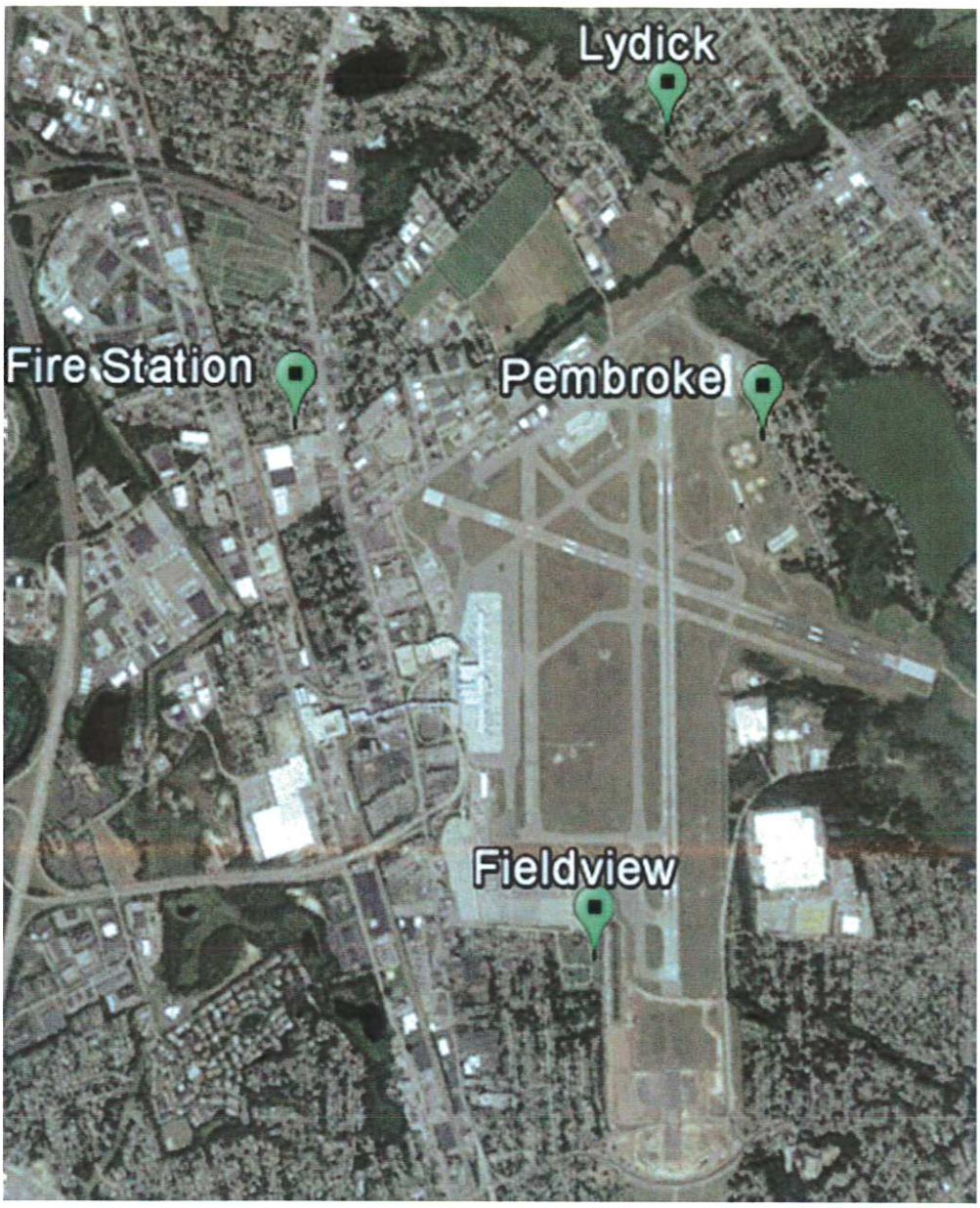


Figure 2.1. Monitoring Stations Locations. Google Earth

2.2 Program Description

Table 2.1 presents the monitoring configurations of each of the RIAC monitoring stations.

Table 2.1. Sampling Configuration of the Four Monitoring Stations in the RIAC Air Quality Monitoring Program.

Parameters	Sampling and Analysis Equipment	Summary Description
Ultra-fine PM < 0.1 microns ($PM_{0.1}$)	Water-based Condensation Particle Counter (EPC)	Real-time measurements based on light (infrared) scattering characteristics of airborne PM.
Black Carbon (BC)	Aethalometer monitors	Real-time measurements based on the light absorbing characteristics of soot.

2.3 Sampling Methods

Sampling of ambient air for the measurement of pollutant concentrations and atmospheric conditions was performed by appropriate monitoring methods. This assures that the air sampled was representative of the ambient air and that the measurements were representative of the actual pollutant concentrations.

2.3.1 Reference and Acceptable Methods

The instruments and systems used to collect ultrafine particulate and black carbon are acceptable real-time samplers for measurements but they are not EPA certified. Descriptions of each of these monitoring methods are presented below.

2.3.1.1 Black carbon

Optically-absorbing black-carbon (BC) aerosol particles, which are a characteristic of diesel and jet exhaust, were continuously measured by a Magee Scientific Model AE-22 aethalometer. The aethalometer is equipped with a $PM_{2.5}$ inlet to ensure BC in the respirable size range is measured.

2.3.1.2 Ultrafine particles

Total particle count was measured using real-time, water-based condensation particle counters (EPC). The particle counters are equipped with an inlet cyclone to screen out particles larger than 3 mm. The majority of particles counted have a diameter of 0.1 mm or less.

2.4 Environmental Control

To help insure proper performance, all analyzers and supporting equipment were installed and continue to operate in a temperature-controlled environment. An insulated enclosure with a thermostatically controlled heater was installed to house the analyzers, samplers, data acquisition system, materials, supplies, and storage of project documentation.

During the warmer months a built-in Environmental Condition Unit (ECU) maintains appropriate temperatures in the shelter. The shelter is maintained between 20 and 30 °C and is designed to minimize rapid fluctuations in temperature.

Section 3: Summary of Monitoring Data

3.1 Overview

The Clean Air Act requires EPA to set National Ambient Air Quality Standards (NAAQS). There are no NAAQS for Black Carbon or Ultrafine Particulates ($PM_{0.1}$).

Meteorological data obtained from the local National Weather Service Station at T.F. Green Airport is summarized in Section 3.5. Runway usage data is summarized in Section 3.6.

3.2 Data Completeness

First Quarter 2020 data capture is presented in the table below.

Table 3.2. Data Recovery from Continuous Monitors.

Site	Valid Hours	Total Hours	Capture
Fieldview			
Aethalometer	2181	2184	99.86%
Ultrafine Particulate Matter	2181	2184	99.86%
Lydick*			
Aethalometer	2106	2184	96.43%
Ultrafine Particulate Matter	2095	2184	95.92%
Pembroke			
Aethalometer	2177	2184	99.68%
Ultrafine Particulate Matter	2183	2184	99.95%
Firestation**			
Aethalometer	0	2184	0.00%
Ultrafine Particulate Matter	0	2184	0.00%

* Lydick EPC Power loss, then a plugged inlet…upon restart, date and time was off between 2/7/2020 and 3/24/2020

** Firestation taken off line to move 12/4/2019. The station was operational in the new location 4/7/2020. No data captured this period.

3.3 Summary of Black Carbon Data

3.3.1 Real-Time Black Carbon Data

The black carbon data is collected at one minute increments with an aethalometer at each monitoring site. Hourly data is calculated. Previous quarter data are presented by site in Tables 3.3.1-3.3.8. Current data are presented in Figures 3. 1- 3.8.

- **Fieldview:**
  - The highest hourly value was 2,621 ng/m^3. Previous quarter Maxima are displayed below.

Table 3.3.1 Fieldview Previous Quarter Maxima values

Fieldview	2019	2018	2017	2016	2015	2014	2013
Quarter 1	2,101	2,622	2513.4	1,735.5	2,141.0	4,815.1	4,521.4
Quarter 2	1,253	2,264	1755.9	1,700.8	2,633.4	2,557.8	4,187.9
Quarter 3	30,767	2,135	3,362	1,694.3	5,166.9	2,196.7	4,815.1
Quarter 4	2,933	2,965	2,808	2,384.9	2,230.3	3,153.8	3,754.3

  - The average hourly value was 273 ng/m^3. Previous quarter averages are displayed below.

Table 3.3.2 Fieldview Previous Quarter Average values

Fieldview	2019	2018	2017	2016	2015	2014	2013
Quarter 1	228	308	257.1	260.8	339.5	431.6	421.1
Quarter 2	196	281	343.2	380.7	424.2	295.8	369.6
Quarter 3	308	305	436.5	466.5	609.1	399.4	471.8
Quarter 4	315	251	312	336.6	260.5	518.2	518.8

- Fire Station:
  - No data collected this period. Previous quarter maxima are displayed below.

Table 3.3.3 Firestation Previous Quarter Maxima values

Fire Station	2019	2018	2017	2016	2015	2014	2013
Quarter 1	3,257	2,878	4694.7	2,986.1	3,774.9	5,209.5	4,767.8
Quarter 2	1,615	2,188	1996.8	2,353.3	8,802.6	5,398	2,596.6
Quarter 3	2,885	2,566	40,544	3,949.2	3,526.8	2,851.3	6,380.7
Quarter 4	5,220	3,148	3,323	4,327.9	10,311.8	3,796	5,437.1

- No data collected this period. Previous quarter averages are displayed below.

Table 3.3.4 Firestation Previous Quarter Average values

Fire Station	2019	2018	2017	2016	2015	2014	2013
Quarter 1	307	398	388.7	377.8	423.1	466.2	374.6
Quarter 2	271	342	453.5	502.2	688.2	346.6	358.6
Quarter 3	388	383	728.6	610.7	1,034.8	438.7	489.7
Quarter 4	400	332	398	495.8	545.8	496.6	614.6

- Lydick:
  - The highest hourly value was 2,685 ng/m3 . Previous quarter maxima are displayed below.

Table 3.3.5 Lydick Previous Quarter Maxima values

Lydick	2019	2018	2017	2016	2015	2014	2013
Quarter 1	2,113	3,523	5057.6	3,489.7	6,311.2	4,895.2	5,980.7
Quarter 2	2,143	2,233	2150.8	13,378	4,751.1	2,396.7	11,278.5
Quarter 3	7,605	4,587	4,381	5319.7	8,459.6		6,014.8
Quarter 4	3,240	4,478	4,849	4283.7	11,291.1		5,762.3

  - The average hourly value was 259 ng/m^3. Previous quarter averages are displayed below.

Table 3.3.6 Lydick Previous Quarter Average values

Lydick	2019	2018	2017	2016	2015	2014	2013
Quarter 1	265	262	466.0	453.4	474	485.2	376.4
Quarter 2	197	266	440.1	542.5	460.7	297.4	320.5
Quarter 3	329	310	615.9	560.7	702.3	443.8	463.9
Quarter 4	318	276	450	554.2	565.5	512.4	582.3

- Pembroke:
  - The highest hourly value was 3,151 ng/m^3. Previous quarter maxima are listed below.

Table 3.3.7 Pembroke Previous Quarter Maxima values

Pembroke	2019	2018	2017	2016	2015	2014	2013
Quarter 1	12,062	4,568	5253.9	3,394.7	4,811.1	14,803.9	15,767.8
Quarter 2	1,975	16,521	2241.5	4,522.2	2,538.4	3,809.1	8,136.9
Quarter 3	3,989	6,531	8141.7	5,122.1	9,656.1	7,071.9	13,220.3
Quarter 4	3,631	7,839	17,452	5199.6	3,975.6	3,127.7	17,189.1

- The average hourly value was 353 ng/m^3. Previous quarter averages are displayed below.

Table 3.3.8 Pembroke Previous Quarter Maxima values

Pembroke	2019	2018	2017	2016	2015	2014	2013
Quarter 1	392	178	484.4	451.0	474	1,007.3	1,324.5
Quarter 2	238	437	417.8	440.6	316.9	323.1	1,094.8
Quarter 3	380	400	619.2	497.2	620.4	534.5	1,606.1
Quarter 4	420	434	409	604.2	600.6	434.7	2,031.3

Black Carbon Fieldview Site

Figure 3.1. Plot of Hourly Average Black Carbon Concentrations (ng/m3) at Fieldview,

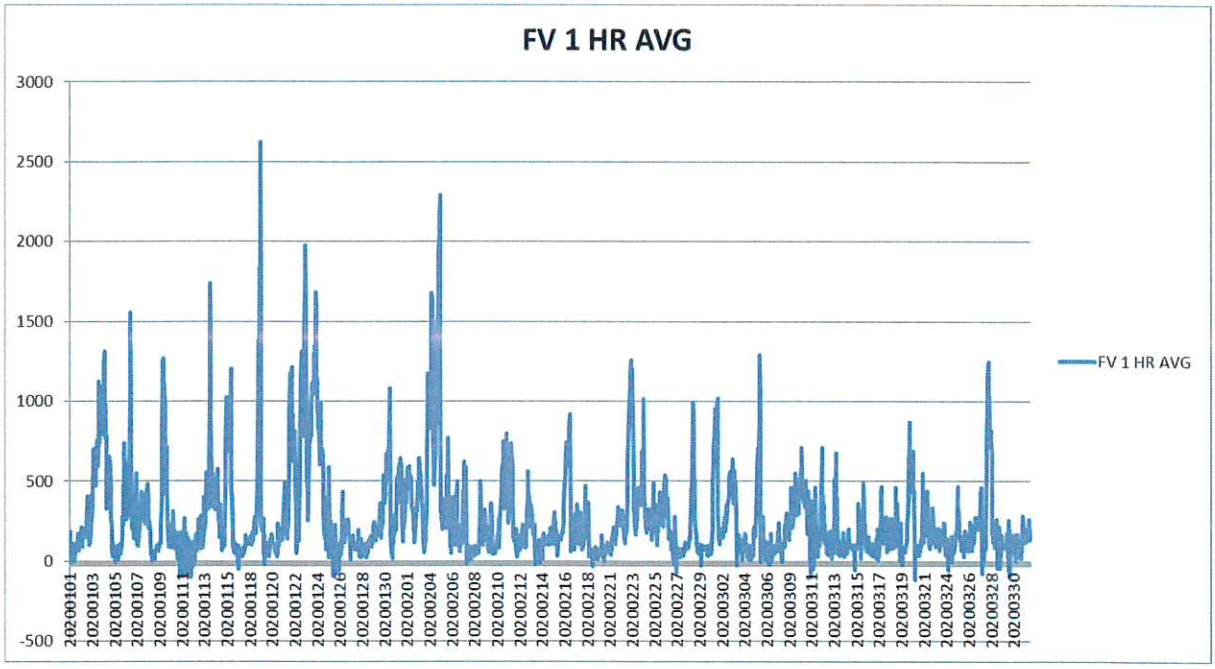
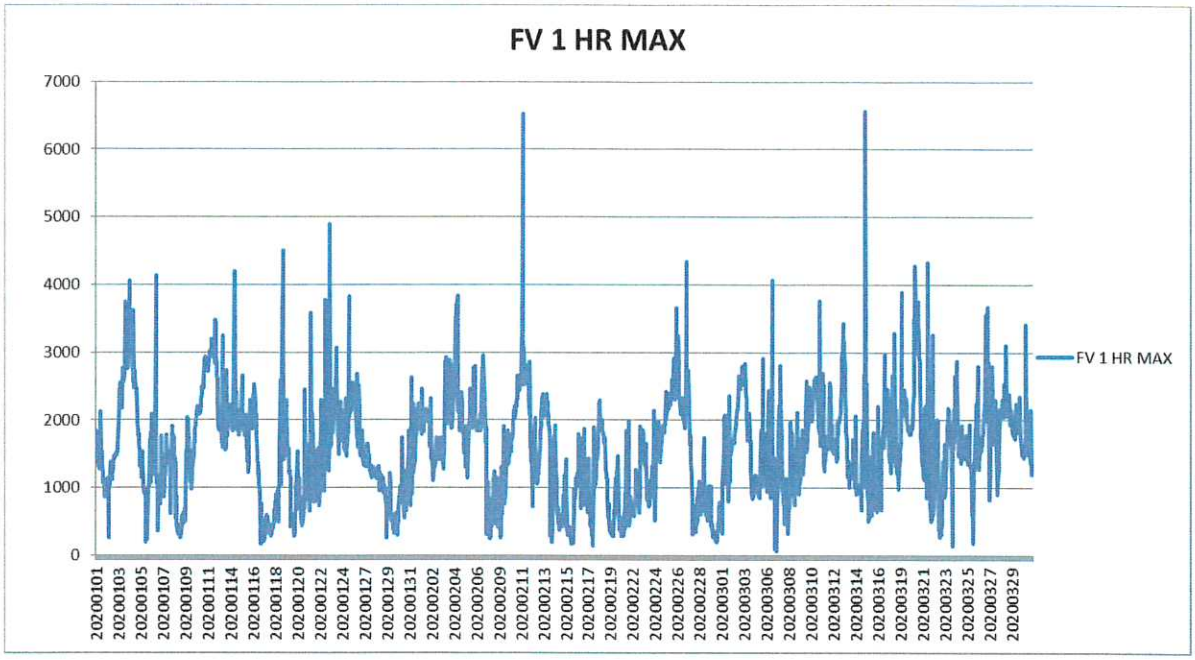


Figure 3.2. Plot of Hourly Maximum Black Carbon Concentrations (ng/m3) at Fieldview



Black Carbon Fire Station Site

Figure 3.3. and Figure 3.4 not used for this report. No Data Collected this period.

Figure 3.5. Plot of Hourly Average Black Carbon Concentrations (ng/m3) at Lydick

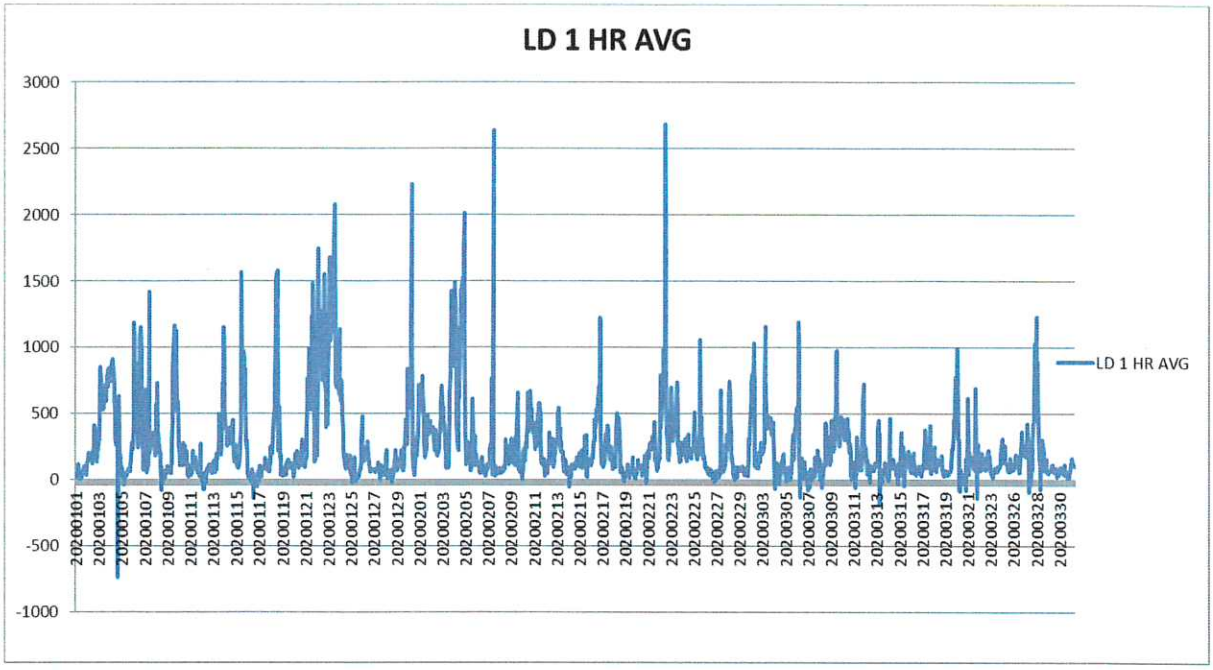


Figure 3.6. Plot of Hourly Maximum Black Carbon Concentrations (ng/m3) at Lydick

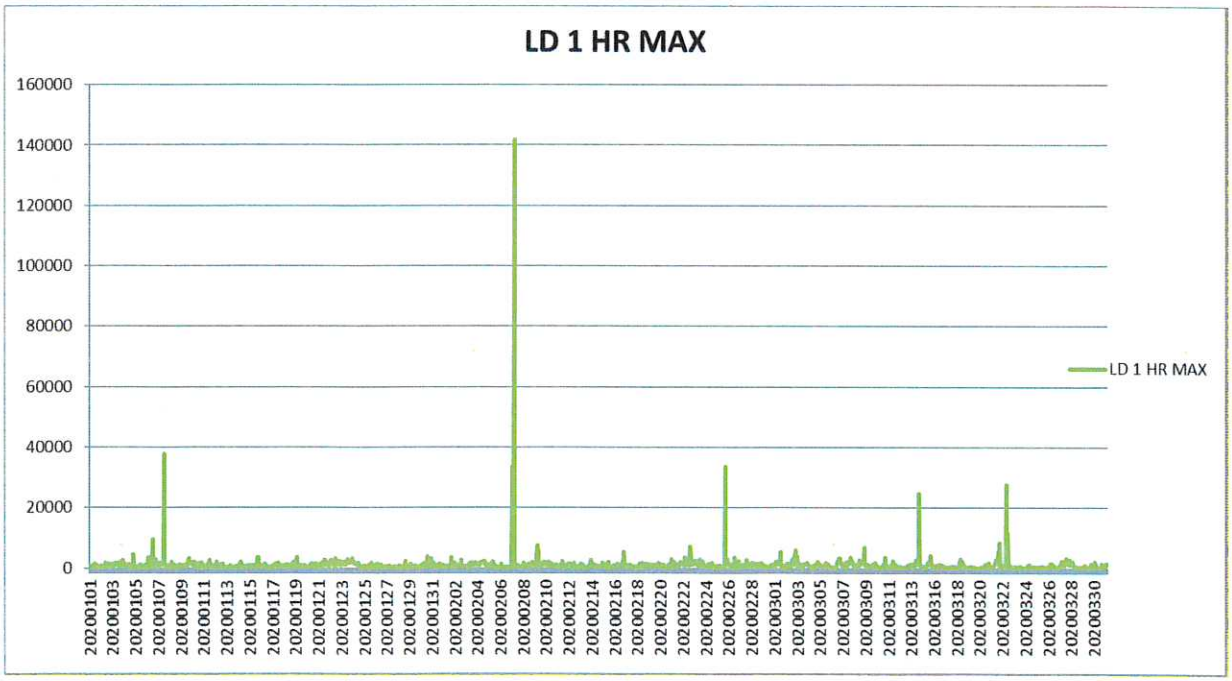


Figure 3.7. Plot of Hourly Average Black Carbon Concentrations (ng/m3) at Pembroke

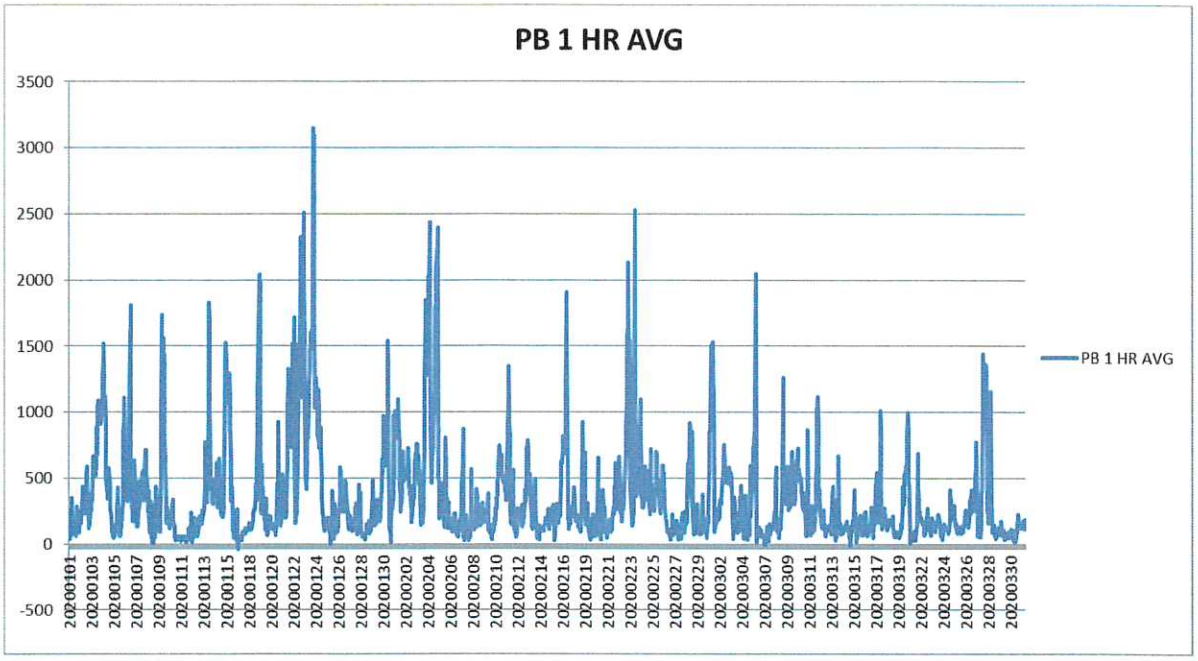
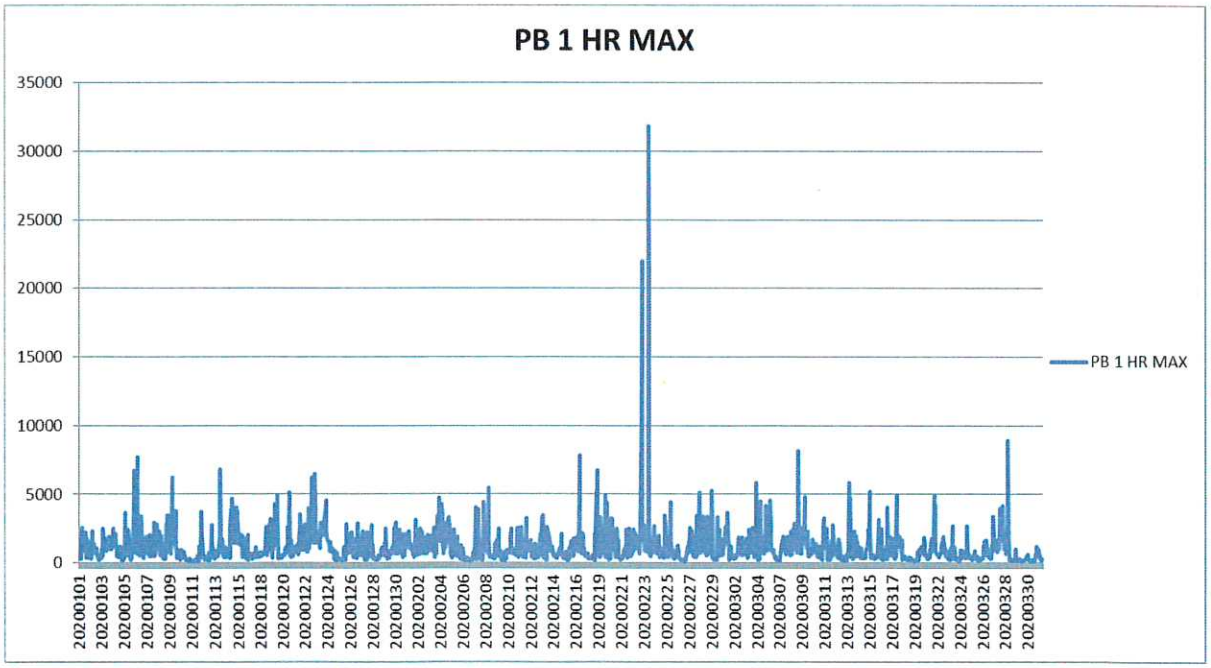


Figure 3.8. Plot of Hourly Maximum Black Carbon Concentrations (ng/m3) at Pembroke



3.4 Summary of Ultrafine Particulate Data

3.4.1 Real-Time Ultrafine Particulate Data

The ultrafine particulate data is collected in ten second increments with a particle counter equipped with an inlet cyclone to screen out particles larger than 3 mm. The majority of particles counted have a diameter of 0.1 mm or less. Hourly data is calculated. Previous quarter data is presented in Tables 3.4.1-3.4.8. Current quarter data is presented in Figures 3.9 – 3.16.

- Fieldview
  - The highest hourly value was 126, 532 particles/cm^3. Previous quarter maxima values are displayed below.

Table 3.4.1 Fieldview Previous Quarter Maxima values

Fieldview	2019	2018	2017	2016	2015	2014	2013
Quarter 1	86,797	185,489	86,331	132,221	78,363	111,836	invalid data
Quarter 2	58,246	105,520	57,144	101,461	84,034	131,465	invalid data
Quarter 3	122,349	39,388	55,171.5	91,208	96,236	112,022	86,618
Quarter 4	118,215	8,566,778	155,878	121,951	132,433	103,301	138,025

- The average hourly value was 10,717 particles/cm^3. Previous quarter average values are displayed below.

Table 3.4.2 Fieldview Previous Quarter Average values

Fieldview	2019	2018	2017	2016	2015	2014	2013
Quarter 1	5,158	10,823	11,247	12,614	12,392	15,264	invalid data
Quarter 2	3,603	9,171	7,064	10,775	9,907	11,877	invalid data
Quarter 3	5,224	1,454	6,439.7	9,251.1	8,357	10,109	12,032
Quarter 4	13,919	29,702	7,914	12,092	11,834	12,501	12,357

- Fire Station
  - No data collected this period. Previous quarter maxima values are displayed below.

Table 3.4.3 Firestation Previous Quarter Maxima values

Firestation	2019	2018	2017	2016	2015	2014	2013
Quarter 1	88,891	Out of service	95,266	129,585	94,285	89,946	invalid data
Quarter 2	47,668	52,933	120,178	48,270	83,263	87,429	invalid data
Quarter 3	39,467	27,750	86,536.3	63,696	73,668	109,807	75,590
Quarter 4	51,291	55,177	71,599	84,197	313,152	57,420	121,675

  - No data collected this period. Previous quarter average values are displayed below.

Table 3.4.4 Firestation Previous Quarter Average values

Firestation	2019	2018	2017	2016	2015	2014	2013
Quarter 1	5,606	Out of service	13,913	15,236	12,806	17,169	invalid data
Quarter 2	2,240	6,445	10,806	7,583	10,208	11,032	invalid data
Quarter 3	2,937	5,169	7,974	9,675	9,170	8,988	10,620
Quarter 4	6,630	7,864	11,933	13,886	14,526	12,111	15,641

- Lydick
  - The highest hourly value was 144,057 particles/cm^3. Previous quarter maxima values are displayed below.

Table 3.4.5 Lydick Previous Quarter Maxima values

Lydick	2019	2018	2017	2016	2015	2014	2013
Quarter 1	8,973	130,013	178,827	133,646	98,411	117,411	170,860
Quarter 2	138,661	104,876	131,813	135,840	61,609	16,713	146,071
Quarter 3	109,521	2,507,171	134,418	159,838	172,451	176,455	245,890
Quarter 4	124,711	3,256,429	183,703	116,333	161,595	132,755	133,402

  - The average hourly value was 11,848 particles/cm^3. Previous quarter average values are displayed below.

Table 3.4.6 Lydick Previous Quarter Average values

Lydick	2019	2018	2017	2016	2015	2014	2013
Quarter 1	80	12,563	14,418	15,411	12,057	15,380	17,570
Quarter 2	7,149	10,076	9,894	11,717	2,941	9,021	13,264
Quarter 3	11,281	11,217	10,936	11,675	14,409	11,924	16,724
Quarter 4	11,034	10,177	13,928	11,584	16,809	12,207	16,187

- Pembroke
  - The highest hourly value was 104,860 particles/cm^3. Previous quarter maxima values are displayed below.

Table 3.4.7 Pembroke Previous Quarter Maxima values

Pembroke	2019	2018	2017	2016	2015	2014	2013
Quarter 1	110,190	313,993	94,188	106,945	91,923	124,941	978,400
Quarter 2	71,270	60,853	106,170	93,125	76,640	111,452	invalid data
Quarter 3	104,264	52,695	84,650	82,388	96,926	81,577	85,105
Quarter 4	109,981	100,504	134,074	122,080	96,233	88,150	107,003

- The average hourly value was 12,081 particles/cm^3. Previous quarter average values are displayed below.

Table 3.4.8 Pembroke Previous Quarter Average values

Pembroke	2019	2018	2017	2016	2015	2014	2013
Quarter 1	6,331	14,835	16,033	14,253	17,211	28,952	40,753
Quarter 2	5,425	8,319	9,866	10,576	7,550	11,063	invalid data
Quarter 3	8,759	6,743	9,855	9,391	5,546	10,310	13,851
Quarter 4	12,726	13,404	16,647	16,036	9,950	14,833	20,395

Ultrafine PM Fieldview Site

Figure 3.9. Plot of Hourly Average Ultrafine Particles (PM0.1) at Fieldview

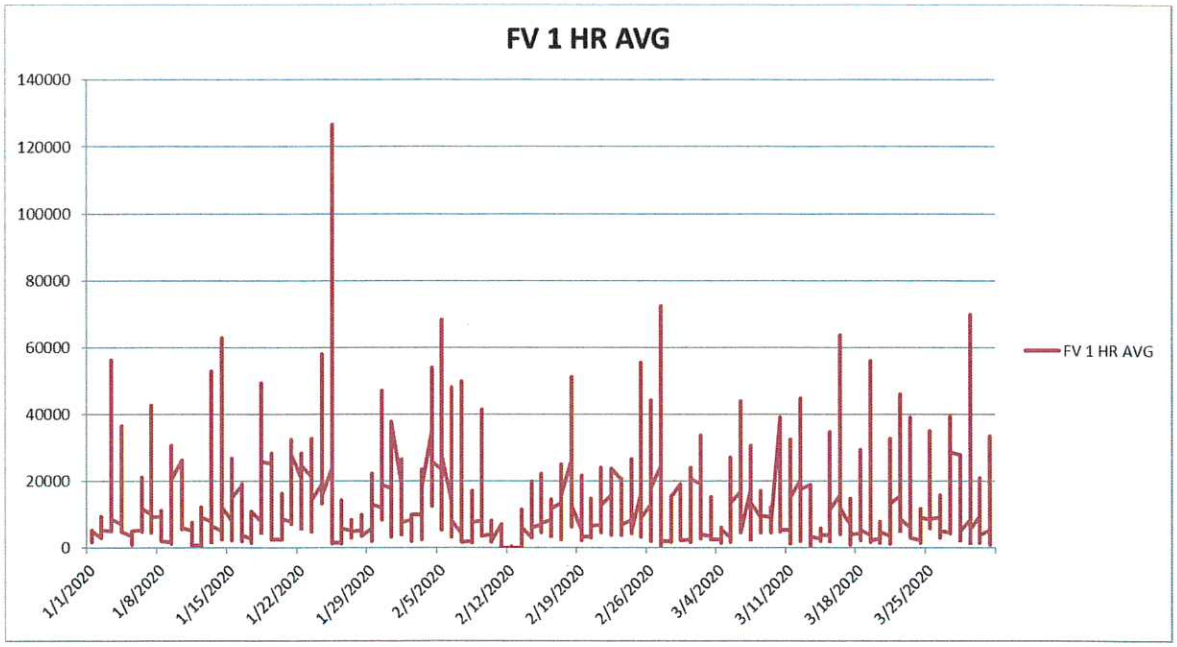
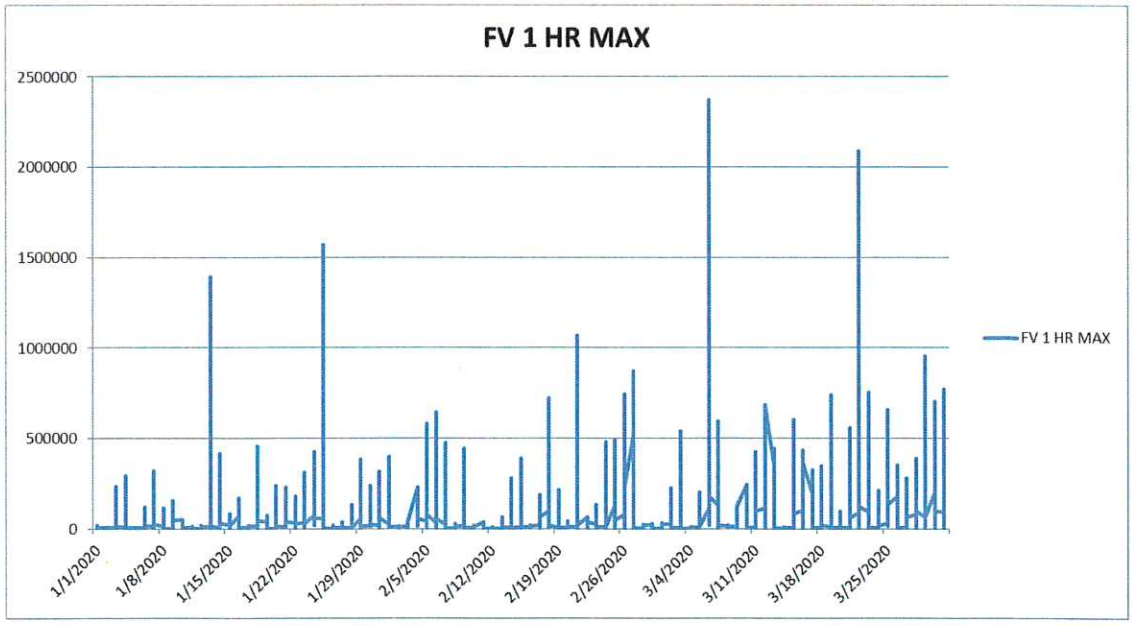


Figure 3.10. Plot of Hourly Maximum Ultrafine Particles (PM0.1) at Fieldview



Ultrafine PM Fire Station Site

Figure 3.11. and Figure 3.12 Not used. No data collected this period.

Ultrafine PM Lydick Site

Figure 3.13. Plot of Hourly Average Ultrafine Particles (PM0.1) at Lydick

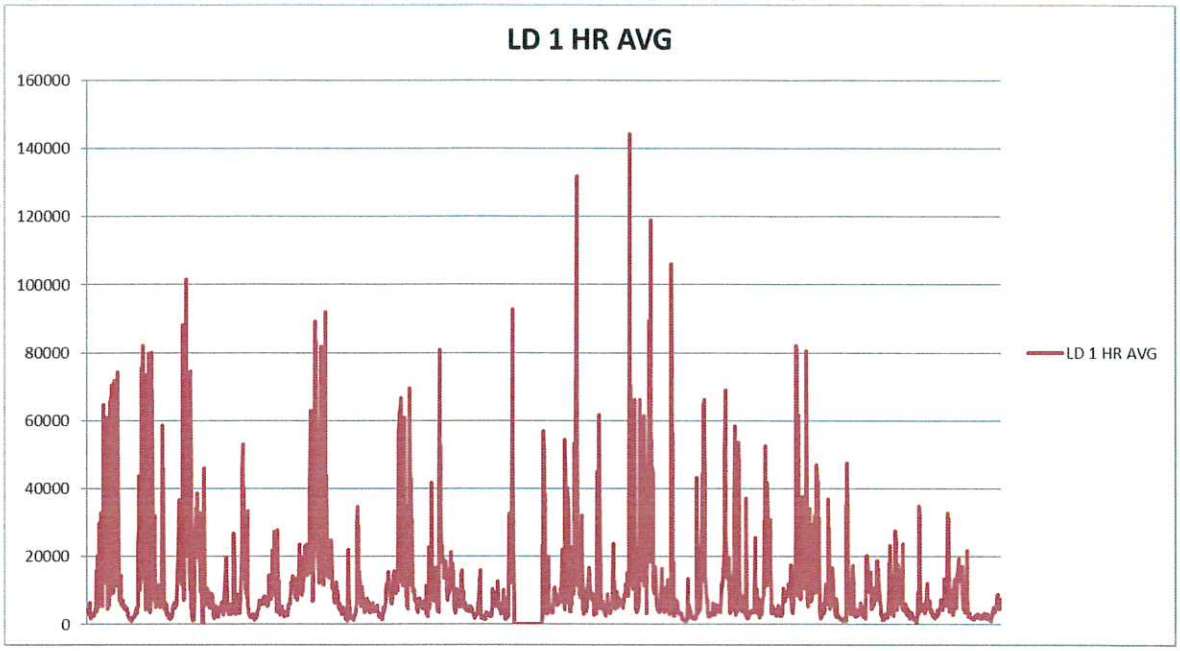


Figure 3.14. Plot of Hourly Maximum Ultrafine Particles (PM0.1) at Lydick

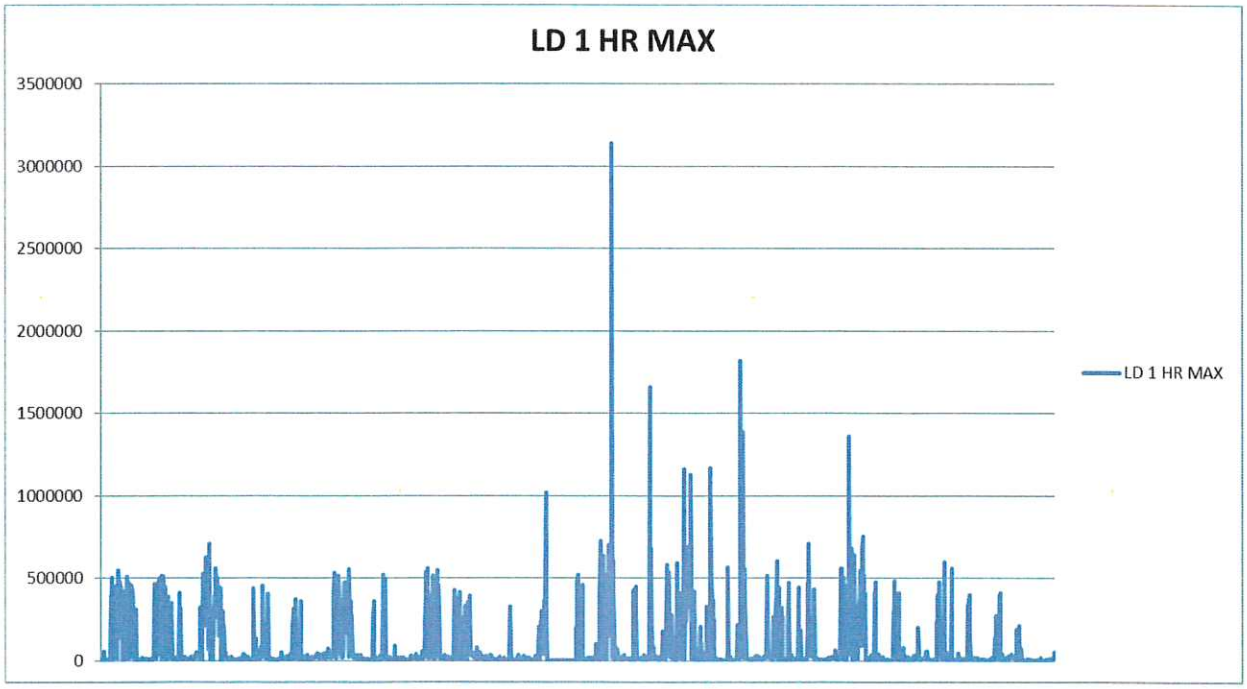


Figure 3.15. Plot of Hourly Average Ultrafine Particles ($PM_{0.1}$) at Pembroke

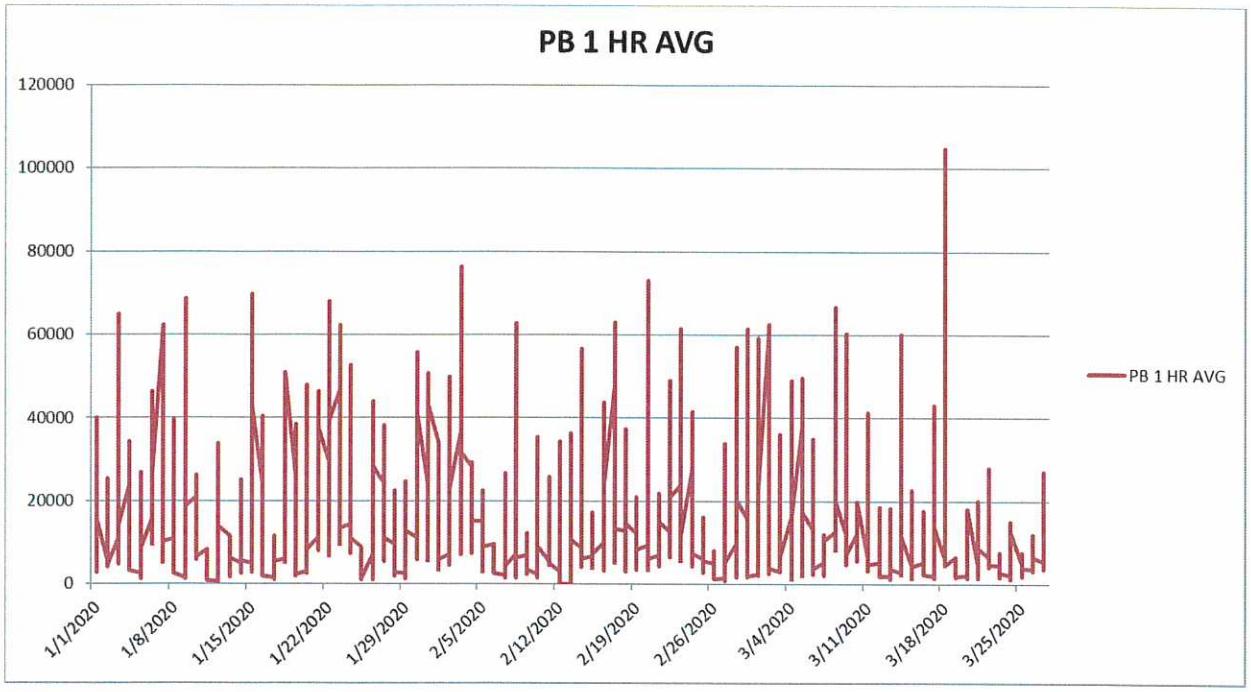
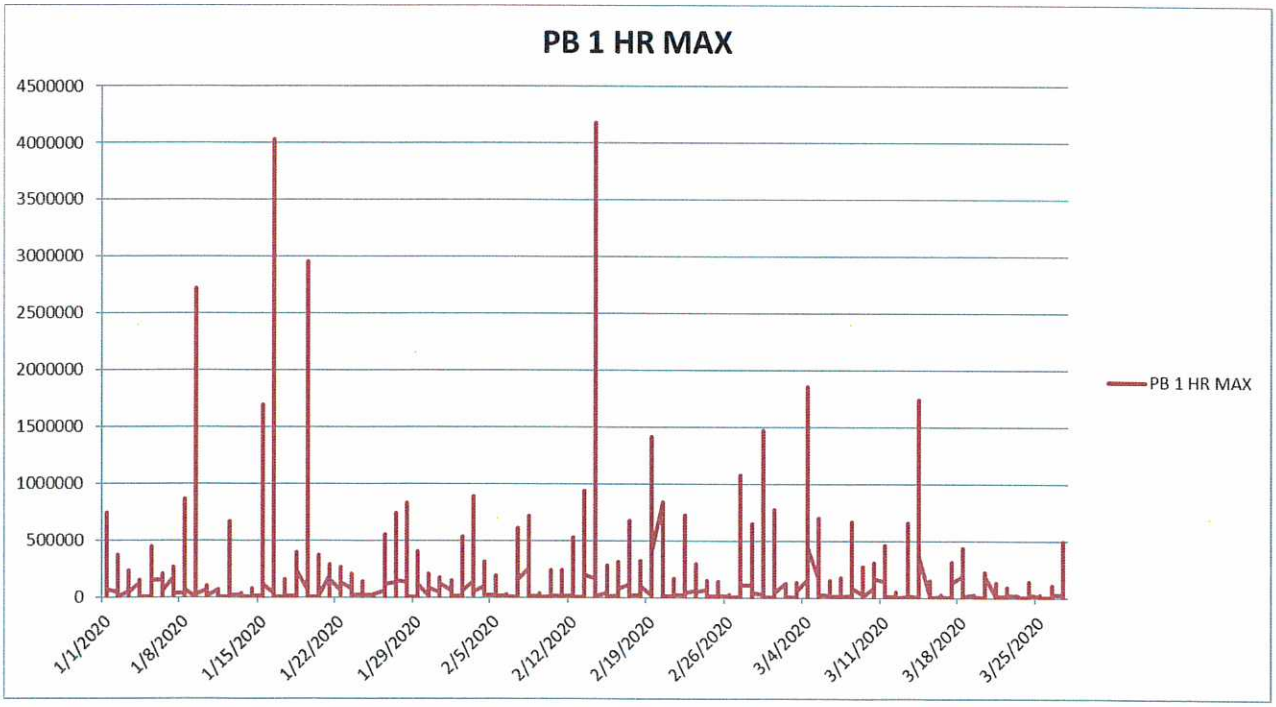


Figure 3.16. Plot of Hourly Maximum Ultrafine Particles (PM0.1) at Pembroke



3.5 Summary of Meteorological Data

3.5.1 Hourly Average Meteorological Data

Meteorological data was acquired from the National Weather Service station at T. F. Green Airport. The parameters summarized below include: wind direction, wind speed, temperature, and relative humidity.

3.5.2 Wind Rose Summary

Wind roses for each month of the period as well as for the entire quarter are presented in Figures 3.17 through 3.20, respectively.

Figure 3.17. Wind Rose for January 2020.

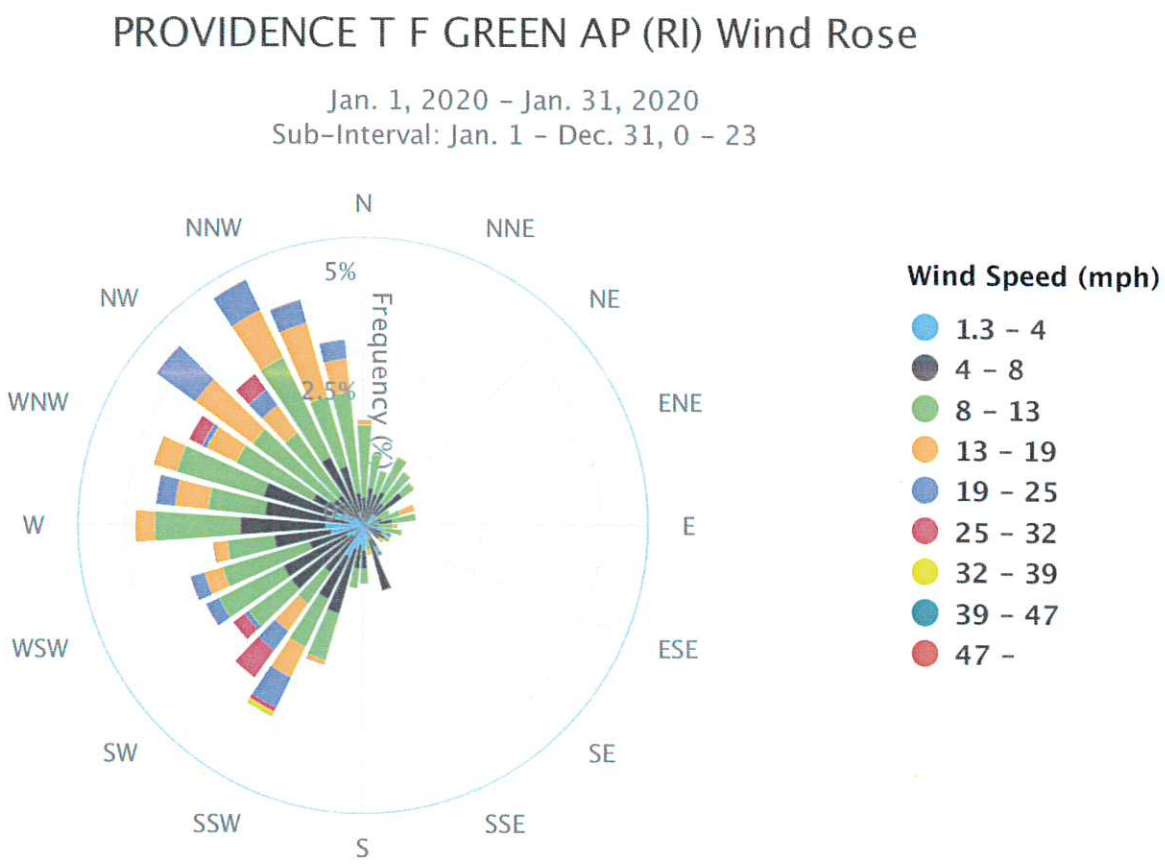


Figure 3.18. Wind Rose for February 2020.

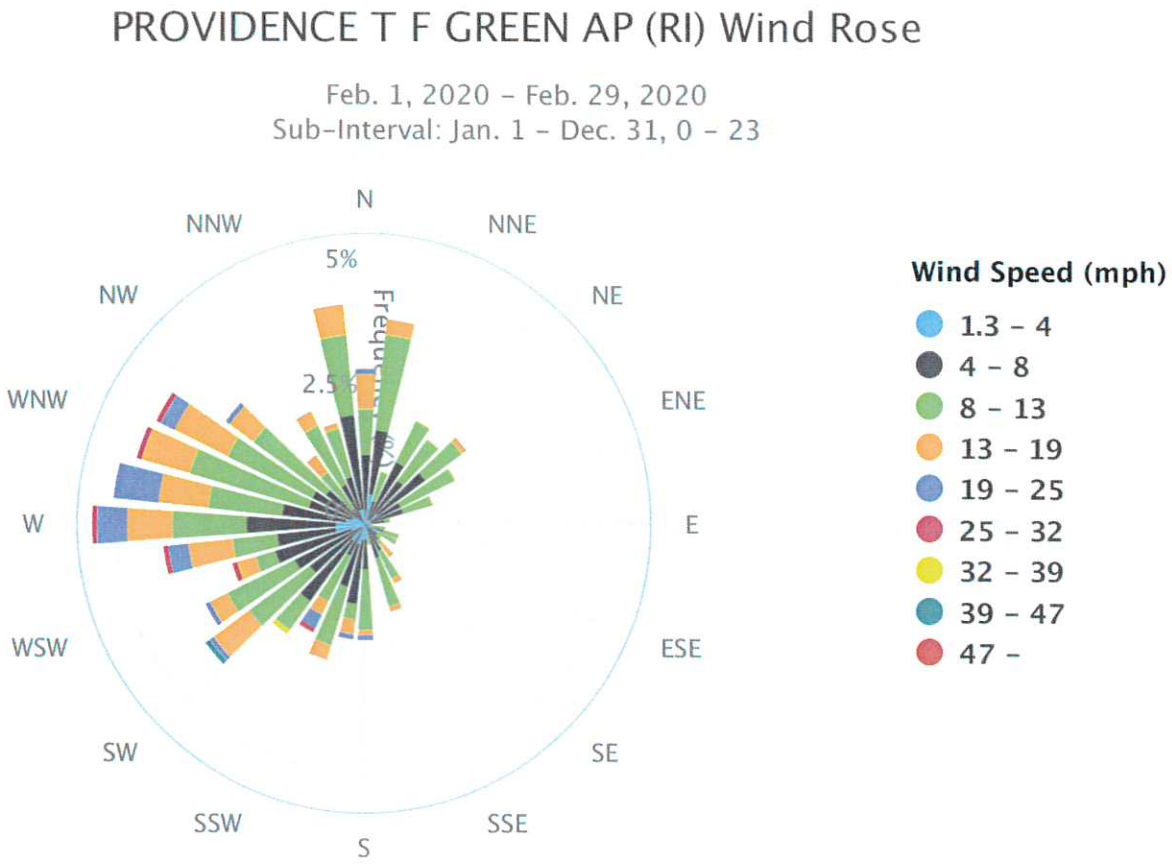


Figure 3.19. Wind Rose for March 2020.

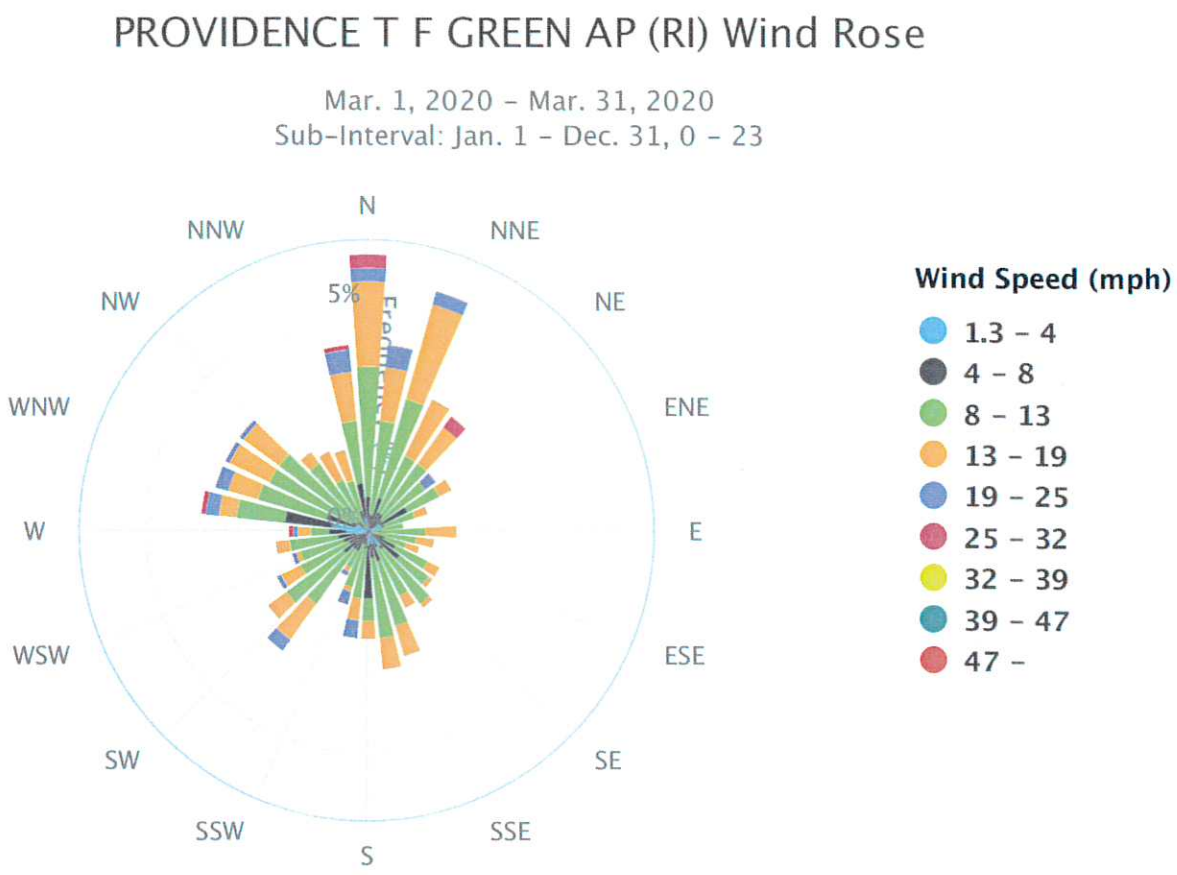
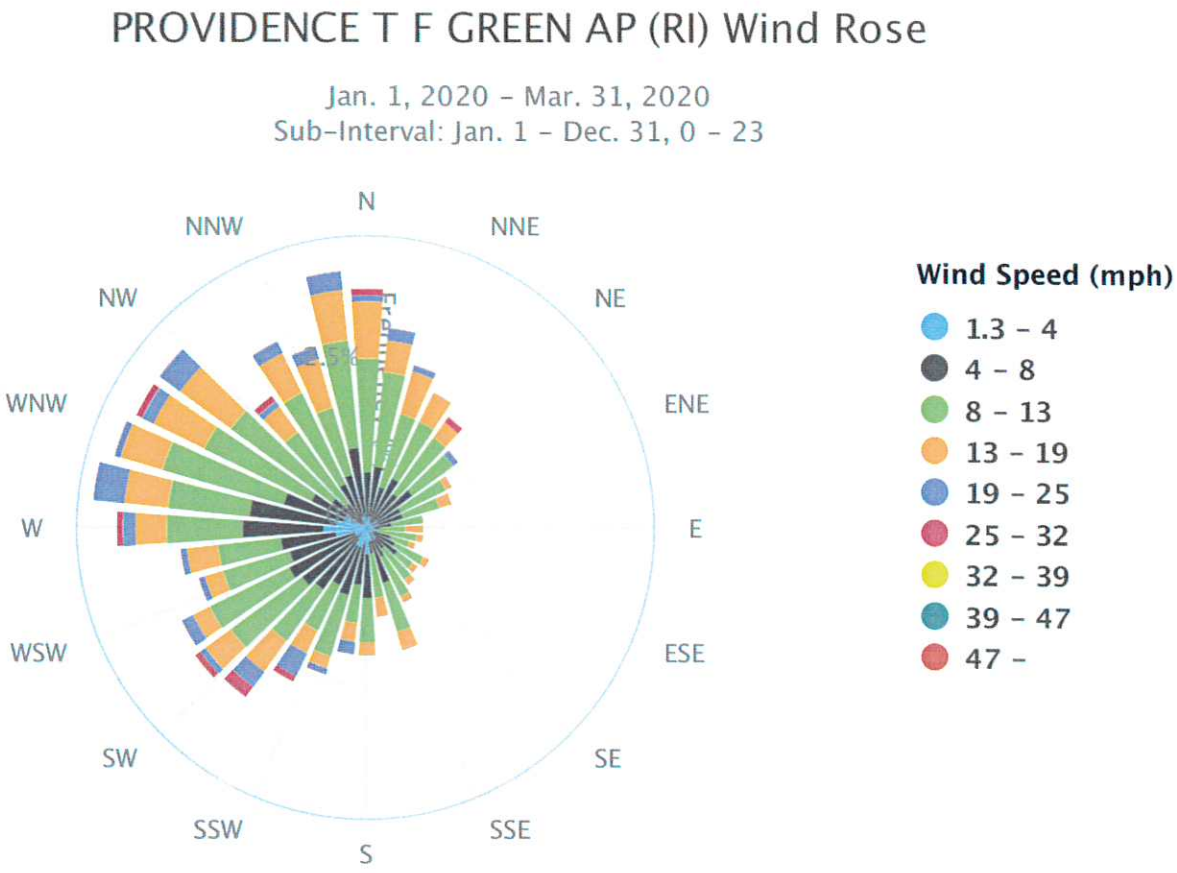


Figure 3.20. Wind Rose for 1st Quarter 2020



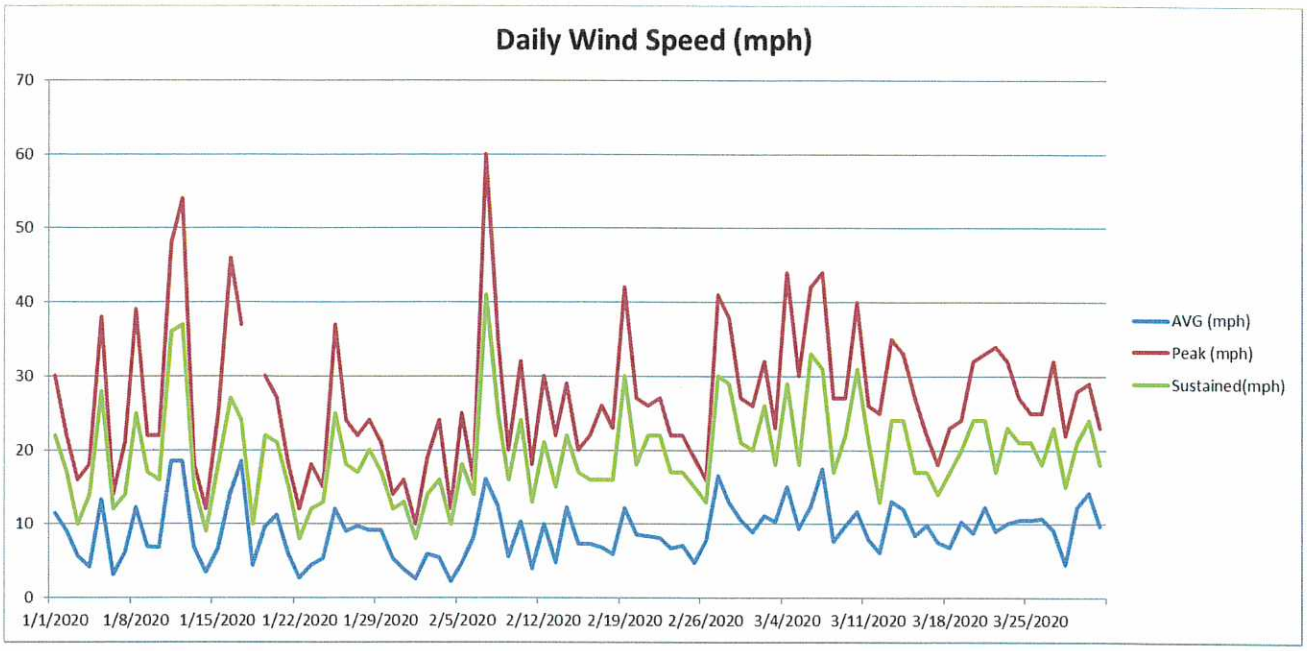
3.5.1 Wind Speed

The 10-meter wind speed summary is presented below and in Figure 3.21.

Table 3.5.3. Daily Average, Peak and Sustained Wind Speed (mph)

Date	AVG	Peak	Sustained	Date	AVG	Peak	Sustained	Date	AVG	Peak	Sustained
1/1	11.5	30	22	2/1	2.6	10	8	3/1	8.9	26	20
1/2	9.1	22	17	2/2	5.9	19	14	3/2	11.1	32	26
1/3	5.7	16	10	2/3	5.5	24	16	3/3	10.3	23	18
1/4	4.2	18	14	2/4	2.3	12	10	3/4	15	44	29
1/5	13.3	38	28	2/5	4.7	25	18	3/5	9.4	30	18
1/6	3.2	14	12	2/6	8.2	16	14	3/6	12.4	42	33
1/7	6.2	21	14	2/7	16.1	60	41	3/7	17.5	44	31
1/8	12.3	39	25	2/8	12.4	35	25	3/8	7.7	27	17
1/9	7	22	17	2/9	5.6	20	16	3/9	9.8	27	22
1/10	6.9	22	16	2/10	10.3	32	24	3/10	11.7	40	31
1/11	18.5	48	36	2/11	4	18	13	3/11	7.9	26	21
1/12	18.5	54	37	2/12	10	30	21	3/12	6.2	25	13
1/13	6.9	18	15	2/13	4.8	22	15	3/13	13.1	35	24
1/14	3.5	12	9	2/14	12.3	29	22	3/14	12	33	24
1/15	6.7	25	18	2/15	7.3	20	17	3/15	8.5	27	17
1/16	14.2	46	27	2/16	7.3	22	16	3/16	9.9	22	17
1/17	18.5	37	24	2/17	6.9	26	16	3/17	7.5	18	14
1/18	4.5		10	2/18	5.9	23	16	3/18	6.9	23	17
1/19	9.6	30	22	2/19	12.2	42	30	3/19	10.3	24	20
1/20	11.3	27	21	2/20	8.6	27	18	3/20	8.8	32	24
1/21	5.9	18	15	2/21	8.4	26	22	3/21	12.3	33	24
1/22	2.7	12	8	2/22	8.1	27	22	3/22	9	34	17
1/23	4.4	18	12	2/23	6.8	22	17	3/23	10.1	32	23
1/24	5.4	15	13	2/24	7.1	22	17	3/24	10.6	27	21
1/25	12	37	25	2/25	4.8	19	15	3/25	10.6	25	21
1/26	9.1	24	18	2/26	7.8	16	13	3/26	10.8	25	18
1/27	9.7	22	17	2/27	16.6	41	30	3/27	9.2	32	23
1/28	9.2	24	20	2/28	13	38	29	3/28	4.6	22	15
1/29	9.2	21	17	2/29	10.5	27	21	3/29	12.3	28	21
1/30	5.4	14	12					3/30	14.3	29	24
1/31	3.9	16	13					3/31	9.7	23	18

Figure 3.21. Plot of Daily Average, Peak, and Sustained Wind Speed (mph).



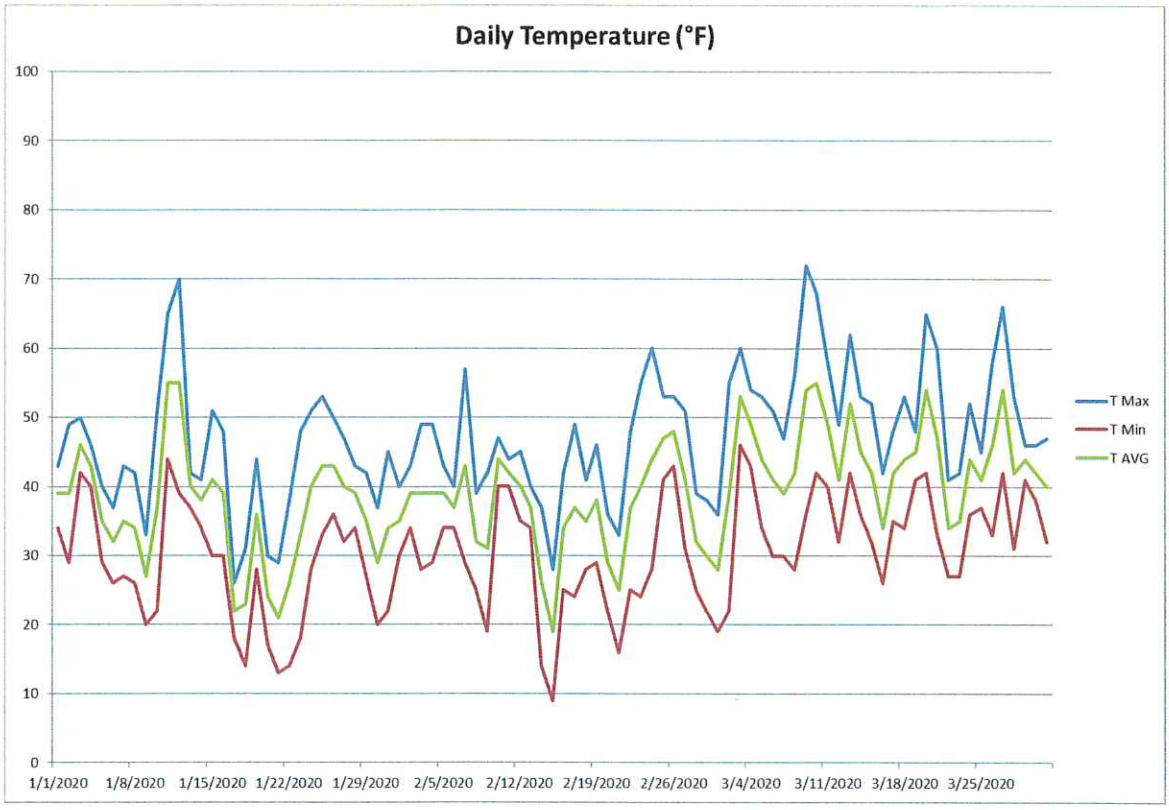
3.5.2 Temperature Summary

The daily temperature data is presented below and Figure 3.22.

Table 3.5.4. Daily Average, Maximum, and Minimum Temperatures (°F)

Date	Tmax	Tmin	Tavg	Date	Tmax	Tmin	Tavg	Date	Tmax	Tmin	Tavg
1/1	43	34	39	2/1	40	30	35	3/1	36	19	28
1/2	49	29	39	2/2	43	34	39	3/2	55	22	39
1/3	50	42	46	2/3	49	28	39	3/3	60	46	53
1/4	46	40	43	2/4	49	29	39	3/4	54	43	49
1/5	40	29	35	2/5	43	34	39	3/5	53	34	44
1/6	37	26	32	2/6	40	34	37	3/6	51	30	41
1/7	43	27	35	2/7	57	29	43	3/7	47	30	39
1/8	42	26	34	2/8	39	25	32	3/8	56	28	42
1/9	33	20	27	2/9	42	19	31	3/9	72	36	54
1/10	51	22	37	2/10	47	40	44	3/10	68	42	55
1/11	65	44	55	2/11	44	40	42	3/11	58	40	49
1/12	70	39	55	2/12	45	35	40	3/12	49	32	41
1/13	42	37	40	2/13	40	34	37	3/13	62	42	52
1/14	41	34	38	2/14	37	14	26	3/14	53	36	45
1/15	51	30	41	2/15	28	9	19	3/15	52	32	42
1/16	48	30	39	2/16	42	25	34	3/16	42	26	34
1/17	26	18	22	2/17	49	24	37	3/17	48	35	42
1/18	31	14	23	2/18	41	28	35	3/18	53	34	44
1/19	44	28	36	2/19	46	29	38	3/19	48	41	45
1/20	30	17	24	2/20	36	22	29	3/20	65	42	54
1/21	29	13	21	2/21	33	16	25	3/21	60	33	47
1/22	38	14	26	2/22	48	25	37	3/22	41	27	34
1/23	48	18	33	2/23	55	24	40	3/23	42	27	35
1/24	51	28	40	2/24	60	28	44	3/24	52	36	44
1/25	53	33	43	2/25	53	41	47	3/25	45	37	41
1/26	50	36	43	2/26	53	43	48	3/26	58	33	46
1/27	47	32	40	2/27	51	31	41	3/27	66	42	54
1/28	43	34	39	2/28	39	25	32	3/28	53	31	42
1/29	42	27	35	2/29	38	22	30	3/29	46	41	44
1/30	37	20	29					3/30	46	38	42
1/31	45	22	34					3/31	47	32	40

Figure 3.22. Plot of Daily Average, Maximum, and Minimum Temperatures (°F).



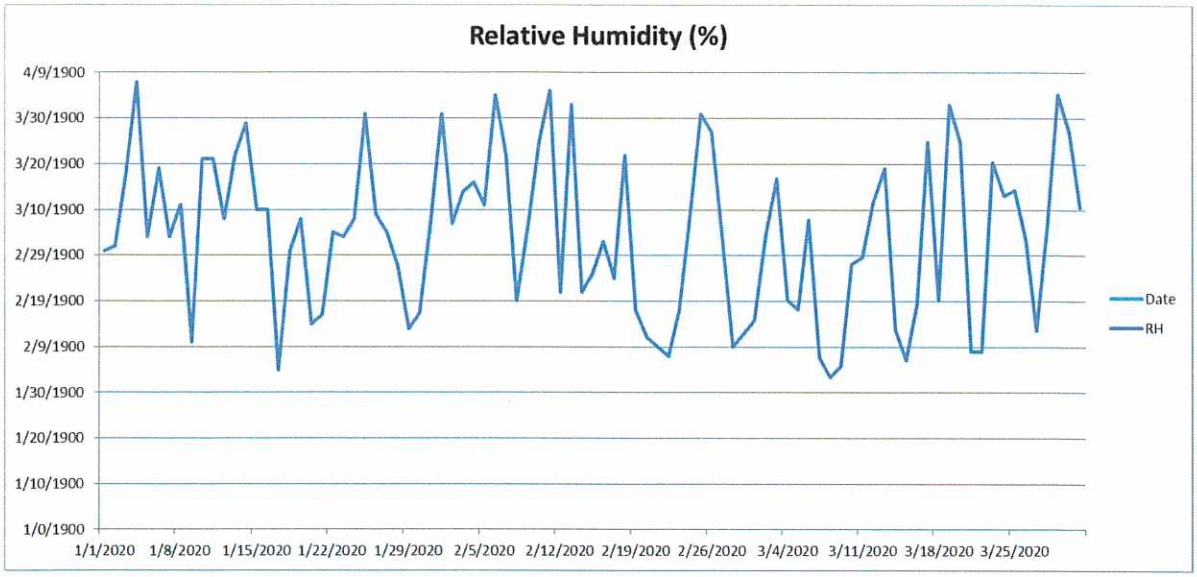
3.5.3 Relative Humidity Data

The average daily relative humidity data is presented below and Figure 3.23. March 2020 daily averages were calculated using NCDC hourly reported values.

Table 3.5.3 Daily Relative Humidity (%F)

Date	RH (%)	Date	RH (%)	Date	RH (%)
1/1	61	2/1	91	3/1	46
1/2	62	2/2	67	3/2	65
1/3	78	2/3	74	3/3	77
1/4	98	2/4	76	3/4	50
1/5	64	2/5	71	3/5	48
1/6	79	2/6	95	3/6	68
1/7	64	2/7	82	3/7	38
1/8	71	2/8	50	3/8	33
1/9	41	2/9	67	3/9	36
1/10	81	2/10	85	3/10	58
1/11	81	2/11	96	3/11	60
1/12	68	2/12	52	3/12	72
1/13	82	2/13	93	3/13	79
1/14	89	2/14	52	3/14	44
1/15	70	2/15	56	3/15	37
1/16	70	2/16	63	3/16	49
1/17	35	2/17	55	3/17	85
1/18	61	2/18	82	3/18	50
1/19	68	2/19	48	3/19	93
1/20	45	2/20	42	3/20	85
1/21	47	2/21	40	3/21	39
1/22	65	2/22	38	3/22	39
1/23	64	2/23	48	3/23	80
1/24	68	2/24	69	3/24	73
1/25	91	2/25	91	3/25	74
1/26	69	2/26	87	3/26	63
1/27	65	2/27	64	3/27	44
1/28	58	2/28	40	3/28	66
1/29	44	2/29	43	3/29	95
1/30	47			3/30	87
1/31	67			3/31	70

Figure 3.23. Plot of Daily Average Relative Humidity (RH %)



3.6 Summary of Runway Usage Data

3.6.1 Runway Usage Data

There were a total of 15,917 aircraft operations during 1st Quarter 2020. Previous quarter's total flight values are listed below. Table 3.6.2 summarizes arrivals and departures for each runway for each month of the quarter as well as the cumulative total.

	2019	2018	2017	2016	2015	2014
Quarter 1	13,663	15,499	12,316	12,864	12,038	12,760
Quarter 2	16,473	18,257	15,537	15,070	14,300	16,089
Quarter 3	18,334	17,312	16,898	16,520	16,594	17,823
Quarter 4	15,917	15,057	16,891	14,375	13,024	13,649

Table 3.6.2. Summary of Runway Usage.

Runway	Operation	JAN		FEB		MAR		Total	
		Flights	Percent	Flights	Percent	Flights	Percent	Flights	Percent
5	Arrivals	833	17.2%	744	16.2%	846	20.7%	2423	17.9%
5	Departures	824	17.0%	759	16.5%	839	20.6%	2422	17.9%
16	Arrivals	5	0.1%	12	0.3%	22	0.5%	39	0.3%
16	Departures	4	0.1%	14	0.3%	19	0.5%	37	0.3%
23	Arrivals	1254	25.9%	1298	28.2%	908	22.3%	3460	25.6%
23	Departures	1328	27.5%	1333	29.0%	992	24.3%	3653	27.0%
34	Arrivals	332	6.9%	245	5.3%	254	6.2%	831	6.1%
34	Departures	255	5.3%	196	4.3%	199	4.9%	650	4.8%
	Totals	4835		4601		4079		13515	

Section 4: Quality Control

4.1 Quality Control Activities

Quality controls (QC) are implemented in this program to insure high quality of all collected data. QC activities include routine site checks. Site checks include performance checks on the operational, real-time samplers. RIAC continues to work with RIDEM/RIDOH to revise and improve quality controls. RIDOH technicians provided technical assistance throughout this quarter. They performed QA checks on all operating stations in December 2019. Units were within acceptable ranges. RIAC is coordinating for another QA check for April 2020.